# SmartImpact

## Local Impacts from Smart City Planning


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# SmartImpact Baseline Report

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URBACT III

# SmartImpact - State of the Art

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## Abstract

**Since 2010 "Smart Cities" have been increasingly subject to scientific and political debate, leading to an uptake of the smart city concept into wider funding of innovation-oriented urban development programmes at national or EU level. Whilst the larger EU and other nationally led Smart Cities programmes are putting a strong emphasis on technology-based and data-driven development of smart district demonstrators, little emphasis is put on governance structures, processes, business model innovation and integrated action planning to support the actual delivery of results. This article gives an overview of the development of the smart city concept in Europe, discusses different drivers and potentially conflicting interests and points towards the concept of living labs and innovation districts as fruitful testbeds for smart cities. The article argues that although implementing early pilot projects and demonstrators, crucial knowledge is lacking at EU level on how to streamline smart solutions into the core-business of urban governance and development. It is further argued that harnessing the full potential of the smart city as a model for sustainable urban growth will require a paradigm shift within public-private collaborations. Our current models of designing, building, financing and operating the city need to be rethought and updated. The article suggests focussing on three core areas of learning that help bring about the transition to a smart city mainstream model: the municipal role in smart city business models and replication, the integrator within the municipality and the systems integrator of smart districts and its role.**

## Smart Cities in Europe

Since the 1980's regional and local policymakers throughout Europe have been propagating different approaches to develop cities that are liveable, economically successful and increasingly sustainable. Throughout this quest for "the city of the future" various paradigms hit the urban developers and policy makers like high-frequency Konratieff waves. In the 1990s it was the bottom-up movements of the Local Agenda 21 who tried to push for a more inclusive and sustainable development of cities. Many city authorities incorporated their ideas and shifted the focus to climate change mitigation and sustainable development goals over the years 2000 -10. Integrated urban development plans based on the Leipzig Charter and a large set of city-oriented action-networks addressing all sorts of urban challenges were the results of this development. Polis, Eurocities, Energy cities or the URBACT city networks are strong and successful examples of this city-induced push for a more sustainable way of developing cities though integrated policies and sustainable action plans.

Around the year 2010 an important paradigm-shift has taken place in the mind-set of city managers, policy makers and industry leaders. Cities realized that building sustainable systems needs to include industry and technology providers to a far greater extent than originally thought. At the same time, the digital revolution made it actually possible to maximize efficiency of urban systems by linking clean technologies, infrastructures, city operators and citizens through smart devices and intelligent services. Businesses identified cities and urban environments as massive new markets and started to introduce apparently tailor-made solutions for the connected and digital city. Data-driven processes are now improving our urban mobility systems and increasingly decentralized energy flows. They help city authorities to take better decisions, save money and have the potential to connect to their communities on a real-time basis. Taken together, this shift of paradigm is the smart city!

Smart cities represent the culmination of a development that is now bringing together local green grass-root movements and Silicon Valley mind-sets. Smart cities promise us: we can build clean, efficient, sustainable and highly attractive cities by at the same time increase economic development. Policy makers across Europe hope that smart cities are the key to bridging the gap between social and ecological sustainability and economic growth. This is the reason why European policy makers today are putting a strong emphasis on the development of smart cities and communities: European Institutions like the European Commission (EC) or the European Investment Bank (EIB) but also national governments increasingly recognize smart cities as key element to achieving the highly ambitious development goals of the EU. With the "European Strategy for Smart, Sustainable and Inclusive Growth" the EU confirmed the 20 x 20 x 20 goals in 2010 and put emphasis on innovation, R&D and the digital economy (European Commission 2010). In its 2050 roadmap, the EC is looking beyond the 2020 objectives and sets out a plan to meet the long-term target of reducing domestic emissions by 80 to 95% by mid-century. Large potentials for reaching this target are seen within urban transport, buildings and energy systems and their respective technology transition (European Commission 08.03.2011). In its White Paper on Transport the EC sets out the goal to have no more conventionally-fuelled cars in cities by 2050 (European Commission 2011) and in October 2014 the European Council concluded on the 2030 Climate and Energy Policy Framework, which sets a binding target of 40% domestic reduction in GHG emissions and at share of renewable energies of at least 27% by 2030 (European Council 2014). At the same time, the EC has identified the completion of the Digital Single Market (DSM) as one of its 10 political priorities and is prospecting to

invest 21.4 billion EUR into the digital economy – with cities and urban infrastructures being the key addressees for these investments (European Commission 2015). Taken together, the ICT and sustainability policies of the EC are set to reinforce each other and to culminate in Smart Cities as key areas of growth, markets and investments. Leading heads of the European Investment Bank and attached research institutions are starting to look towards smart cities as instruments for place based investments that would serve to master the transition towards regional specialization and economic prosperity of heterogeneous regions – especially in the less developed parts of Europe (Leanza und Carbonaro 2015).

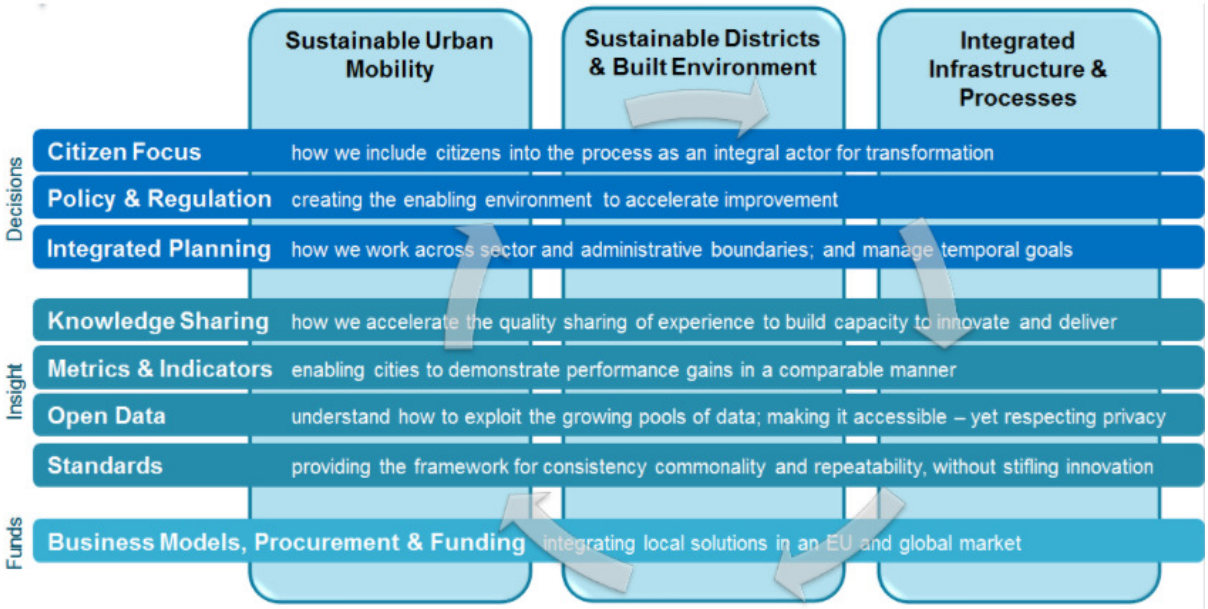
There is, however, no consensus on what a smart city actually is. The terminology has become a handy vessel that can be filled with whatever the personal perception of a smart city is. For Vienna – one of the early birds to jump on the smart city train – the Smart City represents the overarching framework for an innovation-driven, resource efficient and liveable city that includes an innovation strategy as well as a sustainability strategy (City of Vienna 2014). For IBM or Cisco (to name just two examples from the corporate world) the Smart City is the perfect playground for the internet of everything: „*The smart city market is as an amalgam of several existing markets, as well as a driver for emerging technologies and solutions that span existing sectors*" especially „*smart energy, smart water, smart buildings, smart transportation, and smart government*" (Woods und Goldstein 2014). According to Navigant Research estimates, the global smart city technology market is expected to be worth more than $27.5 billion annually by 2023, compared to $8.8 billion in 2014 (Ibid.).

Although the concept of smart cities has emerged from tech-driven ideas about urban utopias and the perfect place of modernity, it now differs from these urban visions in some important ways. From the idea of creating the ideal place for innovating and developing new technologies (Silicon Valley), smart cities have become the target of the application of new technologies. *Although saturated as consumer markets, cities present opportunities for firms seeking markets for modern sensing, forecasting and management technologies*. Although 1990s city policymakers sought to replicate the job base and innovative milieu of high-tech centres, the contemporary purveyors of smart city technologies see city governments as markets for the products of the last 40 years of technology development. At the same time, ambitious politicians and civil servants are ever on the search for the next 'big idea' to move their city to the top of the rank of attractive places. The race to get on the bandwagon and become a smart city has encouraged city policymakers to embrace and embed the process of technology-led growth, directing municipal budgets toward investments that bestow smart city status (Glasmeier und Christopherson 2015 ).

These reinforcing factors result in a joint interest of industry and city authorities to deliver on smart cities, smart districts and smart services for their citizens and customers; yet – when taking a closer look – they reveal some aspects of the challenges that city managers and local governments face in the smart city debate: delivering competitive local innovation ecosystems and providing healthy and sustainable communities for their citizens and future generations, by entering into new co-operations with industry and resisting the strong business push to sell poorly adapted urban technologies at the same time.

On European level the Innovation Partnership on Smart Cities and Communities (EIP) is the most important stakeholder platform for co-creating smart cities and corresponding solutions and processes. It is a large and lose network of over 4.000 representatives of cities, industry, research, politics and multiplier institutions, which is trying to fill the Smart City Agenda with life. 370

commitments of mixed consortia and six action clusters are working towards a transition pathway that would help the European Smart City Community deliver on the promises of Smart Cities for Europe. Although run and supported by the EC, the EIP is a self-organizing network, which is hard to programme. Thus, it represents an excellent body for discussion and networking, but it is not expected to deliver a consistent and comprehensive Smart City Agenda for Europe. The most important achievement of the EIP so far, was to publish a Smart City Implementation Plan (European Innovation Partnership on Smart Cities and Communities 2013), which became the core strategic document underlying EU-driven Smart Cities initiatives. It defines 11 priority areas with three vertical areas (Sustainable Urban Mobility, Sustainable Districts and Integrated Infrastructures and processes across Energy, ICT and Transport) and eight key horizontal enablers on the themes of Decisions, Insight, and Financing.




Source: (European Innovation Partnership on Smart Cities and Communities 2013)

Together with the Operational Implementation Plan (European Innovation Partnership on Smart Cities and Communities 2014), this document represented the background for a large EU funding programme on Smart Cities and Communities within the research and innovation framework Horizon 2020. In the work programme 2014 / 2015 over 210 Million € were dedicated as grants to large first-of-its-kind demonstration projects for smart districts in European lighthouse cities (SCC1 projects). Mixed consortia of cities, research and industry were able to apply for funding in order to create smart lighthouse districts that would actually show urban Europe how to develop and deliver smart cities. While 19 consortia with ca. 120 cities applied in 2014, it was already 43 consortia with more than 250 cities that submitted an application to the EC in 2015. These figures alone show an impressive size of an accelerating movement amongst European cities and businesses towards creating smart districts and delivering on the promises of smart cities for citizens, communities and local economies.

Today (November 2015) three large smart city lighthouse projects funded through the EC are up and running:

- **Triangulum** with Manchester, Eindhoven and Stavanger as Lighthouse cities and Prague, Sabadell and Leipzig as followers.
- **Grow Smarter** with Stockholm, Cologne and Barcelona as Lighthouse cities and Valetta, Suceava, Porto, Cork and Graz as followers.
- **Remourban** with Valladolid, Nothingham and Tepebasi as Lighthouse Cities and Seraing and Miskolc as followers.

Moreover, additional 4-5 lighthouse projects will be announced shortly and several dozens of new consortia are putting together their applications for the SCC1 call in 2016 and 2017. Therefore, this initiative by the EU is arguably the strongest driver of smart cities in Europe today.

Whilst the EU Smart Cities Initiative is putting strong emphasis on technology-based and data-driven development of smart district demonstrators, little emphasis is put on governance structures, processes, business model innovation and integrated action planning to support the actual delivery of results. The considerable amount of public funding for implementing tech-based urban innovations has led to a hectic development of smart city implementation plans across Europe's cities, but this really needs to be thought of as an initial impulse for developing integrated urban development strategies based on sustainable technologies and intelligent solutions, and not as a milestone within a paradigm-shift towards smart cities.

Many cities have responded to the EU call on smart cities and communities by quickly putting together smart city strategies in order to comply with the requirements for application. The strategy papers that have been developed and politically enacted in this process are – without naming any specific city – not living up at all to the full potential of smart cities for Europe. They often refer to a set of desired sustainability measures that are linked into an ICT backbone and supported by an existing (often inadequate and inefficient) governance structure. As beneficial as the EU funding is for the smart city, it has also misguided our focus to over-estimate the actual problem-solving capacity of smart cities and underestimate the complexity and required organizational shift that is needed to make smart cities happen. In addition we tend to neglect potential short-comings of the merely tech-driven smart cities concept. As Glasmeier writes: many authors […] "*agree that smart city technologies are ill-suited to solving the problems that lie at the heart of improving the quality of urban life. Poverty is not on the agenda of smart city planners. They may solve traffic problems, but it is not clear how they will regenerate failing schools or find ways to include neighbourhoods facing disinvestment. The contradiction between the promise of smart cities and its limited policy scope is aptly demonstrated in one of the most celebrated smart cities, Rio de Janeiro. The city, with its control centre filled with wall size computer monitors, can perhaps use forecasts of threatening weather to send out warnings of storm intensity thus leading to speedier evacuation. What it does not address is the question of why people build housing in such high-risk environments and what it would take to change this behaviour. In this instance, at least, smart city technologies deal with symptoms rather than the disease*" (Glasmeier und Christopherson 2015).

Our task today, as city managers in Europe, is to fill the smart city vessel with life and to define the European pathway to Smart Cities. We therefore need to acquire sovereignty of definition about the goals and purposes that have us investing into smart cities, as well as about the potentials that the interconnection of new technologies, infrastructures, citizens and local governments actually bear for our communities. Therefore we need to augment the tech- and business driven smart city concept with governance models, investment frameworks and new forms of public-private collaboration. We

need to look towards well-developed frameworks like the triple (or quadruple) helix (like for example ***Eindhoven*** is doing), the sustainability cycle or sustainability management tools (like ***Stockholm*** is applying) or energy planning approaches (like ***Gothenburg*** is using) and many other functioning instruments that will helps us capitalize on the Smart City in a way that means real added value for our citizens, local economies and the environment.

It makes sense to take a look towards national initiatives on smart and sustainable cities for shaping the European Smart city in a good way. In Germany, a large stakeholder forum (Nationale Plattform Zukunftsstadt) has released a systems research agenda in February 2015 to transform cities towards becoming $CO_2$ neural, energy and resource-efficient and climate-adapted (Nationale Plattform Zukunftsstadt 2015) . Lead by four ministries, this platform is being transformed into an "Implementation Platform" to initiate, oversee and monitor innovation-oriented projects on future cities that aim at delivering the tools, processes and best practices for cross-sector and cross-stakeholder collaboration on sustainable cities. In addition, the Morgenstadt Initiative is running a European network of leading cities, companies and research institutes that aims at developing and implementing socio-technical innovations for the city of the future and is using a City lab approach to develop individual action roadmaps for cities like Prague, Lisbon, Chemnitz or Berlin. To ensure that the UK can make the most of opportunities relating to smart cities, in 2013 the Government established the Smart Cities Forum to bring together cities, industry, sector experts and government departments to identify and address any barriers to development and deployment. With the Future Cities Catapult, the UK has created a global centre of excellence on urban innovations and is investing heavily into applied research and innovation around future cities. The core focus is on promoting healthy cities, building resilience in urban infrastructure, and designing strategies to help cities adopt and finance smarter technologies.  Since 2013 the French Government has been investing over 2 bn Euro into Smart City activities in France, lead by the Ministry of sustainable development. In addition, the research and innovation network advancity  is channelling urban innovation between the research and industry and has examined over 450 projects of which more than 158 have received financing, representing a total investment of €460 million in research and innovation for smart cities. Thus, there are numerous initiatives at national level that future smart cities can attach to. These initiatives, however, approach a sustainable urban development from different backgrounds and thus shade different perspectives on smart cities. A first comparative analysis of Smart Cities in Europe comes to conclude that "…Virtually all cities with a population of over 100,000 in Nordic Member States can be characterised as Smart Cities, as can the majority of cities in Italy, Austria and the Netherlands and approximately half of British, Spanish and French cities. Germany and Poland have relatively few Smart Cities. Eastern European countries generally have a lower incidence of Smart Cities than the rest of EU-28" (DIRECTORATE GENERAL FOR INTERNAL POLICIES 2014).

## Smart Districts as key to smart cities

In today's knowledge-based economy, marked by both unprecedented technological advancement and vigorous competition, the role of innovation is indispensable and cities as forerunners of innovation are of exceptional importance. Dense urban fabric with its high concentration of advanced infrastructure, qualified workforce and advanced commerce furthers interdisciplinary exchange, emergence of social networks, and establishment of new businesses, and thus provides

the necessary foundation for unconventional thinking and disruptive innovation. The spatial geography of innovation is now undergoing a major change: as the world is growing increasingly more complex, technology is advancing at an immense pace. The great findings that once were made by single gifted researchers scattered around the globe, in their homes or garages, in the future will more likely be done by teams of experts working in collaboration. A trend of co-working spaces is becoming increasingly more popular: in collaborative spaces, scientists can exchange ideas with each other and have efficient access to everything from legal advice to state-of-the art lab equipment. In the 20th century the landscape of innovation was defined by several large-scale science parks in regions like Silicon Valley in the USA or Sophia Antipolis in France. However, the time of vast, spatially isolated corporate campuses, not accessible by any other means of transportation than a car has now passed. In the 21st century, a new and promising trend is emerging, namely an **innovation district**, which is a product of the current economic, cultural, and demographic forces that are reshaping the contemporary lifestyle.

In contrast to the aforementioned large science parks, smart districts are compact geographical areas within cities, which provide businesses, start-ups, research, educational and cultural institutions with space to form a tight-knit collaborative cluster built on the basis of cutting-edge technology. Physical proximity, ensured mobility and encouraged sense of community help entrepreneurs, scientists and students to work together, share ideas and technologies to promote „open innovation“. Networking is the key asset, replacing previous economic models of dispersed industries, sectors and specializations. Innovation districts pave the way for new transformative collaborations and creations by people and companies who might have never found common ground before, now see no obstacles for joint creative development via the convergence of disparate sectors and specializations. This dynamic physical realm, densely informed with innovative ideas inevitably causes knowledge spill overs and acts as a catalyst for economic development in the region. Innovation districts make it easier to overcome bureaucratic gaps which slow down new projects, and hinder new businesses such as finding financial and legal aid for start-ups.

This new model brings much-needed change to the way we have become accustomed to view urban social and economic development. The fundamental element of any city are the people that inhabit it – and people are looking for places where work, education, culture and social interaction are linked together by easily accessible means. The contemporary knowledge-based economy is hugely defined by the needs of Generation Y: for them work ceases to be in the first place a means of material support, rather they attach great value to deriving pleasure from their work, to realizing their personal ambitions and aspirations, to inspiring workplace environment, as well as to the exchange of ideas.

Innovation districts provide their citizens not only with open and creative working spaces, but also with suitable residential facilities if required. These modern enclaves follow the principles of sustainability when it comes to environment: intelligent energy management helps foster environmentally friendly and cost-effective energy use, while e-mobility and bicycle routes solve environmental problems caused by traffic and allow for a more effective time use. Living conditions offer a mix of options including affordable housing and efficient infrastructure, thus local residents are focused on achievements and progress, rather than on rent and living costs. New talents will inevitably be attracted by open, clean and functional working and living spaces, giving blood flow to the whole body of the city. The establishment of such innovation hubs is essential for successful economic development in the 21st century. Existing resources must be used in the smartest way

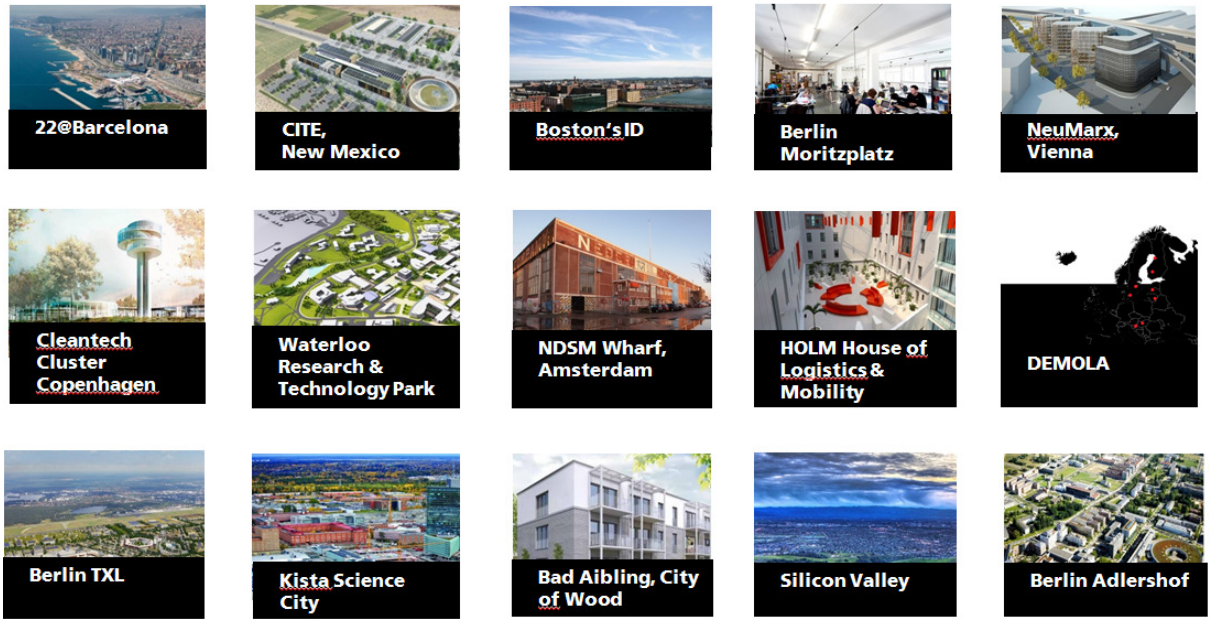
possible, offering effective solutions to socio-economic problems caused by recent financial crises. One of the most prominent among these problems is unemployment: many people, including aspiring scientists and entrepreneurs, have lost jobs. The development of Smart Districts entails rapid job creation. Convergence economy with lowered external costs fosters dynamic business development and expansion, creating an extensive amount of high-quality jobs. Furthermore, smart districts offer numerous educational opportunities for all socio-economic backgrounds, making them skilled competitors on the job market. In strict fiscal terms, innovation districts are **beneficial for municipal governments** as they help increase the tax revenue by the commercialization of ideas that leads to the creation and expansion of firms and jobs via proximity and collaboration. Increased tax revenue may be used for better municipal development ensuring successful functioning of a lucrative self-sufficient economic model. This accounts not only for the innovative neighbourhood itself: the spill over effects are likely to improve the economic standing of the whole city and region.

The potential benefits of smart districts for local communities go hand-in-hand with a new approach to innovations of complex systems, which has started to increasingly gain traction among business innovators, open-innovation communities and even large-scale infrastructure developers: the idea of **Living Labs**. As we have seen, creating a smart city is a highly complex undertaking and needs to build on innovative technologies as well as on innovative planning processes and new stakeholder constellations. Political, spatial, economic, environmental, social etc. parameters need to be taken into account. Complexity science and transition management tell us that a successful form of creating complex systems is to start with small experiments and start scaling up from there.

> *„The premise of the Living Lab is that the city can be used as a real-world testing ground for new ideas and technologies. A vast array of sensors in the urban realm can facilitate the testing of products and services on a real world platform, Schumacher and Feurstein define it as a research methodology for sensing, validating and refining complex solutions in multiple and evolving real life contexts.*“ (Cosgrave et al. 2013, S. 671)

Smart districts that serve as living labs for socio-technical interactions bare the potential to show us the way to the city of the future. City districts provide the right scale for technologies and other system interventions that are neither too small to suffer from cost-effectiveness issues nor too large to suffer from planning and invasiveness issues. They provide well-bounded spaces to undertake radical change and evaluate the impacts of that change.

**Smart districts** combine the orientation towards a research-oriented knowledge-economy of innovation districts and the experimental character of living labs. Smart districts are thus in essence the places where the social, economic and technological model for the city of the future can be designed, tested and improved in new forms of collaboration between city administrations, businesses, citizens and research. Taken together, smart districts are the incubators of the smart city.




Already today there are numerous good examples from districts across Europe and worldwide where an innovation-oriented economy meets conditions for experimenting with new urban technologies in a real-life environment. The proceeding graph gives an overview over existing best practices of smart districts across the world. Some of them have already been realized, others are still within a planning stage.

The key challenge in creating smart districts is to align four core levels of district development in innovative project consortia:

- The technology and infrastructure level,
- the socio-economic strategy level
- the governance and management level
- and the availability of finance

It has been noticed before that especially in smart districts a range of elements converge that make project development and implementation with conventional approaches difficult – and often impossible. These are not only conflicting goals between various stakeholders, more than this the challenge lies in providing new value added services to citizens in a stable and reliable manner, when the best environment for developing and testing new products and services is characterized through low degrees of formalization and less-binding mechanisms of accountability (Concilio und Molinari 2015). Chapter 3 deals in more detail with the different kinds of risks and barriers that hinder the development of smart districts today.

This general challenge of conflicting goals and badly matching requirements at the level of different stakeholders, results in a set of risks and barriers that make it difficult to plan, develop and deliver smart districts through a well-formed and commonly agreed upon approach. Up until now, there is no blueprint for developing smart districts. This is the reason, why creating smart districts has been recognized as one key area of public funding by the EU Commission, which is supporting the development of European Lighthouse districts in ca. 20 – 30 cities across Europe with ca. 400 Mio

EUR through Horizon 2020 between 2014 and 2017. Cities like Manchester, Eindhoven, Stavanger, Stockholm, Barcelona, Cologne etc. have been selected throughout H2020 as SCC1 lighthouse cities and have received substantial funding to implement a set of highly innovative technologies and socio-technical systems for the development of smart districts. Yet, as indicated above, this funding is at risk not leverage the full potential of smart districts, because the paradigm shift in urban governance, urban financing, urban business innovation etc. has not been addressed adequately by accompanying measures at EU level. The H2020 Lighthouse cities are thus not only the testbeds for smart districts; they are also the guinea-pigs to discover, test and improve a new governance and business innovation approach to urban development.

## Challenges to develop & deliver Smart Districts

As we have seen concepts and technologies for planning and realizing sustainable urban systems not only offer solutions to the many challenges of an urbanizing world, they also bear the potential to unlock significant future markets. Yet most cities are struggling with the process of transformation and businesses have so far not been able to harness the full potential of the sustainable city as a future market.

This is partly due to a range of new challenges that cities, citizens and companies face when trying to respond to the challenges of a smart city. Along with the design of urban systems solutions, cities, citizens and companies need to find new ways of collaboration and mutual engagement. Cities increasingly have to deal with complex systems that are cross-sectoral and dynamic. They aim at meeting goals that cannot be directly tied to specific technologies, but are highly ambitious and require collaboration across all departments and sectors (e.g. achieving carbon neutrality, reduction of individual mobility, increasing resilience, etc.). Until now, no standard approach exists for companies to address cities as customers by tailoring their products to cities' needs in an efficient way without encountering major risks. The result is a range of corporate sales strategies for single products that are unable to cover the complex demand a city faces when attempting to implement more sustainable approaches to development. Business and research institutions need support from city officials and civil society to understand the real needs and demands of cities. Conversely, cities require support from researchers and business to identify the right set of technologies, business models and services that will help achieve these objectives.

Smart City solutions are characterized through a range of factors that make it impossible to use conventional business models and well-tested technology approaches. Developing smart cities in fact means that local governments and city administrations need to become innovators, just like companies need to discover their corporate share in urban governance. The following list of challenges for developing, implementing and operating smart districts and smart cities is based on a range of surveys, personal interviews, group discussions and personal experiences as co-ordinator of large multi-stakeholder smart city consortia. It is not deemed to be exhaustive but should give a good overview over the current state of smart city challenges in Cities and corporations across Europe. The main challenges are structured into three larger categories:

a) challenges through market barriers,
b) organizational challenges,
c) leadership challenges.

## Challenges through market barriers:

- Integration of innovative technologies has often **not been tested** and standards are missing. This lacking precedence means high risk for investment and unsecure ROI, leading to a situation, where conventional investment schemes fail and risks are neither taken by investors nor by the city.
- **Cash-flow models are not clear yet** – especially in complex stakeholder constellations, which are characteristic for smart and distributed solutions. In addition, different national landscapes for incentivising technologies like renewable energies (feed in tariffs) or electric vehicles prevent consortia from developing one-size-fits-all solutions.
- **Business models fail** in the face of complex urban systems solutions. This is due to two main reasons: a) sustainable technologies often have their largest gains within external costs (reduction of emissions, pollutions, noise, resource consumption etc.). If they are not factored in to the business model e.g. via government incentives, pigouvian taxes or cap-and-trade systems, they are unable to compete against conventional solutions, unless the service model is strikingly better and the achieved benefits are noticeably higher. However b) as complexity of solutions rises, more stakeholders are needed to develop, implement, operate and maintain smart city solutions, which reduces the likelihood of an even distribution of benefits across all stakeholders, leading to unbalanced cost-benefit models and therefore to uneven investment incentives.
- **Standards** and **interoperability of systems** are lacking. There is little security of planning and transaction costs for smart city consortia are high, since they are not able to refer to existing architectures, communication protocols and standards.
- Many companies have not realized that own smart city products and business solutions need to be **embedded within larger systems**. New forms of collaboration, open innovation and co-creation need to be learned by these companies.

## Organizational challenges

- Most companies still think in products not in holistic solutions to larger needs and problems. They have a classic sales perspective that is output driven not demand oriented. However, in order to address cities as customers, companies must re-invent their sales strategies. No single products but systems-solutions to existing problems and needs are what cities want. The better a company can prove how their solutions contribute to the goals of the city; the higher it will be ranked as development partner. This, however, requires a deeper understanding of the city and its aims and problems (which are often individual). Instead of focusing on selling ones product portfolio, business-to-city (B2C) business means to constantly realign and reinvent ones solutions portfolio with cities‘ needs and demands. **Eco-**

**systems of businesses, technologies and services** become more important, but companies are hesitant to truly open up to new partners.

- Virtually no company sees itself as **systems-integrator** of smart city technologies and services. Neither do city administrations, nor municipal service providers. Thus there is a vacuum when it comes to designing, coordinating and leading integrated smart city projects.
- Equally, most companies that aim to address the smart city market are not prepared to become **systems operators**. Since the actual benefits of smart city solutions for users, local economies and the environment consist in increasing the share of using connected systems and lowering the share of owning individual products, the operational model (and with this also organizational structures like sales, marketing and corporate responsibility) change drastically. The operators of smart city systems and the corresponding networks of companies and municipal representations have not yet been identified or developed.
- Far too often city administrations **still think and act in silos**. They are structured in silos and give actors a hard time who want to push for integrated projects and solutions since cross-coordination between departments often needs to be built from scratch. The **smart city integrator** who is missing at corporate level is also missing within local governments.

  What makes it even harder– there is no standard for organizing municipalities. This results in a broad variety of departments and offices across cities. Departments and offices are named differently and have different responsibilities in virtually every city. According to the administration's structure, the responsible managers for traffic, smart city, urban development, economic development, sustainability etc. are found in different departments. This causes barriers, e.g. when industrial partners need not only identify these managers across the city administration, but also get in touch with a number of them to reach one goal. The organizational pathway to deliver smart cities at local government level, thus needs to consist in local organizational innovation and change management processes rather than being able to adopt a blueprint for smart city organization.

  Leading cities have developed a set of different strategies for dealing with complex cross-cutting issues and to escape the silo-dilemma. Some cities install cross-sectoral departments (New York City), some create special staff units (Ludwigsburg), others install rather informal inter-departmental work groups (Freiburg), and again others outsource the responsibility to semi-autonomous project companies (Vienna) etc. Depending on the city's approach to deal with cross-cutting issues, elements like smart districts, innovation leadership, sustainability, resilience etc. are emphasized and addressed differently. Creating a cross-sectoral structure that is able to bridge the silo-organization of city administrations is one of the most important success factor for pushing for the delivery of smart districts.

## Leadership challenges

- **Political leadership is missing**. Building smart districts means long-term investment and it requires the will to test something new. Many city leaders today are afraid of overstraining their citizens with new and innovative approaches that actually cost money and have not been thoroughly tested somewhere else before – especially if this means to push for an organizational shift within municipalities or to bet on an unclear return on investment. We

are therefore seeing multiple challenges at the political leadership level of cities that make it difficult to have mayors buy in to smart city developments. Yet, if the top-level decision makers do not buy-in, there is little chance to push for a successful development of smart districts on the ground.

- Often no **real partnership** between cities and companies exist, since in some cases procurement regulations prevent close partnerships and in other cases the ways of thinking and acting are very different. When understanding a company and the city as part of a larger value model, city administrations and municipal stakeholders automatically start to become partners instead of customers. This shift in perception is of high importance since it means that urban solutions are co-created and fitted to the actual market, allowing for a rapid market uptake and providing support from the political and administrative realm. Full deployment of the triple helix model means that there is a continuum between politics, administration and private sector, linking these players as partners with equal importance but different roles within the value model of a city.
- Cities need support in **creating sustainable value**. But opposed to business understanding, value for cities is not confined to business value – it also refers to a sustainable development, a healthy environment, socially viable solutions and long-term stability of infrastructure and economy. In economic terms large parts of the benefits of smart and sustainable urban technologies are achieved by reducing external effects and by creating socio-technical capital. This leads to difficult cash-flow models and unsecure investments. To actually identify the value of smart solutions and smart districts, companies and cities need to start thinking in **holistic value models** that reflect the complex benefits for environment, society, economy and a resilient city.

  Companies and cities thus need to start thinking beyond business models and mere social welfare and understand themselves as part of a larger value model that delivers value added services to cities and citizens, creating value that reaches far beyond a monetary return on investment. In a second step smart city value models need to be transferred into business cases for corporate players. Today, however, many corporate players fail to address the real value of smart cities, since they start with their business model right away.

These different challenges to developing and operating smart districts in European cities can be found in any city in differing forms of representation. They can be described as serious risks to successfully delivering smart districts and to help the market for smart city solutions take off. Due to a lack of experience with the development of smart districts and a corresponding scientific monitoring of processes, there is no comprehensive overview over the barriers and risks that are related to the development and implementation of smart districts and there is no toolkit or basket of risk-reduction strategies and instruments that would help stakeholders identify the right strategies and measures to provide for good organizational, financial and technology-oriented measures to overcome the barriers and counter the risks.

The URBACT network SmartImpact shall serve to develop a basket of measures for risk mitigation and overcoming the barriers for the development and implementation of smart districts along the concrete demands of partner cities in the network. To this end partner cities will work to identify current challenges and barriers in their own quest to develop smart districts, learn from each other

and global best practices on smart districts and develop and test new approaches for a deployment of innovative processes, partnerships, business models and socio-technical solutions.

## Streamlining the Smart City into urban development and management

As we have seen, many cities across Europe have started to successfully implement first pilot projects for smart cities and smart districts. Wherever these projects do not rely on a well-established efficiency model or are supported by a strong regulatory framework or government incentives, the implemented solutions still fail to build on viable business models that would allow for an easy replication under market conditions.

Through EU funding a range of barriers have been overcome within the Smart Cities and Communities Lighthouse projects (Triangulum, GrowSmarter, RemoUrban etc.) leading to a successful implementation of a broad range of smart city technologies in these cities. In absence of a viable business model EU funding closes the investment gap. However, the funding is directed towards a technology-based and data-driven development of smart district demonstrators. Little emphasis is put on governance structures, processes, business model innovation and integrated action planning to support the actual delivery of results. This shows that the EU Commission actually treats Smart City solutions in an equal manner like conventional innovations. It reveals the implicit EC hypothesis that a successful proof of concept is sufficient to spur private investments into smart city solutions. It however neglects, that Smart Urban solutions represent a fundamentally new approach of developing, implementing and operating cities and thus also need a fundamental paradigm shift with regards to business model innovation in complex public-private stakeholder environments. Up until today we are basing our investments into clean technologies on two models – the efficiency model and the policy model:

- The **efficiency model** is largely distributed and applied with clean technologies. Efficient devices like efficient motors, CHP power stations, LED lights, AAA+ electronic devices, water saving shower heads, isolated houses or the use of heat pumps are examples for efficiency technologies. The main innovation of the efficiency model lies within one single piece of technology or one clearly defined product. This makes market uptake rather easy.

- The **policy model** is strongly used in creating renewable energies and energy markets, or for overcoming lock-in structures of established socio-technical systems. We encounter it wherever governments seek to support politically desired technologies and there is a financial gap between the efficiency model and a profitable business model. The investor then invests into the clean technology and receives an additional bonus (in terms of granted return on invest or investment support) that allows for a profitable return on invest. Examples for this are feed in tariffs for solar and wind energy, subsidies for electric vehicles or market regulations like **taxes**, **fees** (e.g. for polluting cars) **caps** (e.g. emissions trading schemes) or **bans** (e.g. for FCKW).

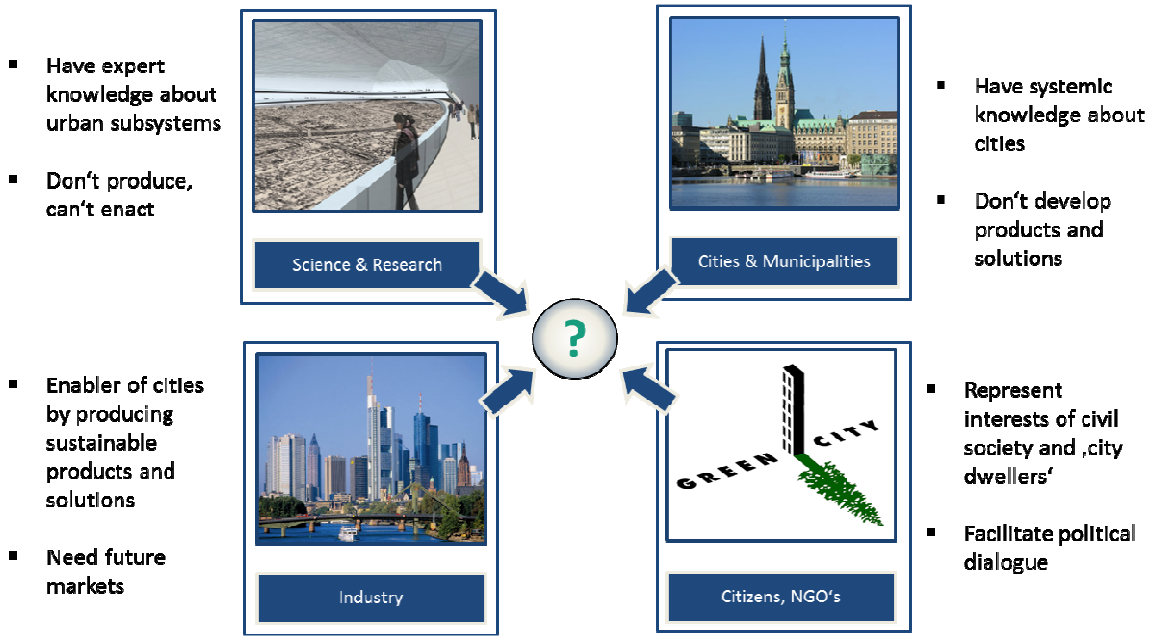
Up until now, these models, the **efficiency model** and the **policy model** are the only economic models for incentivizing investments into clean technologies and for developing the markets of clean tech. Smart city solutions draw on both these models. However, smart city solutions are inherently different to the incumbent solutions, since they aim to link multiple technologies and multiple

stakeholders from public and private by an ICT based connector. With digitalization and the Internet of Things (IoT) a new organizational and economic model for connected clean and efficient technologies needs to be developed and it will be substantially different from the two incumbent approaches towards financing clean technologies – the efficiency and the policy model.

Intelligent solutions that connect a range of technologies for a larger benefit not only have the potential to drastically increase efficiency, they also produce a range of additional benefits for many different actors. An **electric car-sharing** solution for example reduces noise in cities, frees up urban space, reduces emissions and increases personal mobility for everyone. A **hybrid district energy grid** reduces fossil fuel consumption, maximizes clean energy use, achieves cost effective production use and storage of energy through intelligent balancing schemes and increases the liveability for city dwellers that have electricity and heat at their demand at any time.

What is substantially different in this model is the interlinked and connected nature of the systems solutions that are able to achieve these effects. It is not one single technology, but rather a set of socio-technical systems that need to interact in an intelligent way, in order to deliver a broad set of benefits to an individual network of beneficiaries. The sustainability potential of these solutions cannot be harnessed through conventional business models and regulations or subsidies. New approaches are needed today to prove the potential of smart and connected solutions and to develop collective investment schemes that relate individual benefits with joint investments. The reason for this is the new interconnected nature of smart cities solutions. Multiple stakeholders from the public (municipalities, municipal enterprises, state-owned agencies etc.) and the private realm need to collaborate in a close way, sharing data, costs, benefits and responsibilities in a complex way. Neither of these organizations is set to do so in an easy manner. A public authority that is programmed to maximize efficiency of tax-money will not take on responsibility for private investment fall outs of single companies, neither will private companies easily disclose sensitive information about own business models, technologies and go-to-market strategies**. In essence, the role of the systems integrator is vacant**. We have not foreseen it in our conventional way of doing business. The systems integrator needs to bring public and private stakeholders as well as citizens and research into joint consortia with shared risks and benefits – and he needs to make sure the benefits outweigh the costs for each actor that is needed to deliver a successful smart city solution under market conditions.

**Figure 1: The missing link – interconnection of smart city stakeholders**




Smart City demonstrators that have been funded with national or EU grants forced the participating parties to organize themselves in a way that would facilitate the delivery of solutions. Still most consortia that receive public funding are struggling to find the right way forward and to get the most out of their organization. Yet, an important first step has been made.

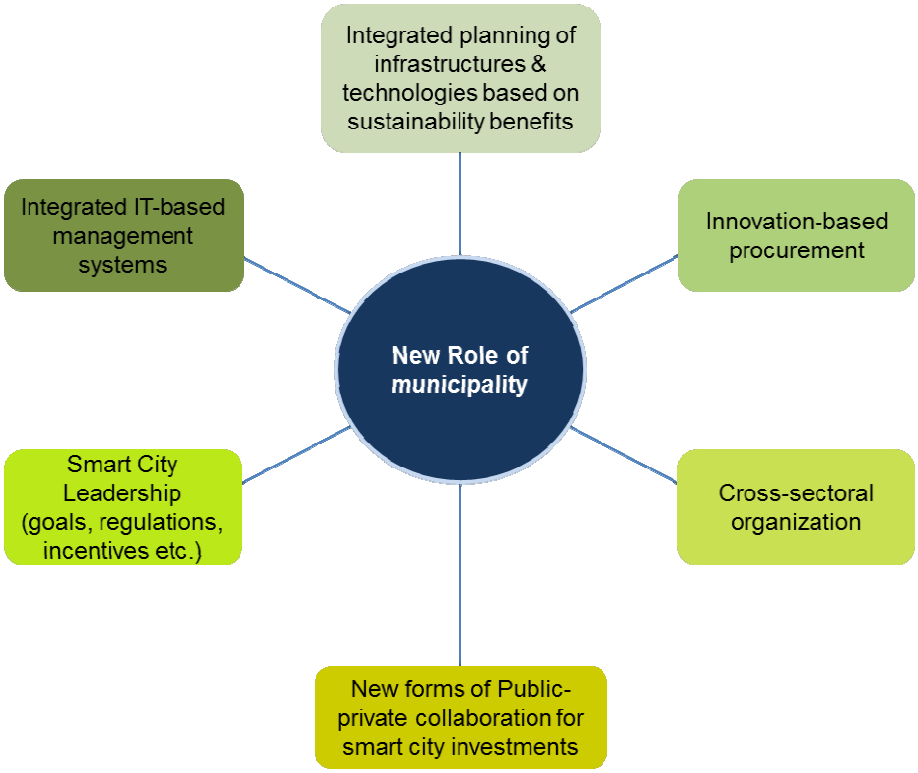
We have arrived at the point, where businesses and municipalities both are in need for streamlining and upscaling the smart city pilot projects and demonstrators into their core business. Companies want to develop scalable business cases that would help capitalize on the investments that went into the demonstration projects and municipalities want to understand the consequences of streamlining the smart city into their daily agenda for organization, budgets and procurement.

**In essence, cities and companies across Europe are looking for a smart city replication model that would build on a new form of inter-organizational learning from existing first pilot projects and demonstrators.**

It is unquestioned that a new replication model for smart cities will require all stakeholders – business, politics, administration, research and citizens – to adapt and to develop new organizational, economic and process models. At this point we put special emphasis on the role of municipalities in bringing about the change that is necessary for streamlining smart city business into the development and management processes for their cities. Especially the role of municipalities needs reshaping and updating in the face of rapidly changing environments of urban development and an increased necessity to put private money to work for achieving municipal goals.

The new role of the municipality refers to a set of new challenges that need to be dealt with within the political and administrative leadership system of cities, in order to respond to the challenges of the smart city.

**Figure 2: Elements of a new municipal role**




In a much quoted recent article Bill Gates emphasizes that the private sector is unable to deal with complex challenges involving common goods like climate change (Bennet 2015). This, in essence, resembles the Nobel-prize awarded research of Elinor Osborn, who showed that the effective management of a natural resource often requires 'polycentric' systems of governance where various entities have some role in the process (Ostrom). Government may play a rolein some circumstances, perhaps by providing information to resource users or by assisting enforcement processes through court systems. In cities public infrastructure, public space, air, water, greenery, traffic flows, public safety, street lighting etc. are no depletable natural resources, but they still are common goods that are subject to rivalrousness and therefore need to be governed. In the smart city these goods are becoming linked through another good, whose nature is ambiguous: data. Data is sometimes open (public good) and sometimes only accessible for its owner (private good), which exponentially increases the complexity of accessing, using and benefiting from goods that are part of a smart city. It even questions which goods are public and which are private in a city. Up until now there is no standardized regulatory framework that would be able to deal with this.

Arguing with Elinor Ostrom, each city will need to find its own way of dealing with this dilemma of the commons in the smart city. Yet, municipalities can learn from each other and exchange best practices on what approaches to governing the smart city might work better than others. The URBACT III network **SmartImpact** will deal with this question and support municipalities in their quest for suitable governance models and business models that would allow for an uptake of connected and technology based solutions for a sustainable development of the cities.

It will thereby focus on three core areas that help deal with the challenges outlined above:

1. **The municipal role in smart city business models and replication**

   Smart solutions operate in the private realm and in the public realm. This implies that smart solutions create benefits for different kinds of stakeholders, amongst which the municipality is a core stakeholder. The benefits of smart solutions for municipalities are broad, but they are often difficult to measure and they differ from solution to solution individually. Working with a concept of Smart City Modules will allow the SmartImpact network to identify costs, benefits, risks and the necessary preconditions for a broad range of smart city solutions. This then will lead to a much better understanding of the municipal role in financing, co-ordinating, implementing and operating different smart city solutions. Ultimately it will allow for categorizing Smart City solutions according to their costs and benefits for cities.

2. **The integrator within the municipality**

   Which institutions and structures are most likely to successfully co-ordinate cross-departmental collaboration within the city administrations? Municipalities are dealing with this question in differing ways and come to different organizational and political solutions. Looking at the broad spectrum of organizational approaches within the city administrations will help to understand what structures and frameworks increase the likelihood of successfully delivering on planning, procuring and monitoring complex systems solutions that touch upon various departments and offices (energy, lighting, traffic, waste, public space etc.).

3. **The Smart City integrator and its role**

   Is the municipality the actor that designs, builds, finances and operates smart districts? In most cases it is not. Larger smart city projects that involve infrastructure and real estate need a strong municipal partner but are most often delivered by private entities. But who is the integrator that connects companies, investors, users and the municipality into a systemic process of jointly designing, building, financing and operating semi-public solutions and services? Discussing existing examples of smart city integrators and finding the right approach for all involved cities will help streamline the development and implementation of smart city solutions into the core business of the cities.

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# URBACT III

# SmartImpact Action Planning Network

# Synthesis

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V 1.0

10 March 2016

## Content

# Introducing SmartImpact

The URBACT III Network SmartImpact aims to develop organisational and knowledge-based instruments that help its member cities to deliver on the promise of the "smart city".

SmartImpact cities share three important goals:

- They want to grow their economy in a sustainable way
- The want to reduce their environmental footprint
- They want to increase the efficiency of public spending

SmartImpact city members are convinced that a "smart approach" based on ICT, data management and collaboration, allows them to pursue all three of these goals at the same time. Most of SmartImpact partners have already successfully experimented with pilot projects in the area of energy, transport, Open Data or sustainable buildings. Others are about to roll out smart city pilot projects or need to steer the development of a new district in a sustainable and intelligent way. However, all cities face the challenge to mainstream investments and maintenance of "*smart solutions*" and "*smart processes*" into their everyday business of city planning, urban development, infrastructure management, city maintenance and economic development.

- **Smart solutions** are integrated socio-technical systems that link clean technologies through data and that integrate users and individual behaviour in the form of a wider service and business model.
- **Smart processes** are sequences of connected activities bf multiple actors in different municipal departments and other institutions that aim to deliver an urban service in the most efficient and sustainable manner.

For SmartImpact cities, becoming "smart" thus means to put an innovation-based management approach to work within the public administration and at the leadership level of the city. This approach will serve to facilitate cross-departmental collaboration and investments, to organise collaboration with the private sector and to spur a maximum uptake of data-driven and ICT-based solutions to deliver public services in an efficient way.

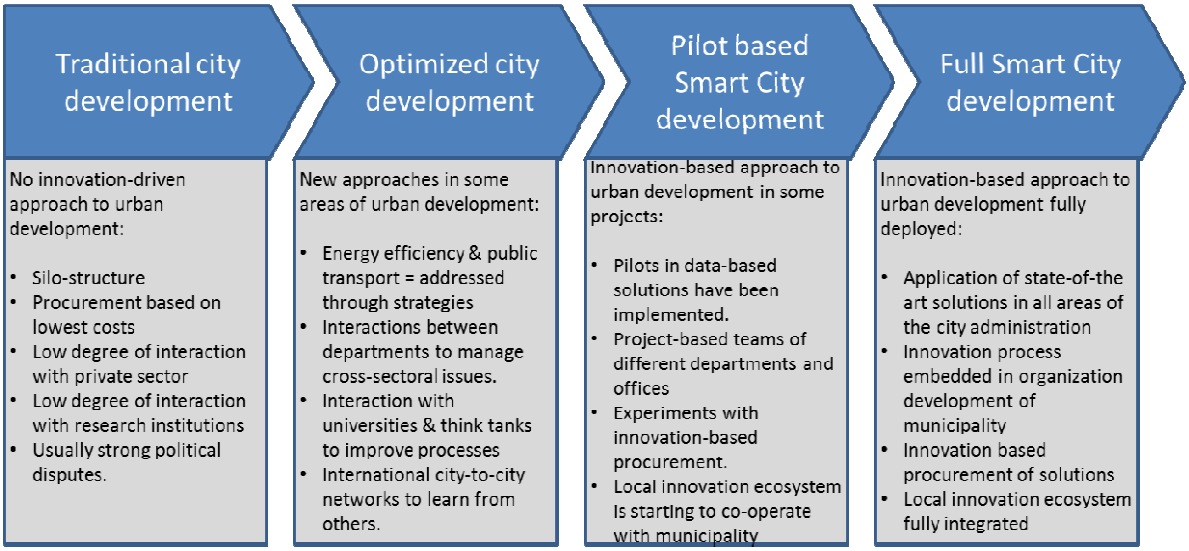
Current research funding has been channelled into the development and deployment of smart solutions in pilot projects like those under the H2020 Lighthouse Programmes. The management and governance processes and the new forms of public-private collaboration that are necessary to actually invest into and maintain complex solutions that are based on data and technologies, have not been given adequate attention. Yet, they are the precondition for successfully capitalising on the potential of clean technologies and data-based services.

**Therefore SmartImpact will explore and develop the Innovation-Management tools for municipalities, which are necessary to finance, build, manage and operate a smart city. SmartImpact members will develop approaches that support decision making, investments, management and maintenance of those smart solutions that help achieving the city's development goals.**

The member cities of SmartImpact will focus on the development of processes, organisational structures, programmes and communication-based instruments that help them use “smart solutions” and “smart processes” in the everyday business within departments of the city administration. They will further develop, test and improve approaches that maximise the integration of citizens and the private sector into an innovation-based delivery of public services wherever possible. The goal is to achieve strong impacts on the development goals of member cities on a long-term perspective through mainstreaming connected solutions and ICT-based processes into the daily business of key areas of city planning and development.

SmartImpact cities are highly diverse in terms of experience and potential with regards to becoming a smart city and in terms of development challenges that they currently face. The Baseline assessment of all 10 SmartImpact member cities, combined with in-depth research on smart cities and sustainable urban development through Fraunhofer IAO, allows formulating a simple Smart City Maturity Model that allocates advances towards becoming a smart city along the axis of innovation and organisational development (see figure 1).

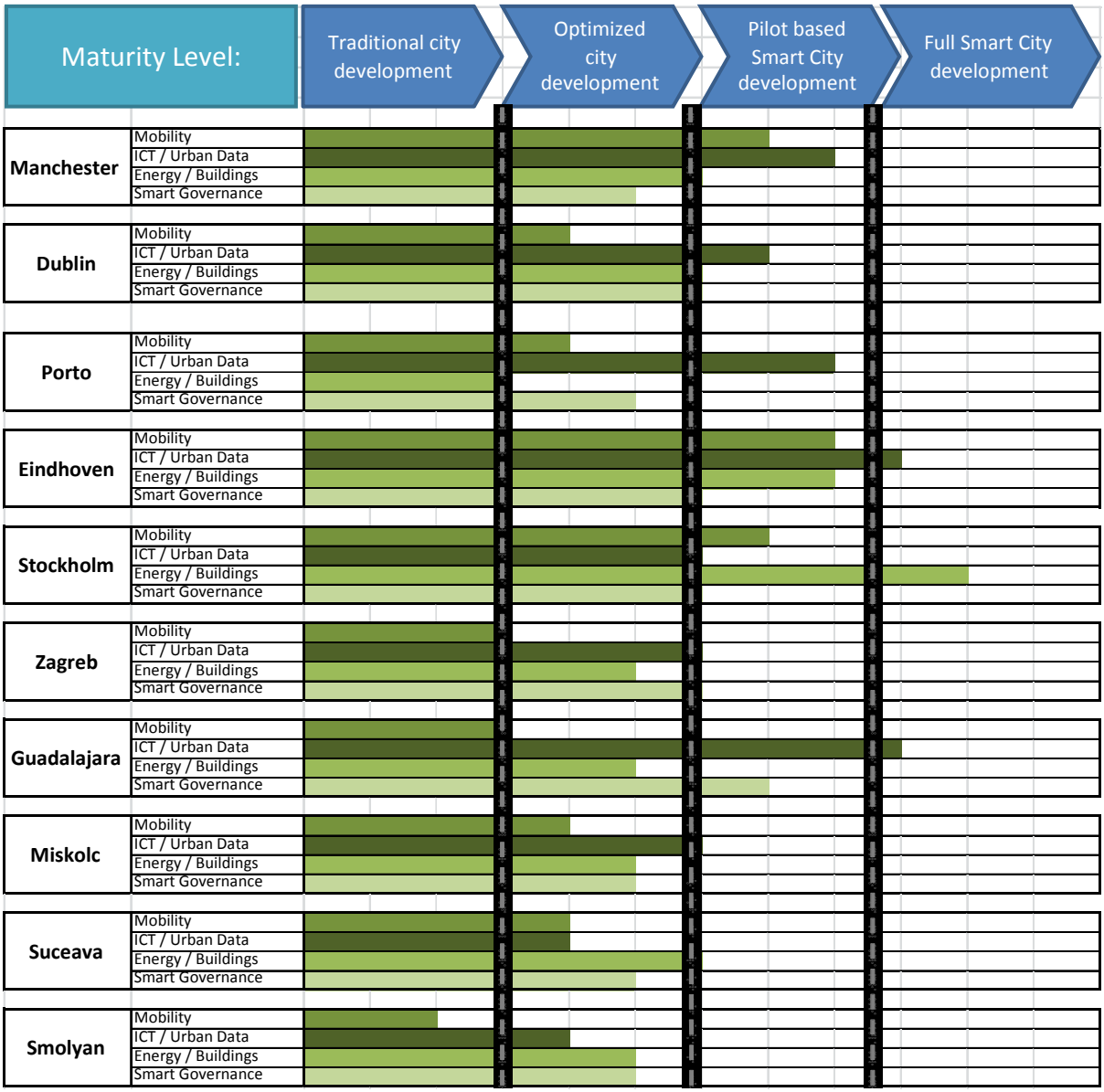
**Figure 1: Smart City Maturity Model**



## SmartImpact Cities

Aligning SmartImpact member cities across the four stages of the maturity model, allows us to contextualise the current state of development and to identify common challenges that are to be addressed within SmartImpact. As a matter of fact member cities have been addressing different challenges in the past, emphasising a different focus of smart city development in each city. Figure 2 shows the maturity profile of each city based on the information collected for the Baseline reports.

**Figure 2: Allocation of SmartImpact cities within the smart City maturity model**



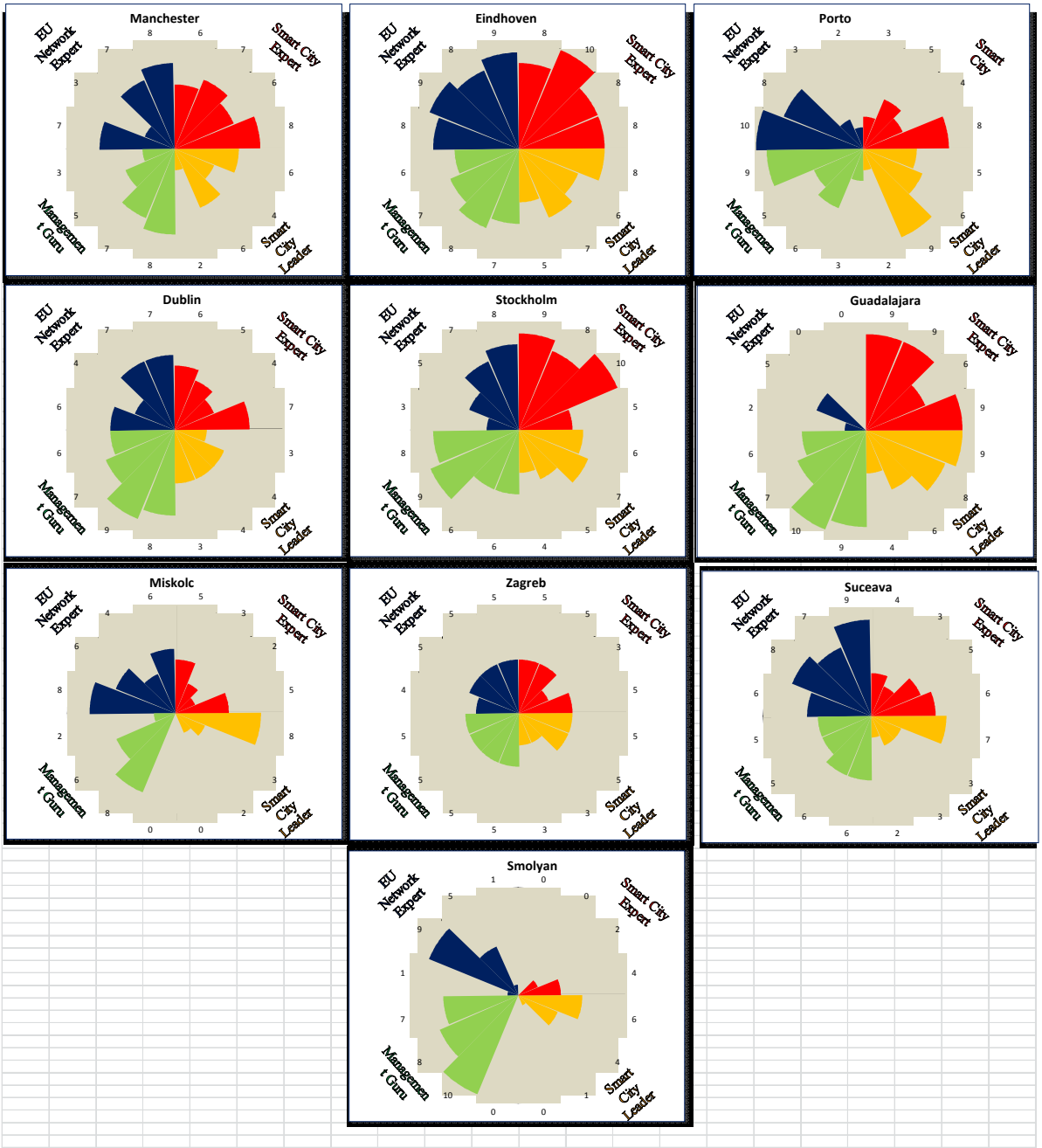

This diversity in smart city development shows that SmartImpact cities have different learning goals and individual challenges that must be addressed through smart solutions and smart processes. There is already a broad range of good practices in several areas of smart city development, which can be utilised to facilitate peer learning and to generate inspiration:

- *Manchester* is piloting a virtual power plant that improves the energy efficiency and utilization levels of renewable energy through demand-side management of several technologies in public buildings. Manchester is also trialling a data curation service to integrate data-sets across various smart city solutions in the Corridor – a central district of the city.
- *Porto* has managed to spur bottom-up economic development through linking citizens and local SME's with a data-based approach. Several start-ups that pilot ICT-based solutions for Porto have already emerged through this approach and are piloting with ICT-based services that make use of urban sensor data.
- *Zagreb* has successfully developed an innovative Business Process Management tool within the city administration, which helps to link departments and offices on cross-departmental processes and enhances the overall efficiency of the city administration.
- *Stockholm* has been working with an integrated management approach to Environmental Management for a long time already and is currently showcasing several smart and sustainable solutions within the large EU H2020 demonstration project GrowSmarter, which includes smart solutions and urban lighting, transport and housing.
- *Eindhoven* is redeveloping Strijp S, a brownfield area in the city, to become a data-driven and innovative district that combines working, research and living in a new form. Eindhoven has successfully integrated citizens into the development and deployment of smart solutions and is one of the first cities to address an older social housing district from the 1960s / 1970s with an intelligent tool for upgrading the buildings.
- *Guadalajara* has successfully installed a FIWARE platform that is able to integrate data from all kinds of urban processes, allowing the municipality to improve existing services and to develop new services that would enhance quality of life for citizens and measure environmental performance of the city. First data-sets from waste and street-lighting have been successfully integrated already.
- As Follower City in the H2020 SCC lighthouse project Remourban, Miskolc has enacted a first Smart City Strategy that lines out 13 innovative projects as a tangible step to becoming a smart city. Some of them are already under implementation – e.g. a public space failure reporting system. Substantial ERDF funding will be channelled into sustainability-related projects in the coming years, providing a financial basis for many potential smart city projects.
- Suceava is a follower city within the H2020 SCC1 lighthouse project GrowSmarter and has successfully implemented an electric vehicle and charging project through URBACT II, as well as a smart lighting project through a Swiss development fund.
- Smolyan is just starting into the discussion of how to solve local problems based on smart solutions and smart processes. The city will be able to build on significant learnings fom SmartImpact.

Many important smart city and smart district pilot projects have been successfully executed in the member cities of SmartImpact. However, throughout the baseline visits a range of key issues have been identified as challenges that all member cities need to address in their quest for becoming a smart city. Overall, no city has yet managed to mainstream processes, organisation and engagement processes to centre the use of intelligent, ICT-based technologies and services at the core of daily operations in all departments that are endowed with planning, implementing and maintaining technologies and infrastructures and public services.

These examples show that there is a large and substantial basis for mutual learning and exchange through which SmartImpact can produce real results at City, Network and EU levels. Figure 3 shows the profiles of all SmartImpact partner cities with regards to their experience and expertise in smart city development:

**Figure 3: SmartImpact profiles of partner cities:**



The profiles were developed based on a self-assessment scheme that allocates each city on a level between 0 (=non-existent) and 10 (=best in Europe) across 16 dimensions that are relevant for an improved exchange and learning within SmartImpact. The self-assessment was counter-checked by an assessment through the Lead Expert and Lead Partner, which would take into account the cross-comparison between all SmartImpact partners. Table 1 gives an overview over all dimensions.

**Table 1: SmartImpact dimensions for self-assessment**

| | | |
|---|---|---|
| **Smart City Expert** | 1 | Experience of partner with smart city projects |
| | 2 | Decisions by the council on smart city / smart districts |
| | 3 | Level of expertise within municipality |
| | 4 | Level of expertise within ULG |
| **Smart City Leader** | 5 | Priority of Smart City / Smart district at political level |
| | 6 | Clear smart city goals and measures defined |
| | 7 | Degree of implementation of smart city measures |
| | 8 | Existence and implementation of monitoring framework |
| **Management Guru** | 9 | Well developed ULG (established working relationship) |
| | 10 | Local coordinator attached to decision making in city |
| | 11 | Local coordinator linked to business, research & civil society |
| | 12 | Organization of strategic cross-cutting issues within administration |
| **EU network expert** | 13 | Existing transnational exchange on smart cities |
| | 14 | Application of Operational Programmes (ERDF, Jessica, ESF) |
| | 15 | Experience in EU city networks (URBACT, Polis, Eurocities etc.) |
| | 16 | Successfully applied to EU-funded innovation projects in last 5 years |

The network SmartImpact and the content of the network have evolved in an iterative approach. Partner cities and their current challenges on their way to becoming a smart city have had an impact on the content that the network will address as largest governance challenges of smart cities. At the same time the content and the concept also had an impact on the selection of the partner cities.

The goal of the baseline study was therefore to provide the best match on two levels:

1. Between the thematic issues addressed in the network and the learning needs identified in the 10 partner cities.
2. Between the degree of expertise in each partner city and the peer-learning potential in the identified thematic areas of network learning.

To this end, the partnership today refers to a set of concepts and frameworks, which have helped to bring about this content – city – network match in an interative way:

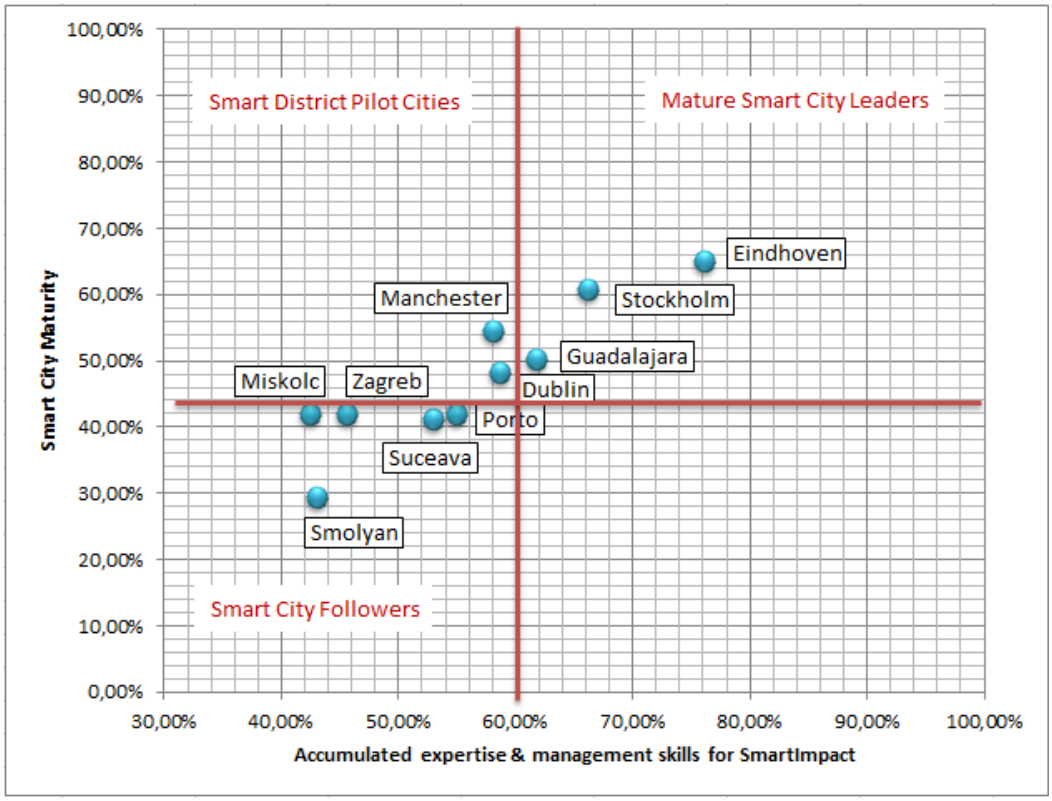
a) The **smart city maturity framework** referring to the four dimensions of smart mobility, smart energy & buildings, ICT and data integration and smart governance. Each city has been briefly allocated in this model based on the information gathered throughout the baseline review.

b) The **Smart City Profile** of each city based on a mix of a self-assessment by the city and an assessment by the Lead Partner and the Lead Expert, highlighting the strengths and weaknesses of each city on the four categories of
    a. Smart City experience,
    b. Smart City expertise,
    c. Excellence in Smart City management
    d. Experience in EU-networks

c) **Five thematic areas of network learning**, which have been identified as priority areas throughout the baseline review with each city and in two joint workshops with all member cities.

Based on the smart city maturity framework and the assessed profile of each city we were able to plot SmartImpact member cities on a diagram that relates the maturity of the city in terms of deploying smart solutions and working with smart processes to the accumulated expertise and management skills of the municipality in this area. Figure 5 gives an overview over the allocation of the partner cities in these categories, allowing to distinguish between cities that are pretty mature and leading the way, cities that are successfully piloting smart districts, but have not yet established supporting structures and follower cities that are just starting the journey towards becoming a smart city.

Figure 4: Expertise and maturity of SmartImpact member cities



# SmartImpact Themes

Throughout the baseline study it became apparent that SmartImpact partners bring together significant experience in aspirations and the deployment of smart technologies. The partnership is able to demonstrate significant breadth and depth in the field of smart. The baseline studies reveal that whilst there are common opportunities, there are also common challenges. Virtually no partner has already mainstreamed connected solutions and ICT-based processes into the daily business of key areas of city planning and development.

The below described five key thematic areas represent the main learning needs of all partners of SmartImpact, which will serve to push all cities more to the upper right corner of the diagram in figure 5.

## 1. Organisational Development within the city administration:

Clean and connected technologies help improve urban services and meet sustainability goals. However, they need to be planned, financed, built and operated across various departments and offices within the city administration. At the same time, becoming smart means to engage civil society, local SME's, research and larger companies into the process of urban innovation. This again requires a sound top-level organisation, strategy based decision making and the management and monitoring of a complex system – often in an iterative approach. None of the SmartImpact member cities have yet adapted their organisations to the new demands that working with smart solutions impose on them. In no member city is there established administration structures that serve to strategically leverage the potential of smart technologies or to actively shape urban development projects in order to create "smart districts" as a standard process. No member city has yet installed comprehensive processes that help to deal with procuring cross-cutting and data-based technologies or delivery of ICT-based services. And no city has yet found the magic formula to induce enthusiasm for smart solutions and their potential to radically improve processes across a broad section of and commitment to workers -those who maintain the roads, fixes the pipes or tends the green spaces. Yet, SmartImpact member cities have started to think about and experiment with organisational structures and processes that better support a strategic development of a smart city or smart districts. Also, member cities have started to identify processes and structures that serve to integrate multiple stakeholders (public / private) into complex tech-based urban development projects by assuring accountability and efficient planning and decision making.

SmartImpact members will therefore work towards organisational innovations that are able to respond to the new challenges of smart cities.

## 2. Financing and procurement of innovative & connected solutions

Smart Solutions offer cities a range of options to improve services and generate efficiencies. Intelligent lighting can serve to improve parking, enhance security, collect sensor-based city data and save energy at the same time. A hybrid energy grid that uses electric vehicles as storage devices for renewable energies, can drastically increase utilisation levels of renewable energies and reduce emissions of houses, offices and industrial facilities. Financing these "smart solutions" require new ways of understanding how value is created in smart cities, which ultimately leads to co-investment strategies with costs and benefits for public and private actors. On a very practical level, the

procurement of smart solutions through a single actor (city) is already challenging, since it a) requires linking planning processes and budgets of different city departments into one procurement process, and b) it requires cities to adopt a new innovation-based approach to procurement based on competitive dialogue, innovation partnerships or green procurement. Some SmartImpact member cities are successfully experimenting with innovation-based procurement (e.g. Dublin) and Green procurement (e.g. Stockholm), some are also testing public-private co-investment strategies into smart technologies (Eindhoven), yet these approaches are still at an early stage and need further verification and refinement.

Together SmartImpact members will identify value cases for smart solutions and further corresponding investment strategies, and they will develop strategies and approaches to improve the procurement processes of smart solutions within city administrations.

## 3. Activating the local Innovation-ecosystem for smart districts

At the core of the "smart city" there is innovation. Start-ups, local SMEs, Universities and think tanks are the key players to deliver on the promise of an efficient, clean and liveable city. By integrating citizens into a continuous process of engagement and communication, urban services can become much more adapted to the needs of service users (citizens) and service deliverers (the municipality) and behavioural change can be induced on both levels. But how do cities engage their citizens? How do cities innovate and change behaviours within their organisations? How do they make sure the high-potential start-up knows about the open-data platform and the options to use urban sensor data? How do they communicate their strategies and challenges? How do they make sure that investment decisions actually reflect the strongest demands of citizens? And how do they keep the communication process alive and positive, even if results will not be visible until 2021?

Together SmartImpact member cities will develop tools and processes to facilitate communication with SME's, Universities and citizens. They will learn from each other which approaches to involving private stakeholders into the development process of the smart city have been successfully tested, and which ones did not work so well.

## 4. Supportive Regulations & Incentives

As described in the State-of-the art document to SmartImpact, there are various barriers that prevent investments into smart solutions from taking off. Local regulations and incentives can play an important role in overcoming some of the described barriers. They can help to channel private investments into integrated technology-based solutions and ICT-based services that support sustainable development of the city. Free parking for electric vehicles, environmental zones and congestion charges, building regulations, compulsory connection to the grid, the use of open data standards, predefined Annual Performance Indicators. and mandatory data integration are examples for city-based governance instruments that support the uptake of smart solutions.

SmartImpact city members will collaborate to identify regulations & incentives in the areas of transport, housing / buildings, energy and ICT that support the uptake of clean technologies and data-based solutions and / or shift behaviour towards more sustainable patterns. They will share best practises to leveraging private investments into smart and sustainable solutions in order to achieve substantial long-term benefits for the city.

## 5. Data Integration & E-Government

Urban data platforms have the potential to integrate several kinds of urban data-sets for enhancing the delivery of urban services and improve the efficiency of the city administration. Information about waste processes, street lighting, parking spaces, urban delivery services, available renewable energies and much more can be provided in real-time and within a single data platform. Integrating different kinds of data-sets through intelligent algorithms allows for developing new services and for drastically improving urban processes. The prerequisite for this is an open ICT-platform that collects data-sets from different municipal companies and service providers. City administrations are thus required to plan, deploy and operate data platforms and the management of third-party provision of data and delivery of services based on urban data. This imposes several challenges on city administrations – from escaping the lock-in of large corporate platform-providers to contractual negotiations with second-tier service providers who need to comply with open standards and make use of the data for providing and improving smart services.

In addition, urban data platforms bear the potential to shifting administrative services to the internet and improving e-government processes based on a better integration of data and users.

SmartImpact member cities are in different stages of developing and implementing urban data platforms and e-government services. While some have already successfully deployed a platform solution, others are merely starting the process to identify potential data-sets. Learning about best practices, available solutions and best-in-class approached to manage urban data integration will help SmartImpact cities to advance in their quest for better services and higher efficiency.

## Taking the Next Step

Throughout the baseline study it became evident that skills, expertise, experience and knowledge on these five thematic areas are present at a high level within SmartImpact. Yet, they are unevenly distributed. While some cities (like Guadalajara) have learned intensive lessons from an own approach to developing an ICT platform for the smart city, others (like Zagreb) have already worked out an excellent approach to cross-sectoral process management for smart services by the municipality. This example can be extended to all thematic areas and accounts for all member cities of SmartImpact: each city has strengths and weaknesses in the five thematic areas. This represents a great opportunity to have SmartImpact members learn from the experience of their peers in the thematic areas, where own experiences are lacking.

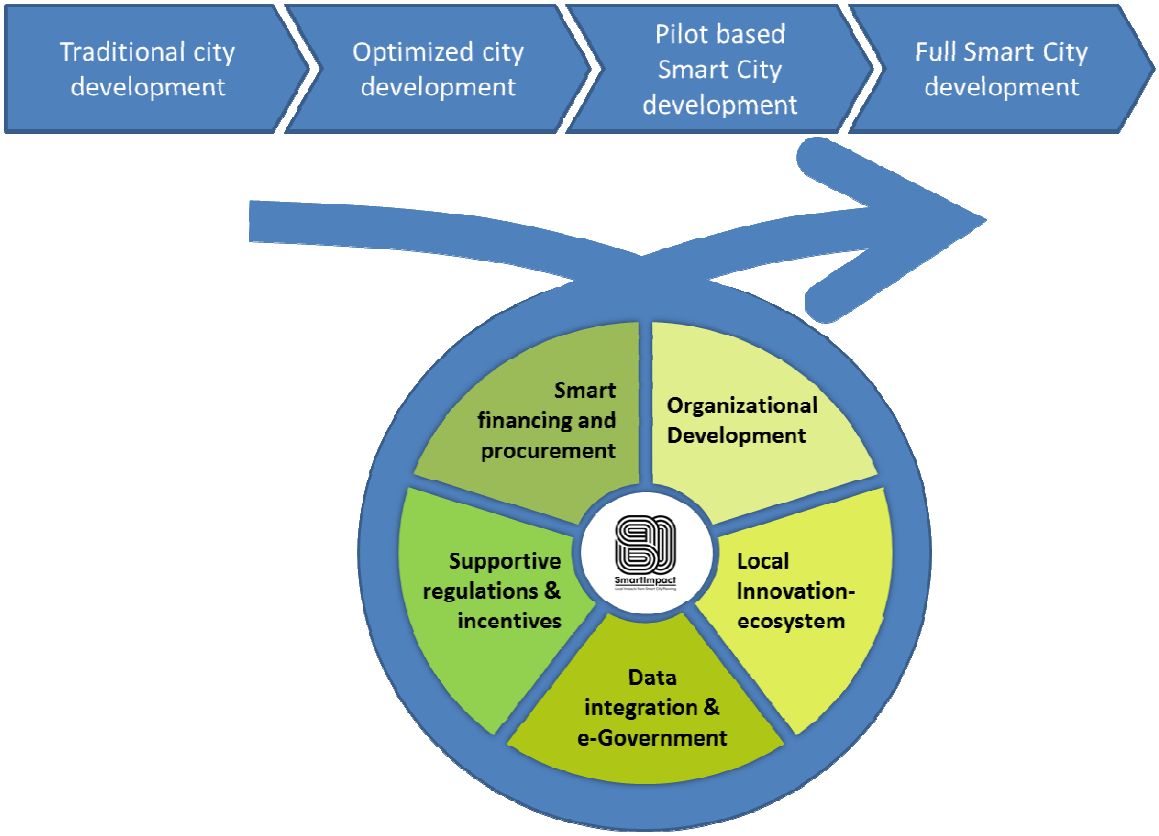
The SmartImpact partners therefore bring together significant experience in aspirations and the deployment of smart technologies. The partnership is able to demonstrate significant breadth and depth in the field of smart. The baseline studies reveal that whilst there are common opportunities, there are also common challenges. These underpin the five thematic areas of learning within SmartImpact:

This circumstance will be used throughout the 2nd phase of SmartImpact by nominating tandems of two cities that will work on the five thematic areas, producing five corresponding thematic reports. LP and LE envisaged to having the strongest member city and the weakest member city forming one tandem for each thematic area in order to maximize the potential for peer learning. However, since skills, experience and expertise are unevenly distributed and all cities share the wish to improve in the areas where they feel weakest, the tandem list below represents the best possible approximation to the original idea of maximizing peer-learning.

# The SmartImpact Model

The integrated action plans of SmartImpact member cities will evolve around these five key areas of smart city development. They will focus less on the actual technologies and smart solutions that can and will be deployed in all cities in the future, but more on the structures, processes and institutions that are necessary to successfully plan, finance, build and operate smart solutions in the future. Taken together, SmartImpact member cities will develop the governance model for the Smart City by working across the five identified themes.

Figure 5: SmartImpact: Governance accelerator for the Smart City




As described in the State-of-the-Art, this governance model will be different for each city – it needs to reflect individual preconditions, stakeholder constellations, the financial and regulatory autonomy of the city and national legislation. Yet, taken together, SmartImpact member cities will develop the European pathway to smart cities and provide 10 different role-models for all cities in Europe that are struggling with the challenge to develop smart districts and become a “smart city”.

## SmartImpact framework for transnational exchange and learning activities

The transnational exchange between the 10 member cities of SmartImpact and the transfer of the learnings to the local level represent the main mission for SmartImpact. The transnational meetings will be designed to serve as exchange platform and as a program for capacity-building at the same time, in order to enable city representatives and the local coordinators to initiate, maintain and

upscale local transformation processes that eventually lead to a full development of smart districts and smart cities. To this end, SmartImpact will build on three key elements for structuring a successful transnational exchange, learning and capacity building:

- Organisational learning
- Dialogue techniques
- Leadership development

Figure 6: SmartImpact framework for exchange and learning


For the organisational learning we will build on the work of Peter Senge and focus on fostering an inter-organisational learning process between the members of SmartImpact that builds on shared experiences and personal relationships. This will be supported through appropriate and well-selected dialogue techniques which help to build capacity through focussing on lessons learned from real-world experience. The goal is to use both approaches for a new concept of smart city leadership development, helping SmartImpact members better understand their own role, potential leverage points and local barriers to initiate and strengthen smart city development projects within their municipalities.

## Methodology for exchange and learning

The five disciplines for organization learning, as laid out by Peter Senge (Senge , 1990) represent the core framework for developing successful transnational meetings and for supporting the local coordinators of SmartImpact member cities to transfer learning into the ULG and wider political decision making in their cities. These disciplines are described as personal mastery, mental models, building shared visions, team learning and systems thinking:

1. "**Personal mastery** is a discipline of continually clarifying and deepening our personal vision, of focusing our energies, of developing patience, and of seeing reality objectively."
2. "**Mental models** are deeply ingrained assumptions, generalizations, or even pictures of images that influence how we understand the world and how we take action."
3. "**Building shared vision** - a practice of unearthing shared pictures of the future that foster genuine commitment and enrollment rather than compliance."
4. "**Team learning** starts with dialogue, the capacity of members of a team to suspend assumptions and enter into genuine thinking together."
5. "**Systems thinking** - The Fifth Discipline that integrates the other four."

Not all elements of Senge's framework are equally important to SmartImpact, since Senge developed the approach with a view on rather closed organizations like corporations. In SmartImpact we will focus on the elements that apply to inter-organizational learning. In essence this means lining out mental models that are behind identified barriers of smart city development, creating the basis for team-learning through appropriate dialogue techniques and supporting SmartImpact members with a hands-on approach towards systems thinking. Since traditional municipal structures reinforce silo-thinking and linear, discipline-oriented planning, building the capacity for systems thinking within SmartImpact is seen as a crucial prerequisite to spur the development of cross-sector innovation and inter-departmental approaches to strategy and management of smart cities and smart districts.

Building on **practical dialogue techniques** for the actual SmartImpact meetings will help the LP and LE to activate the reflection process on mental models and to collectively work on a systems thinking approach towards the smart city. To this end, dialogue techniques as laid out in the works of Heiko Roehl, Marianne Miler Bojer, Marianne Knuth or Colleen Magner (e.g. see Roehl 2008) will serve as practical guideline for organizing and conducting thriving and interactive transnational meetings together with partner cities from SmartImpact. For the transnational meetings we will work with concepts like Change Labs, Open Space Technology, Scenario Planning, World Café, Learning Journeys, Story Dialogue etc. In some cases practical tools for the five disciplines, as laid out in the „Fith Discipline Fieldbook" (Senge, 2007) will come to play a role throughout the transnational meetings. During the meetings SmartImpact members will develop the basis for a new approach towards municipal leadership for smart cities. For this, we build upon the Theory – U by Otto Scharmer (Scharmer 2008), who developed a concept that helps to "***lead from the future as it emerges***". The theory is based on a concept called "presencing." A blend of the words "presence" and "sensing:"

> *"Presencing signifies a heightened state of attention that allows individuals and groups to shift the inner place from which they function. When that shift happens, people begin to operate from a future space of possibility that they feel wants to emerge."* (Scharmer, 2008)

Being able to facilitate that shift is, according to Scharmer, the essence of leadership today. Theory U is being used by numerous stakeholders and corporate innovators. Working with Scharmer's model (and other leadership models, like e.g. the dialogic change model from the collective leadership institute) will **help the local coordinators to actually initiate, steer and manage transformation processes within their municipalities based on their own roles and competences**. It will enable SmartImpact members to design and understand individual approaches that are necessary to institutionalize the transformation process within their own local environment.

## Member structure and participation of URBACT Local Groups

SmartImpact will consist of a consistent core group and individual wider groups.

The **core group** will be made up of the LP, the LE and the local coordinators of the 10 member cities. This group of 12 – 15 people will consistently gather in transnational meetings and together work on all defined thematic areas for SmartImpact.

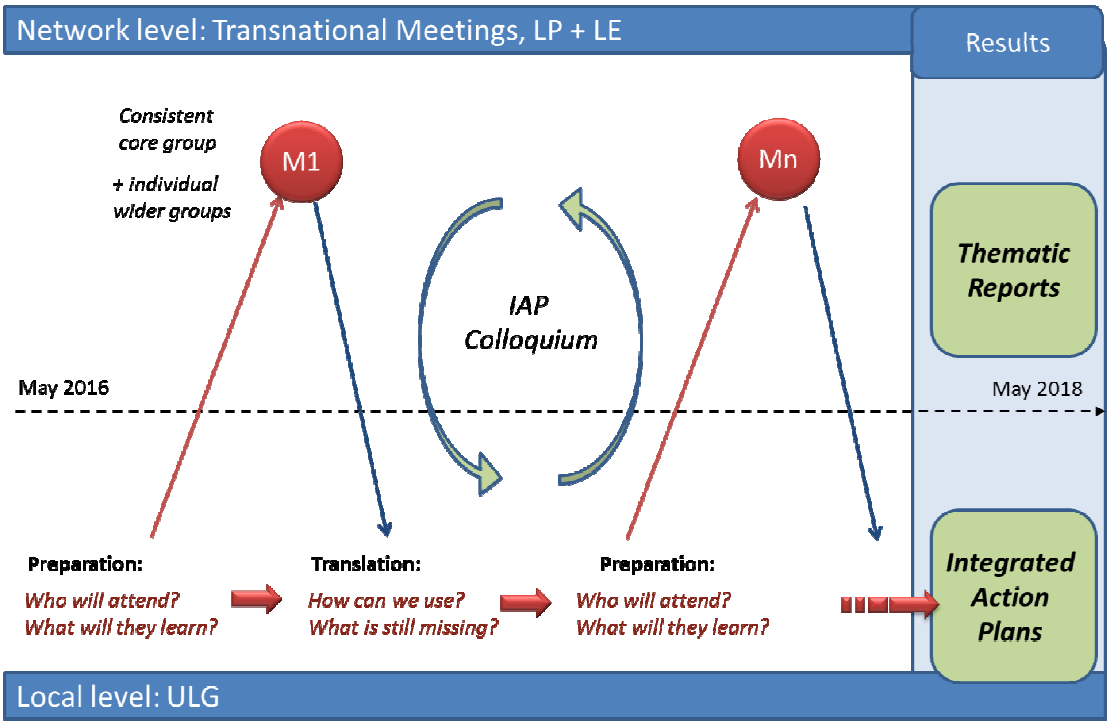
There have been bilateral discussions with all local coordinators, but also group discussions on this approach. All local coordinators have acknowledged the importance of a consistent core group. Emphasis was put on the availability of the local coordinator for all transnational meetings. This has led some member cities to rethink the role of the local coordinator within their participation in SmartImpact and ultimately, two city members changed the person of the local coordinator, in order to be able to meet this goal.

The **individual wider groups** will consist of the Urbact Local Group of each city. Here SmartImpact member cities have chosen very heterogeneous approaches. Some focusing on a core group within their city administration, some inviting also stakeholders from the wider local group of municipal enterprises, universities or SMEs.

The wider group will vary from meeting to meeting according to the thematic focus and the corresponding representatives of the different ULGs that will be invited to the transnational meeting. We aim to invite elected representatives of city councils as well as partners from the level of local implementation of smart solutions.

Each transnational meeting of SmartImpact will have a thematic focus on governing smart district development processes and smart cities as lined out above (organizational development, innovation ecosystem, data integration and e-governance, regulations & incentives, financing & procurement). All meetings will be embedded in an iterative process of knowledge generation supporting the development of the integrated action plans in the member cities. To this end, meetings will be co-created through the URBACT community based on the learning needs of the respective ULGs and based on the learning process that is taking place in the cities. An “Integrated Action Plan Colloquium” will make sure that cities are able to share their progress of the IAP with other city members, as well as LP and LE between the transnational meetings, leading to a peer review process of the IAP, which becomes the basis for the next transnational meeting. The Colloquim will be based on the concept of Collegial Coaching.

Figure 5: Network structure and transnational meetings of SmartImpact




## Framework for local activities

The local activities in SmartImpact will focus on translating the learnings from the transnational network meetings into an integrated action plan and – eventually – into local policies. The conceptual framework for structuring this transfer is seamlessly integrated with the concept for network learning and transnational exchange. The most important task of SmartImpact partners (especially the local co-ordinators) is to make use of the methodologies, tools, concepts and frameworks for network learning on a local level. This is the reason, why SmartImpact is organized around the three key topics of Organizational learning, Dialogue techniques and Leadership development.

The main idea for transferring knowledge and practices from the network level to the level of the Urbact Local Group is to use the network meetings as training sessions for the implementation of similar approaches and dialogue formats at the local level. The dialogue formats and interactions throughout the transnational exchange are thus organized to also serve the purpose of **capacity building for the local coordinators and the ULG**. Especially when structuring and incentivizing the collaboration between the members of the ULG, the local coordinators will need to make use of the concepts, tools and methods introduced during the transnational meetings. Ongoing reflection about the usefulness of the formats will help identify the most important elements of the SmartImpact exchange and learning concept.

The co-production process of the Integrated Action Plans through the IAP Colloquium will serve to add thematic expertise and consult on strategies and processes to transfer learnings to the local level. By fostering a peer review process of the IAP, local coordinators will be held “accountable” for bringing the thematic and strategic learnings from the network level into the local action plan. If no

reference is made to the results of the transnational meetings in the IAP, the local co-ordinator (and if available, additional members of the ULG) will be asked to elaborate on the reasons for this.

During the IAP Colloquium (and during workshops at the transnational meetings), local coordinators will be facilitated to exchange information on process on the ground. Challenges, best practises, as well as practical hints and tips for managing the ULG and activating local decision makers and political representatives will be exchanged and discussed.

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SmartImpact
Local Impacts from Smart City Planning

# SMARTIMPACT

# Baseline review report – Manchester, UK

MANCHESTER CITY COUNCIL

European Union
European Regional Development Fund

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URBACT

# Contents

# Summary

As a growing city, the importance of smart cities is key to Manchester's future ambitions. To take forward the smart city agenda for Manchester there is an urgent need develop a coordinated high level programme board and an integrated action plan (IAG). The core strategic areas of growth, reform and place underpin the cities aspirations and with a number of "smart" projects in delivery, a harmonised approach that places them on the same trajectory is essential. Along side this is ever present drive for efficiencies and savings. Hence is a need to widen and deepen the level of understanding of the opportunities for smart and to develop practical routes to delivery plus solutions to barriers. An IAP that provides a roadmap to mainstreaming smart city approaches is recognized as necessary next step.

# Section 1

## SmartImpact in Manchester – aims and objectives

SmartImpact will drive forward the smart agenda for Manchester City Council (MCC), bringing together senior city executives, stakeholders and to provide a basis from which to deliver projects across the city. Cutting across a range of services, policy and geographical area, the need is for smart city technologies to improve service delivery for better outcomes and reduced inefficiencies.

The city council needs to embrace innovation in the way it carries out its core business. Manchester will produce an integrated action plan (IAP) that provides a roadmap to cultural change within the organisation. The desire is to mainstream smart city approaches into the operational environment of the city so that all aspects of city delivery think smart.

The goals of the IAP are described as:

- Goal 1: Set up an innovation based smart city group. This group could include a smart city manager within the city administration to link departments and create an innovation based organisation to support delivery.

- Goal 2: Install a dialogue forum (smart city board) between private sector, universities, citizens and city municipality. A key task would be to develop a smart city strategy for Manchester as wider city entity.

- Goal 3: Horizon scanning of potential priorities and development focus for potential to enhance efficiency and improve services. Growth opportunities are also included here.

- Goal 4: Establish up a range of financial support tools to spur public sector innovation working with SMEs, researchers.

# Section 2

## Short description of the city

Historically, Manchester was a flourishing city who played a decisive and leading role in world textile manufacture and production in the late 18th century, a position it maintained and held until its decline in the 1960s. What a contrast today. Manchester is in many ways transformed: physically, economically, and environmentally. It has grown into a distinctive international city. Now, to become more productive, the city needs to continue to attract high-value industries, provide support for business and get more people working.

Covering an area of 117Km$^2$, Manchester is located at the heart of the Greater Manchester metropolitan area. This forms the Greater Manchester City Region, an agglomeration of built up area of connected neighbourhoods, creating a single urban area. The population of 2.7 million make the metropolitan area the second largest economy in the UK outside London, generating 4% of national GDP. Manchester itself is one of the fastest growing cities in the UK, with a population of approximately 520,000 generating €63 billion GVA pa. Projections see it set to rise to 600,000 by 2023.


The Greater Manchester Region

With a background of changes to national government funding for local government and a reduction in funding, there has been stability both politically and at officer level within Manchester City Council. The city major equivalent has remained the same since 1996, with the socialist party as the controlling group. This stability of governance is considered as a key contributor growth in the city.

## Short overview of national/ regional policies and incentives

**Manchester Strategy** – the draft urban strategy for the city for 2016-2020 has just been published as a draft following a consultation period. Publication is due Spring 2016. This overall strategy and vision provides they framework for a range of topic specific implementations plans, including transport, energy, social care, waste, skills, education, science and business support.

**Manchester Core Strategy** – this was adopted July 2012 and is the key Development Plan Document in the Local Development Framework (LDF). It replaces significant elements of the existing Unitary Development Plan as the document that sets out the long term strategic policies for Manchester's future development and will form the framework that planning applications will be assessed against.

**Corridor Manchester's Strategic Vision to** 2025 - Corridor Manchester is the 243-hectare area running south from St Peter's Square to Whitworth Park along Oxford Road. It is the first partnership of its kind in the UK. The aspiration is to develop the area as a smart city district. The Corridor serves as large-scale demonstrator for smart solutions within the EU H2020 lighthouse project Triangulum. A smart city implementation plan that addresses energy management in buildings, provision of renewable energies, integrated infrastructures and sustainable mobility solutions has been developed in 2015 and will be executed throughout 2016 and 2017.

**The Greater Manchester Devolution Agreement** - the authorities who make up the Greater Manchester Combined Authority (GMCA), a top tier administrative body, is shortly to take on a wide range of devolved powers from central government. The agreement will increases the resources available to Greater Manchester across its full range of strategic priorities. These are direct through additional funding and indirect through greater influence over national and other programmes.

**The Greater Manchester Strategy** – This the strategic vision of the The Greater Manchester Combined Authorities (GMCA) made up of the ten Greater Manchester councils who work with other local services to improve the city-region. The Greater Manchester Local Enterprise Partnership (LEP) ESIF Investment Plan 2014 -2020 is based on the priorities of this plan and from 2014-2020 expects to benefit from 415M euro European Structural Investment Funds (ESIF).

# Section 3

## Description of the baseline review focus

The smart city agenda in Manchester has developed significantly in the last two years both in terms of profile and the integration of activity within the city. Previously much of the work was led by Manchester Digital Development Agency (funded by MCC) and whilst successful in raising the city profile within Europe and delivering on projects, it was less successful at securing significant levels of funding to drive change and mainstreaming activity within the city council service delivery.

Currently the city has a number of successful projects and activities underway and "smart" is recognised as an important issue within the political leadership and certain departments. However there is a need to widen and deepen the level of understanding of the opportunities and to develop practical routes to delivery. The intention is that SmartImpact will provide the city with the route.

The focus of the review is to examine current activity that falls under the smart banner and look at where the city wants to be in 2020 in the context of the newly published Manchester Strategy (2015 – 2020). The process is to map that journey with a key enabler to being the need to bring together activity in a coordinated way i.e. a high level programme board working to an IAG. Critically this must be underpinned by the key pillars of city vision: Manchester as a world class city as competitive

as the best international cities with **growth** (jobs and economic wealth), **people** (delivering services that foster aspiration, independence and resilience) and **place** (creating and maintaining a quality of life for residents).

# Section 4

## Baseline review activities

The Manchester baseline methodology draws on work of the Fraunhofter Institute under the Triangulum H2020 project and weeklong study visit the in January 2016  Over 20 interviews were carried out from the political senior executive level (major equivalent) through to officers delivering project and included external stakeholders. A SmartImpact round table discussion then followed with officers responsible for the delivery of smart projects in MCC and the lead expert.

# Section 5

## Key findings

Across Manchester a diverse range of smart city initiatives are in progress or have been recently completed. These form part of the Manchester Smarter City Programme. The intention of the programme is to build on ongoing activities and around transport, health, environment and energy efficiency and to encourage further investment, through supporting pilot projects and working with partners in the universities, business and the public sector (note that the activity listed is broader than MCC itself).  The activities fall in to five groups.

1. Smart City initiatives led by the city council including: refurbishing council buildings and installing smart building management systems; installing energy efficient intelligent street lighting; and, a Digital Demonstrator Hub which enables SMEs to learn about the potential of superfast broadband.
2. Smart city initiatives delivered in collaboration by public and private sector organisations including: CityVerve, a £10 million project which will demonstrate the potential of IoT (Internet of Things) technologies within the smart city; and, DIMMER and Odysseus, two FP7 projects focussed on the role of information in creating more efficient district energy systems (heat networks) and catalysing changes in energy consumption behaviour.
3. Smart city research and innovation clusters including: Thinklab at the University of Salford; the Centre for Digital Innovation at Manchester Metropolitan University; and, The University Living Lab at the University of Manchester.
4. Smart city initiatives driven by grassroots and community organisations including: FabLab – a makerspace providing shared access to digital fabrication equipment; and, Eco Home Lab – a community group using open source hardware and software to increase the energy efficiency of their homes.
5. Innovation intermediates seeking to foster smart city activity across Manchester, including: FORWARDMcr – a hub for tech start-up companies; and, the Greater

Manchester Hydrogen Partnership – a network of stakeholders seeking to promote the use of hydrogen fuel cells within the city.

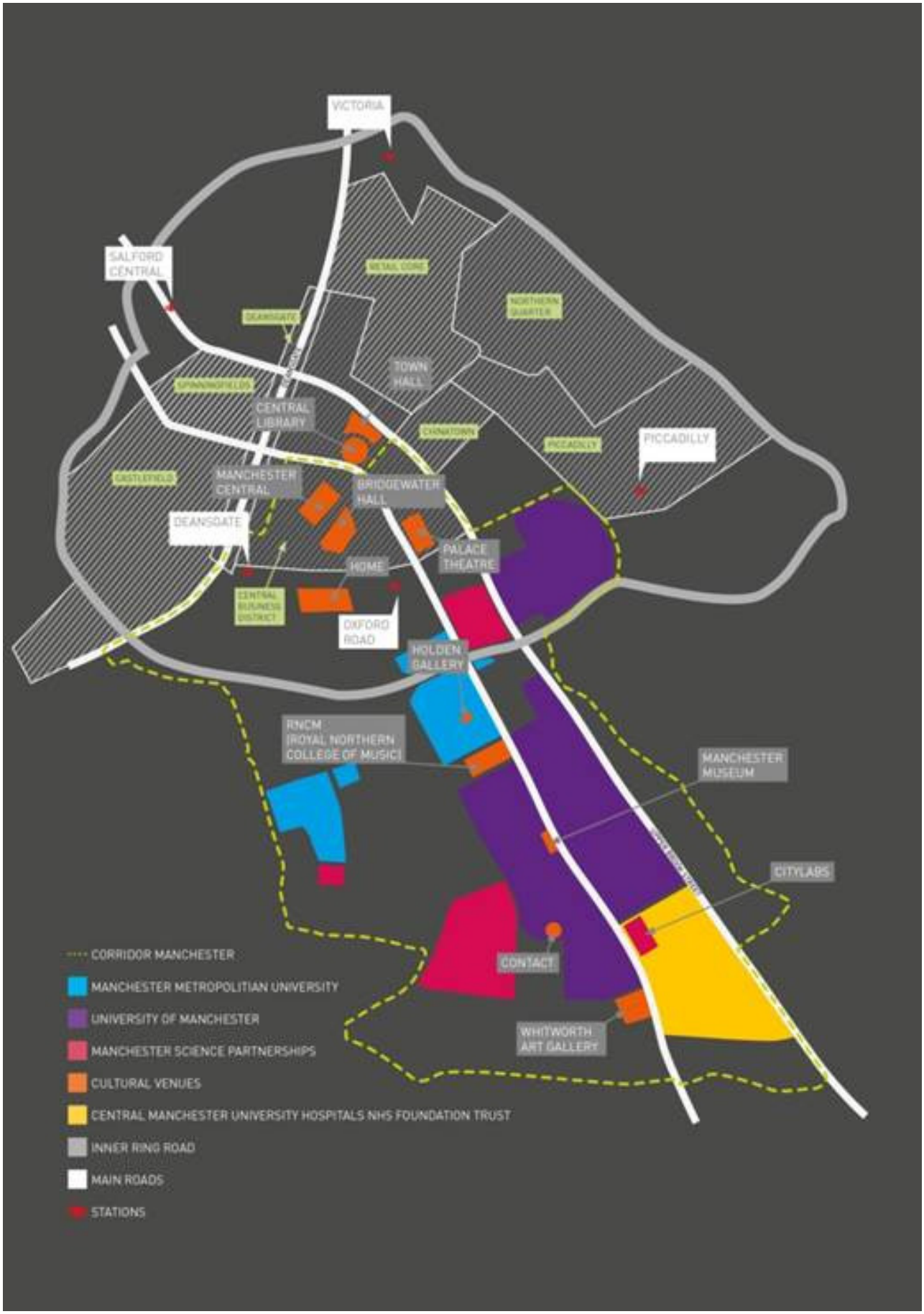
The city has aspirations to create a smart city district in an area known as Corridor Manchester. This is a 243 hectare area running south from St Peter's Square to Whitworth Park along Oxford Road; 70,000 students and 60,000 workers are based within this area and is home to numerous knowledge-intensive enterprises and organisations. Central to the city's economy, these actors create value in sectors including education, health, and digital innovation, low carbon technologies, advanced materials, finance and the creative industries. Corridor Manchester was formed in 2007 to generate growth and investment within the area, and was the first partnership of its kind in the UK. It now brings together key stakeholders within the district including MCC, The University of Manchester, Manchester Metropolitan University (MMU), Central Manchester University Hospitals NHS Foundation Trust (CMFT), Bruntwood, Manchester Science Partnerships (MSP), ARUP and The Royal Northern College of Music (RNCM). Three members of Corridor Manchester - MCC, UoM and MMU – are also members of the Triangulum consortium; alongside industry partners Siemens and Clicks and Links.

The objective of Corridor Manchester is, by 2025, for the district to be become "Manchester's cosmopolitan hub and world-class innovation district, where talented people from the city and across the world learn, create, work, socialise, live and do business; contributing to the economic and social dynamism of one of Europe's leading cities".

Smart city initiatives that increase the social and environmental sustainability of the Corridor are expected to play an important role. For example, the transformation of a section of Oxford Road to limit general traffic (i.e. cars and delivery vehicles), will promote a modal shift to public transport, cycling and walking within the Corridor. Other major programmes in planning or delivery include:

- redevelopment of Oxford Road rail station;
- redevelopment of the UoM Northern campus and the MMU;
- extension of the Manchester Science Partnerships campus);
- development of a new hospital through a £50m partnership between Nuffield Health and Manchester Metropolitan University;
- redevelopment of a form BBC (British Broadcasting Corporation) site and First Street;
- development of the Graphene Engineering Innovation Centre and Sir Henry Royce Advanced Materials Institute.

The geography o f Corridor Manchester is shown on the next page.


VICTORIA
SALFORD CENTRAL
RETAIL CORE
NORTHERN QUARTER
DEANSGATE
TOWN HALL
SPINNINGFIELDS
CENTRAL LIBRARY
CHINATOWN
PICCADILLY
PICCADILLY
CASTLEFIELD
MANCHESTER CENTRAL
BRIDGEWATER HALL
DEANSGATE
PALACE THEATRE
HOME
CENTRAL BUSINESS DISTRICT
OXFORD ROAD
HOLDEN GALLERY
RNCM (ROYAL NORTHERN COLLEGE OF MUSIC)
MANCHESTER MUSEUM
CITYLABS
CONTACT
WHITWORTH ART GALLERY
CORRIDOR MANCHESTER
MANCHESTER METROPOLITAN UNIVERSITY
UNIVERSITY OF MANCHESTER
MANCHESTER SCIENCE PARTNERSHIPS
CULTURAL VENUES
CENTRAL MANCHESTER UNIVERSITY HOSPITALS NHS FOUNDATION TRUST
INNER RING ROAD
MAIN ROADS
STATIONS

The findings demonstrate an active smart programme in the city. However what it also reveals is the need for coordination and integration. New technologies have always played a role in the evolution and growth of urban areas and will continue to do so in the future, especially as budgets become tighter and more challenges arise. However, the smart agenda is also very complex, mainly due to the variety of stakeholders and technologies involved. In addition, the need for managing data, which connects stakeholders and technologies into larger systems, imposes an additional layer of complexity on city managers endowed with smart city development projects. This means that if cities are to become smart, a high level of coordination and co-working will be required between and within cities, government departments, the private sector and communities.

## Challenges

The challenges identified for Manchester can be identified as:

**Infrastructure** - Manchester's city centre in particular has large areas without superfast connectivity. This affects businesses ability to compete as well as a challenge to attract the talent needed if city centre homes do not have super or ultra-fast connectivity.

**Governance** – as the city moves forward to a greater aspirations as a smart city this means a wide range of stakeholders. The city authority sees itself in an enablement role, facilitating and stimulating activity. The "smart city" in a box solutions offered by the major IT companies are not the solution, more the direction of travel is towards broader multi stakeholder urban platform approach that allows for cross sector involvement as well as citizen engagement and participation. The challenge ranges from data ownership through to governance and responsibility.

**Financial and monetisation -** the city has a diminishing role in direct service provision. How then can a city attract investment to fund and build out new smart solutions? And Having attracted the investment what is the path to sustainability?

**Interoperability** - an urban platform approach requires solutions to be agnostic and to allow an innovation driven, agile, "bottom up" approach with flexibility as a keystone. Manchester has not yet decided about its approach for an urban platform but will need to deal with this question in the months to come. The goal is to provide as many data as possible through an open platform and to spur digital local innovation.

**Risk management** – the public's confidence in public sector IT projects is low. It is critical that investments are successful and value for money. The speed of change for solutions is rapid and whilst this brings the benefit development and functionality and longevity and future proofing is important.

**Procurement** – the current approaches do not stimulate innovation. Whilst recognising the role of the larger players, the city wishes to "grow its own" and invest in the innovation sector. This means a more intelligent procurement process that can also engage effectively with local SMEs.

**Tackling working in silos –** traditionally Manchester, similar to all cities in the UK and beyond, have delivered services in isolation of each other. Despite transformation of services at MCC in recent

years, the thinking still exists. Smart provides new opportunities to think differently and to re-examine service delivery, particularly in areas such as highways, street lighting and waste.

**High Level Coordination** – new technologies have always played a role in the evolution and growth of urban areas and will continue to do so in the future, especially as budgets become tighter and more challenges arise. However, the smart agenda is also very complex, mainly due to the variety of stakeholders and technologies involved. Currently there is no coordination of smart activity in Manchester. This means that if cities are to become smart, a high level of coordination and co-working will be required between and within cities, government departments, the private sector and communities.

## Good practice

MCC has of experience a wide range of European and international projects dating from the mid-1990s. This includes multiple projects from FP6, FP7, CIP, H2020, Interreg and Urbact I and II. As a next step Manchester Smarter City Programme has been developed to explore ways of making the city work better through use of technologies. Projects taking place in the city include:

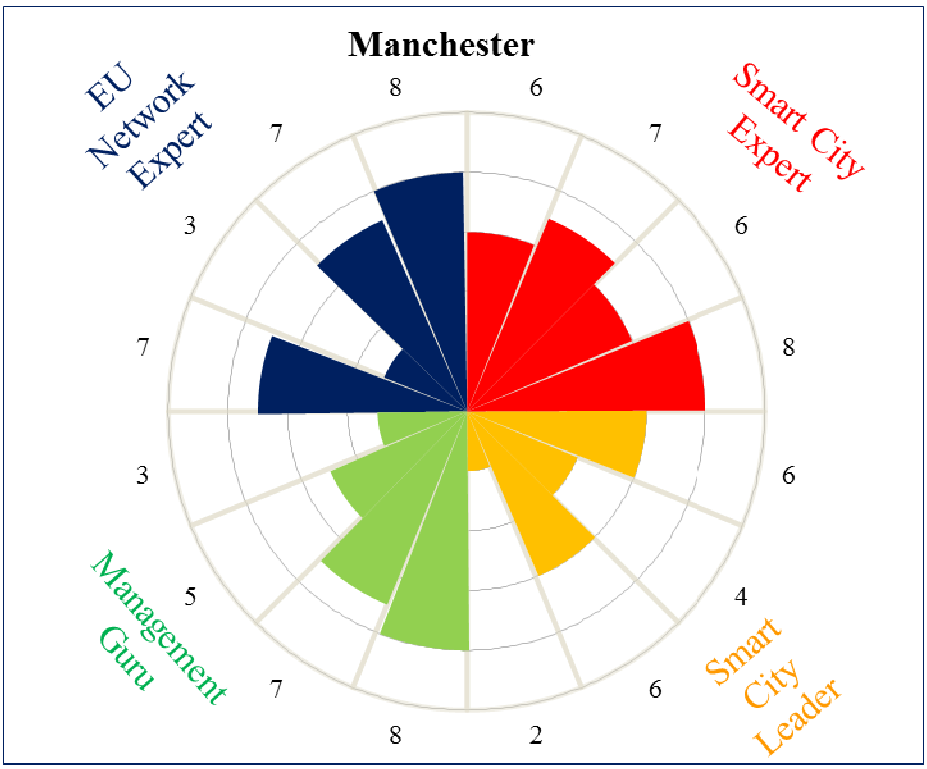
- Building Energy Management System - a Building Energy Management System for Town Hall Extension and Central Library
- Central Library Digital Demonstrator - providing superfast broadband and state-of-the-art technology throughout central library for businesses.
- Centre for Digital Innovation - a multidisciplinary space at MMU bringing together research, business, commercial and teaching under one roof.
- CityVerve - an Internet of Things (IOT) demonstrator project within Corridor Manchester, is designed to transform the way we work, rest and play in a digital age. Manchester will be the first UK city to build and operate an urban sensor network at scale with 'smart' improvements will help deliver more personal, efficient and flexible products and services.
- DIMMER - a project creating 3D Visualisations to model real-time energy usage.
- Ebb & Flow Energy Systems - A project developing a virtual power plant solution supporting electric vehicles based at Manchester Science Park.
- EcoHome Lab - a group that meets regularly to develop new software and hardware for the home.
- Fab Lab Manchester - a creative space for 3D design and rapid prototyping.
- FORWARDMcr - the city's Tech Start Up Hub.
- Future Everything - an innovation lab for digital culture and runs an annual festival in the city.
- Google Garage - based at Manchester Central Library, the project provides digital masterclasses to local businesses, start-ups, and anyone interested in a 'digital tune-up' to pop in and learn skills needed to grow their business or career.
- Greater Manchester Hydrogen Partnership-corridor - a network of stakeholders involved in developing hydrogen fuel cells.
- Intelligent Lighting – MCC is replacing 56,000 street lights with LED lighting to reduce carbon and running costs.

- Manchester Digital Laboratory - a not-for-profit digital innovation organisation operating out of a community hub in the Northern Quarter.
- MiGuide - a street wayfinding service accessed through digital screens throughout the city centre.
- Nedo - a collaboration between Greater Manchester and Japanese partners to demonstrate innovative heat pump technology and smart ICT in residential settings.
- Open Data Manchester - an independent network developing the city's open data infrastructure.
- THINKLab - a state-of-the-art research facility based at neighbouring University of Salford working with new digital technologies.
- Funding mechanism -, including those that relate to CSI Europe (Urbact II) and the JESSICA instrument.
- Triangulum - creating a smart city district within Corridor Manchester using a multi- sector approach across energy, ICT and transport.

# Section 6

## SWOT- analysis

The analysis of strengths and weaknesses in the relevant action fields for SmartImpact is based on a mixed-assessment approach. Each city was asked to complete a self-assessment by rating the own state of performance in 16 areas of action and expertise. The scale ranges from 0 (not at all) to 10 (best city in Europe). The self-assessment by the city representatives was matched by an assessment of the Lead Partner and the Lead Expert after the baseline visit. The figures below show the merged values of the self-assessment and the SmartImpact LP/LE assessment.



| SmartImpact Assessment – scale = 0 - 10 | | |
|---|---|---|
| 1 | Experience of Manchester with smart city projects | **6** |
| 2 | Decisions by the council on smart city / smart districts | **7** |
| 3 | Level of expertise within municipality | **6** |
| 4 | Level of expertise within ULG | **8** |
| 5 | Priority of Smart City / Smart district at political level | **6** |
| 6 | Clear smart city goals and measures defined | **4** |
| 7 | Degree of implementation of smart city measures | **6** |
| 8 | Existence and implementation of monitoring framework | **2** |
| 9 | Well developed ULG (established working relationship) | **8** |
| 10 | Local coordinator attached to decision making in city | **7** |
| 11 | Local coordinator linked to business, research & civil society | **5** |
| 12 | Organization of strategic cross-cutting issues within administration | **3** |
| 13 | Existing transnational exchange on smart cities | **7** |
| 14 | Application of Operational Programmes (ERDF, Jessica, ESF) | **3** |
| 15 | Experience in EU city networks (URBACT, Polis, Eurocities etc.) | **7** |
| 16 | Successfully applied to EU-funded innovation projects in last 5 years | **8** |

## Conclusions

Manchester's position as a city built on technology is unparalleled. Today there is a smart programme that has been active for a number of years providing for a range of good practice. Numerous projects and initiatives are in delivery, including H2020 funding to create a flagship smart energy district. As a growing city, the opportunities to use smart to support the cities aspirations are without question. To move forward the need is to embrace innovation in the way the city carries out its core business, cutting across a range of services, policy and geographical areas, to improve service delivery for better outcomes and reduced inefficiencies. There is also an urgent requirement for high level ownership by senior city executives and stakeholders with the development of an integrated action plan (IAP). This will provide a roadmap mainstreaming smart city approaches so that all aspects of city delivery think smart.

## References


Manchester Strategy www.manchester.gov.uk/mcrstrategy

Core Strategy www.manchester.gov.uk/info/200074/planning/3301/core_strategy

Manchester Smarter City Programme www.manchester.gov.uk/smartercity

Corridor Manchester Report www.corridormanchester.com/welcome

Stronger Together: The Greater Manchester Strategy www.greatermanchester-ca.gov.uk/info/20067/greater_manchester_strategy

# SMARTIMPACT

# Baseline Review Report – Dublin, EI

European Union
European Regional Development Fund

## Contents

## Summary

Dublin, the capital city of Ireland has all the right ingredients to become one of Europe's leading smart cities. While Dublin has made progress across many domains (in particular mobility), a lack of a joined up approach has hindered progress. This is changing as Dublin City Council has recently established a dedicated 'smart city' function within the organisation. Also, the 4 Dublin local authorities are actively collaborating on a 'Smart Dublin' strategy and improved coordination of smart city initiatives. The Smart Dublin vision consists of a "mix of data-driven, networked infrastructure, fostering sustainable economic growth and entrepreneurship, and citizen-centric initiatives, with a particular focus on creating more efficient city services, improving transportation flows, tackling flooding, attracting inward investment and encouraging indigenous start-ups and SMEs, and opening data and encouraging civic engagement."[1]

An action plan for jobs for the Dublin region launched by the Irish Government in Jan 2016 highlighted a number of priority 'smart city' actions under the theme: Dublin "the Ideas Capital". It stressed that Dublin needs to be an exemplar of a "smart city" internationally, test bedding new technologies which use big data and the internet of things to improve city life. [2]
The following priorities were included: Rolling out "smart districts", a Dublin Internet of Things Demonstrator project and a Street of the Future project.

The city as part of the SmartImpact project is developing a Smart District approach with a particular focus on the Dublin Docklands district which will ensure that the city achieves strong local impact, while also raising its international profile. There are many stakeholders in Dublin that are committed and excited to support and be part of a larger smart district development process in the Dublin Docklands. The challenge for Dublin is to align the interests and activities of businesses, the city administration and developers. With extensive development commencing in this district it is imperative these activities are properly aligned. A key outcome of this Smart District project is the development of an integrated action plan to ensure maximum benefits for both public and private interests.

The docklands district has achieved a remarkable transformation from its origins as a former working docks to its current position as a leading technology and financial services hub. This was a result of an extensive government led regeneration and development program from the late 1980's. There are now over 27,000 people living in the area (an increase of over 54% between 1996 and 2011). It is now home to a world leading financial services cluster and also has recently earned the nickname "Silicon Docks" due to the presence of leading global tech companies such as Google, Facebook and LinkedIn. Over 40,000 people are now employed across the docklands.

The financial crash and subsequent recession in 2007 left many unfinished and derelict sites. However with the economic upturn underway much of Dublin's large scale urban development projects are now concentrating around the Docklands. Investments of ca. 3 billion are to be made into a Strategic Development Zone around North Lotts and Grand Canal Docks up to 2025. The City of Dublin has to make sure now that these investments not only support sustainable real estate development in what is to become an important business district in Dublin,

[1] Rob Kitchin - Dublin as a Smart City- http://www.maynoothuniversity.ie/progcity/2015/12/dublin-as-a-smart-city/
[2] https://www.djei.ie/en/News-And-Events/Department-News/2016/January/25012015.html

but also leverage future proofed clean and efficient infrastructures, sustainable transportation and data-driven municipal services.

There is strong commitment from the top-level decision makers in the city towards realising ICT-based sustainable infrastructures in the Docklands and to mainstream the smart city approach into the city administration. The re-development of the Docklands represents a concrete and tangible frame for aligning corporate and public interests under a "smart city" umbrella in Dublin. Dublin City Council has a dedicated 'smart city lead' who is charged with leading the coordination of smart city activities and aligning interests within the City Council. He reports directly to the Chief Executive. A regional co-ordination team has also been established to align activities across the 4 Dublin authorities.

The Smart District project is an important initiative to help Dublin realise its smart ambitions.

# Section 1

## SmartImpact in Dublin – aims and objectives

Dublin City Council aims to increase the capacity of the administration to better plan and implement smart technologies and infrastructures in a way that delivers positive outcomes for its citizens. This will be realized through the development of a Smart District in the Docklands area of the city. Furthermore, Dublin City Council (DCC) aims to contribute to the development of a practical model for the *replication of smart urban solutions at European network level.* This will provide the basis for improving and accelerating the development of a smart district in the Dublin Docklands.

**In SmartImpact Dublin wants to:**

- **Grow** capacity within the city administration to systematically plan, finance and operate smart solutions in the district context working in collaboration with public and private stakeholders.
- **Align** interest of key stakeholders across the District.
- **Collaborate** with business, start-ups, citizens, workers etc. in developing and delivering a smart district in the Docklands.
- **Develop** best practice and case studies around the successful development of the Docklands; how they are financed, what are the barriers and what is the greater benefit for Dublin.
- **Build** a 'Smart Docklands' brand.
- **Create** a basket of instruments together with SmartImpact partners to reduce risk in developing smart city districts, which will accelerate take up, acceptance and delivery of smart city districts.
- **Feedback** to the Local and national Policy makers and also the European Commission so that the Strategic Policies and future funding can be set aside to develop smart city districts.
- **Replicate** how to role the Smart District model to other districts across the city

## Baseline review methodology

This baseline review combines several methodologies for generating a holistic and full picture of the current state of the smart city development structures and activities in Dublin.

1. Assessment of quantitative indicators. By assessing and analyzing data on a total of 25 indicators, we generate a comparable overview over the setting in which the developments are to take place.

2. Baseline assessment template: we provide the local coordinators with a structured template that contains a set of open questions to key areas of interest. The local coordinator is requested to provide the information in form of written answers and after consultation of his local community.

3. Direct meetings and interviews: we meet local leaders from the City Council, research, civil society and local businesses. Through discussions and interviews we assess their perspective and interests on the concrete smart city development projects – in Dublin this is the Docklands district.

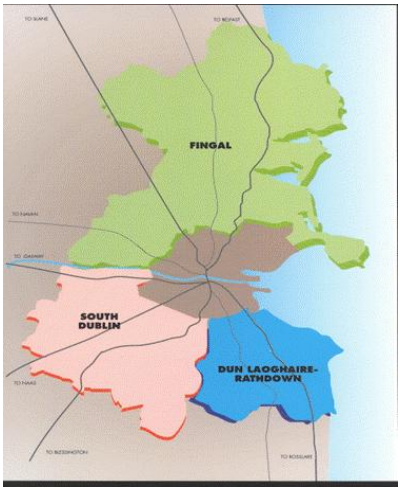
4. Matching all three levels of information allows us to identify the development potential, but also the challenges that stakeholders face, when pushing for smart city solutions in Dublin – since not all are speaking about the same subject and interests and abilities to act often differ.

## Section 2

### Short description of the city

The Dublin Region is situated to the east of Ireland and occupies an area of 92,200 hectares. The Region is located on the coast bordered by low mountain ranges to the south and farm-land to the west and north. The city is famous for its music, literature and pubs and is the home to the Guinness brewery and many of the world's most well known writers including James Joyce, Oscar Wilder and William Butler Yeats. It is one of 4 international cities designated as UNESCO city of literature.[3]

Dublin is the administrative and political capital of Ireland housing the national government and president of the state. The region is home to 1.27m people (CSO, 2011) and accounts for 38% of the national economy. It also acts as a European and international gateway for the many multinational firms that have established their headquarters in the city. It is the only Irish city of relevant scale that is cited in international benchmarks and rankings and is often referred to as Ireland's only truly internationally competitive city.




The Dublin Region comprises the administrative areas of Dublin City, South-Dublin County, Dun Laoghaire-Rathdown County and Fingal County.

Dublin City Council is the largest local authority in the State. Its 2015 revenue (operational) budget is in the order of €773m and it has a 3 year rolling Capital Programme, covering the period 2015 to 2017, of €568m. It has just under 5,800 employees. The City Council provides a wide range of infrastructure and services, including some essential services, that impact on the daily lives of all residents and that contribute in significant and diverse ways to their quality of life. It also makes a major contribution to the economy of the city, the region and the State.

Dublin City Council has been through a period of significant change/transformation over recent years. In part this reflects the financial pressures it has experienced as a direct consequence of the on-going programme of fiscal adjustment pursued by Central Government. It also reflects the adverse impact of the performance of the general economy on its revenues. In addition, the Council has been subject to a major local authority reform programme the implementation of which is continuing.

[3] http://www.dublincityofliterature.ie/

## Short overview of national/ regional policies and incentives

As a small open trade dependent economy Ireland and Dublin has to ensure that it maintains its competitive advantages. It is important to note that Ireland and Dublin's economic success was primarily down to the national led policies and initiatives developed throughout the 1980's up to the present (with a particular focus on attracting Foreign Direct Investment).

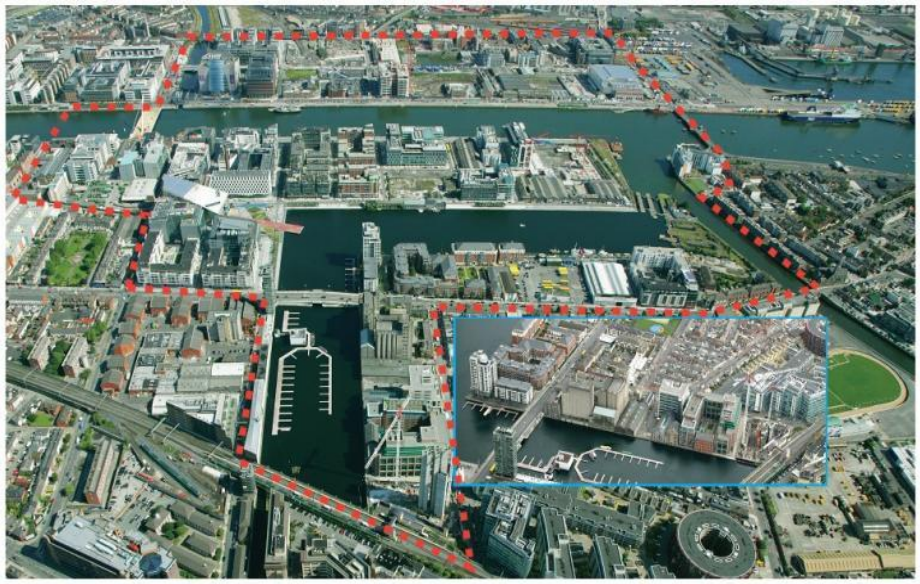
The City supports these national policies through its planning and development remit and its management of key infrastructure areas such as waste, roads, traffic and major urban regeneration projects. The lead agencies in economic delivery in Ireland are the IDA (Industrial development agency), Enterprise Ireland (focusing on export led enterprise and high growth potential), the City enterprise boards (small scale enterprise, entrepreneurs) and SOLAS (training and skills). It is only a more recent phenomenon that City and County administrations have taken a more active role in the wider economic development remit. This was mainly due to the impact of the recession but also the increasing recognition of the need for Dublin to develop stronger leadership and coordination in the absence of a directly elected mayor and strong regional governance structures.

The particular area of focus for the smart district project is 'Dublins's docklands', which was subject to a major flagship scheme of urban renewal in the 1980's. As a previously derelict docklands site it was the subject of a major integrated development comprising business, residential and recreational functions. The creation of a new International Financial Services Centre was central to this development[4]. A single purpose development agency was established in the late 1980's with effective planning functions to deliver on this development. The area is now home to a wide range of international financial services companies which contribute over 7% to national GDP.

A second wave of regeneration sowed the seeds for the emergence of what is now known as 'silicon docks'. Grand Canal Dock is now a centre for leading tech companies such as Google, Twitter and Facebook.[5] It is increasingly becoming a magnet for highly skilled international workers[6].

[4] http://www.financedublin.com/the_ifsc_story.php / http://www.ifsc.ie/page.aspx?idpage=6
[5] Silicon Docks - The Rise of Dublin as a global tech hub (2015, Pamela Newenham)
[6] http://www.wsj.com/articles/tech-workers-flock-to-dublins-silicon-docks-

The latest phase of development currently underway in the docklands is being fast tracked as part of a strategic development zone (SDZ)[7]. This area is strategically located in the Central Business District adjacent to the downtown commercial and financial centres. As an increasingly desirable area to live and work the Docklands area is attractive to both developers and commuters. The strategic development zone covers a 22ha area. Much of this development is taking place in planned sites which NAMA (National Asset Management Agency) has a financial interest, comprising over 75 per cent of the total available development land.



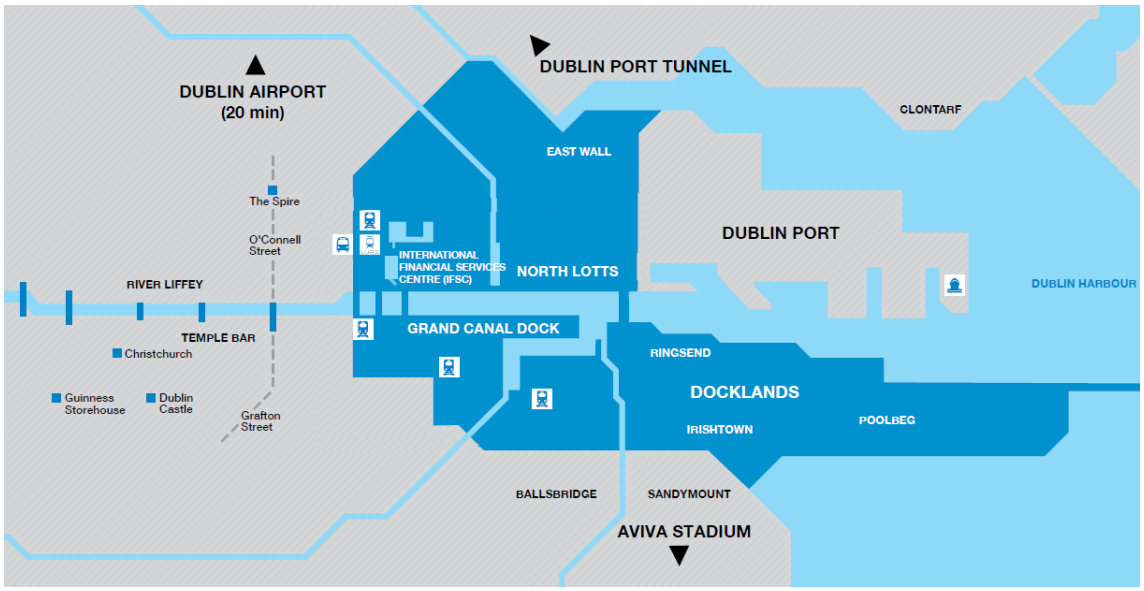
[7] http://www.dublincity.ie/main-menu-services-planning-urban-development-plans-local-area-plans/north-lotts-grand-canal-dock

## Section 3: Description of the baseline review focus

The Docklands area of Dublin has been identified as the focus for the Smart District Project due to its strategic location and also the presence of key stakeholders and projects that are currently active in the area. The overall Docklands area (comprising the district electoral divisions of North Dock A, B, C, Mansion House A, South Dock, Pembroke East A and Pembroke West A) has increased in population by over 54% between 1996 and 2011. The 2011 Census population for this area recorded almost 27,000 people. Between 2006-2011 the population increased by over 36% at a time the city growth rate was 4.2% and 8% growth nationally. Within the SDZ boundary, the 2011 Census recorded 6,366 people compared to 4,001 persons in 2006, representing a significant increase of over 50%. The SDZ population represents approximately a quarter of the wider Docklands population

http://www.dublincity.ie/main-menu-services-planning-urban-development-plans-local-area-plans/north-lotts-grand-canal-dock

By developing the wider Docklands area into a smart district (incorporating the IFSC, Grand Canal Docks and the new SDZ zone) Dublin City Council is starting an ambitious process that will lead to much better co-ordination of activities and stakeholders within the city administration. "*The ultimate goal is to create an international Lighthouse District that will enable the city to attract businesses, to spur social and economic development and to reduce the carbon and resource footprint of the city*"




The vision for the Docklands is to become one of the great urban living environments of Europe: "*to be a model of sustainable inner city regeneration incorporating socially inclusive urban neighbourhoods, a diverse, green innovation based economy contributing to the prosperity*

*of the locality, city and country. All supported by exemplary social and physical infrastructure and a quality public realm integrated with the wider city*" [8]

**Example of already existing projects include:**

Part of the Docklands is referred to as **Silicon Docks** which has become a magnet for high-tech multinationals such as Google, Facebook, Twitter, Linkedin, Dropbox, Airbnb and many more. It is also the financial services hub for Ireland with many leading financial services firms located here.

**Strategic Development Zone:**

Dublin City Council is fast tracking the development of 22 hectares in the docklands, north and south of the river, that comprise a strategic development zone (SDZ). The plan identifies five specific development hubs with over 3 billion to be invested over the coming years in the area. This will deliver an additional residential population of almost 5,800 and employment of almost 23,000 people.

**The smart districts integrated action plan will focus on the following:**

- Dublin Docklands district
- Identification of appropriate pilots and demonstrators - which will involve extensive multi stakeholder engagement

[8] http://www.dublincity.ie/main-menu-services-planning-urban-development-plans-local-area-plans/north-lotts-grand-canal-dock

- Understanding best practice case studies of existing smart city districts and successful deployments of smart solutions that will inform future opportunities.
- Development of a toolkit to support the development of smart city districts so other areas in the city can adopt as required.
- Development of key targets that can be used to monitor success and help prioritise pilot selection.
- Evaluation toolkit to prioritise pilots and evaluate their success.
- Identify new financing opportunities
- New approaches to procurement (challenge based approach)

**Docklands21**, recognised as a Smart and Sustainable Energy Community is a leading initiative that is centred in the strategically vital IFSC and Silicon Docks area of Dublin city's docklands[9]. Docklands21 will work with all sectors of the community beginning with business. Already, more than 40 Dublin docklands-based companies have come together to form Ireland's largest Sustainable Energy Community (SEC)

# Section 4

## Baseline review activities

1. Assessment of indicators through the Dublin City Council
2. Baseline visit to Dublin by the Lead Partner and Lead Expert of SmartImpact

The baseline meeting in icluded Chief Executive, Owen Keegan, Dublin City Council, Eileen Quinlivan – Executive Manager, Transformation Unit, Docklands Project Team (Docklands); Aideen O Hora. International Sustainability Initiative (ISI) 'Docklands 21' Sustainability Initiative / Docklands; Ciaran Flanagan, Chair of Docklands Business Forum; Pauline Riordan – Smart Dublin; Rob Kitchin (Programmable City), Brian Donnellan & Niall Connelly (Business School)– Maynooth University.

# Section 5

## Key findings on subjects:

**Current Position:** The Smart Dublin vision consists of a 'mix of data-driven, networked infrastructure, fostering sustainable economic growth and entrepreneurship. A focus on citizen-centric initiatives, in particular, more efficient city services, improving transportation flows, tackling flooding, attracting inward investment, encouraging indigenous start-ups and SMEs, opening data and encouraging civic engagement'.

[9] http://www.seai.ie/News_Events/Press_Releases/2015/%E2%82%AC2BN-to-be-invested-in-Docklands-development-by-2021.html

**Dublin's Smart City Eco-System**

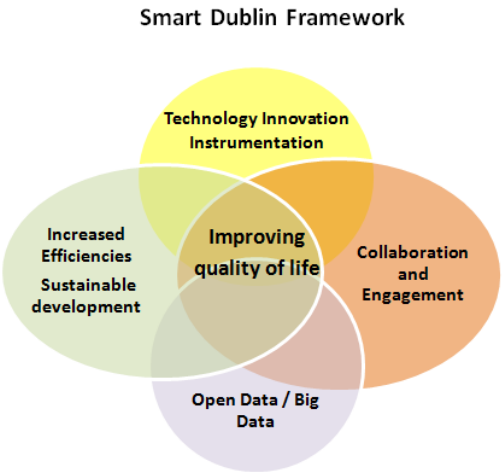
There are many reasons why Dublin has such potential to be a leading world class smart city. It is home to 9 out of 10 of the world's leading technology companies, it has an extremely vibrant and growing technology start-up eco-system. There is a fairly well developed ecosystem of 'university-industry-local government' smart city research centres and collaborations (including 'The Programmable City' (implications of creating smart cities), 'Innovation Value Institute' (business models for smart city technologies), 'Insight' (data analytics for smart cities), 'CONNECT' (networking and comms for smart cities), 'Future Cities' (sensor, communication and analytical technological solutions for sustainability), 'Dublin Energy Lab' (smart grids and meters) and some industry centres (e.g. IBM's smart city global research team)and testbeds (especially relating to the Internet of Things with companies such as Intel). Organisations such as Codema (energy agency for Dublin) and the Sustainable Energy Authority of Ireland (SEAI) undertake smart energy/grid projects and provide advice and guidance.

Mapping out this ecosystem and understanding the connections / opportunities for collaboration is one of the key objectives of this project.

**Smart City Initiative - Dublin City Council:**

The Smart City initiative of Dublin City Council is supported directly through the Chief Executive of Dublin City Council, Owen Keegan. New organizational structures to support cross-departmental collaboration on planning and procuring smart technologies have been established: a dedicated 'smart city lead' now reports directly to the Chief Executive. At a regional level each of the 4 Chief Executives have supported the development of a regional Smart Dublin approach which now incorporates the Dublinked open data project. A dedicated team of 4 co-ordinates the regional approach. At a political level there is support for the initiative however there is still relatively limited awareness of the potential of 'smart city' technologies. This will change as Dublin builds out the engagement model in 2016 as part of the Smart Dublin rollout – www.smartdublin.ie

**Smart Dublin's** ambition is to position Dublin as a leading smart city offering open access to public data, open to emerging technology opportunities, open to new ways of working and new collaborations. A testbed for new technologies that help improve city life.



Smart Dublin is delivering a framework that encourages co-creation of smart city solutions to address priority city needs. Within this framework there is an emphasis on applying emerging technology opportunities (Internet of things) while also better leveraging big data opportunities through the 'Dublinked' platform. The Smart Dublin framework sets out key operational challenges across areas of mobility, environment, energy, waste and emergency management. A cross cutting advisory board is being established to provide leadership and direction to Dublin's Smart City ambition. There is a lot of interest at a local level from entrepreneurs, start up accelerators, MMC's and universities to engage in the Smart Dublin project. Finding the right type of engagement model is a key objective of Smart Dublin.

Over the past year Dublin City Council has been evaluating its smart city projects portfolio and aims to better co-ordinate these projects, to put them on a more formal structured basis and to ensure that they address prioritised city challenges. The following actions are being implemented:

**Central Co-ordination.** The city council is currently bringing together all of its Smart City work through the establishment of a centrally coordinated function led through the office of the Chief Executive.

**Opening up opportunities for collaboration.** There is significant smart city expertise in the Dublin region. The emerging Smart Dublin framework will allow for greater flexibility for the city and region to work with universities, entrepreneurs and companies to co-innovate, test and deploy new urban solutions. In order to be successful the City Council needs to engage extensively and productively with the business, NGO's, third sector, and academic institutions to allow for co-innovation and demonstration partnerships.
Such collaborations will also help the City Council better understand the latest technology trends and entrepreneurial approaches to solving urban challenges (and improved future procurement). Dublin is positioning itself as a leading city to test and deploy new technologies which in turn open up opportunities for people/companies to invent new things and to test and sell them into an international marketplace.

An emerging 'Smart Dublin' framework will provide a more structured and flexible approach to engagement with external agencies. The City Council seeks to build partnerships that demonstrate innovative solutions in the areas of transportation, environment, management of extreme weather events and energy efficiency. Advances in technology innovation can help the city deliver more responsive and efficient city services while at the same time support local economic development goals.

This Smart Dublin Framework will create new opportunities for entrepreneurs, SME's and multinational companies alike to address and testbed solutions that may be applicable to a wider global marketplace. The City Council is interested in seeking partners for demonstrators/validation and R&D partnerships. As part of these collaborations Dublin City Council will offer "real world" testing of products, services or technologies by giving access to DCC infrastructure.

A recent action Plan for jobs for the Dublin region launched by the Irish Government's highlighted priority actions under the theme: Dublin “the Ideas Capital” and included the following priorities:

–Dublin an exemplar of a “smart city” internationally, testbedding new technologies which use big data and the internet of things to improve city life.

- rolling out “smart districts”, a Dublin Internet of Things Demonstrator project and a Street of the Future project -

There are already a number of demonstrators underway or planned across the city involving companies such as IBM, Intel and others in collaboration with SMEs and research institutes in areas such as flood management, mobility, energy, environmental monitoring and waste management. These demonstrators help to better understand the opportunities arising in the Internet of Things.

The aim is to establish a number of test-beds, in conjunction with relevant research and technology centres operating at the higher Technology Readiness Levels (closer to market) and to develop transparent protocols to facilitate and encourage enterprise access to test-beds.
Dublin can contribute to the national ambition and raise its visibility internationally as a Smart City. Highly innovative FDI and Irish based technology companies are seeking opportunities in a city that is at the cutting edge of new technology and reflect their own ambition. While a range of assets are available to Dublin, there is a need to address system constraints to realising its full potential.

## Realisation

**Docklands 21:** By inspiring companies, SME’s, communities, institutions and professional services to improve their consumption profile, Docklands21 is playing a leading role in a wider national and international picture.

***"Flagship projects like Docklands 2021 will play an important role … convincing more firms and communities across Ireland to work together and develop similar collaborative projects that can demonstrate the wider benefits of energy efficiency***." - Minister Alex White , Communications, Energy and Natural Resources

In achieving this ambition, as well as providing a positive economic benefit, Docklands21’s resource efficiency activities are helping to save money, shape new business models and drive long term business competitiveness. That means more investment, more jobs and more opportunities to help power the economy, aid growth and improve prosperity. Docklands21 is led by the International Sustainability & Investment Centre (ISI Centre) and supported by both the Sustainable Energy Authority of Ireland (SEAI) and Dublin City Council (DCC).

By doing business in a responsible, smart and sustainable way Docklands21 ambition is for Dublin’s docklands to be recognised as one of the most resource efficient areas in Europe by 2021.

**Docklands SDZ:** Between 2015 and 2022 360.000 m² of commercial area and 240.000 m² of residential area will be build within the Dublin Docklands.

The realization of the Smart District is planned as an innovative form of public-private collaboration. In essence, the city will provide for cutting-edge infrastructure, enabling clean transportation, high-class communication and value added services for the smart district. In return, investors will be required to co-finance some of the infrastructure development via innovative investment models and rent- and leasing models.

**Fiber Backbone:** A competitive dialogue with the industry serves as basis for integrated planning that helps to bridge demand and supply. The Docklands Team are engaging in competitive dialogue to ensure total coverage of the district with dark fiber of highest bandwith that will be available for leasing through companies that build and operate within the Docklands. This will extend the areas already covered in the financial services area.

**Centralised District Heating:** Low emissions hope to be achieved through a centralized district heating system: the Docklands intend to link to the existing district heat network, which will connect to a 40 – 50 MW waste-to-energy power plant currently in constriction.

**LED lighting:** There is currently a project in place to upgrade the lighting in the district to LED. However there is an interest in piloting smarter lighting soltutions which could incorporate parking surveillance and free public wifi.

**Public Realm masterplanning:** Dublin City Council is currently developing a plan for the public spaces in the Dockland area. The plan addresses issue like water management, ecology, maintenance, arts & culture, community engagement, room for initiatives and for (digital) technology and urban design. Up until now (Dec. 2015) the planning department of Dublin City Council has collected a large range of best practices and possible interventions for the public space in the Docklands. Throughout 2016 these will be brought into a public realm masterplan.

## Financing

**Docklands 21** A total of 40 firms located in the Docklands have already signed a charter for the smart and sustainable development of the Docklands. Together they represent 51 premises and 31,000 employees with a combined energy bill in 2014 close to €20 million. It is the dedicated target of this group to achieve 24% in energy efficiency savings through a bundle of innovative measures. Over the past four-years they have already undertaken 193 different conservation projects. These include insulation, lighting controls, office equipment, behavioural and awareness campaigns. Docklands21 is developing a plan to save an additional >6GWh of their energy consumption and rolling out support services to the 40 firms already involved.

Initially, eight companies in the IFSC, with a collective energy bill of over €5 million and 7,620 employees, came together in a pilot project to reduce their energy consumption, company costs and demonstrate quantifiable sustainability credentials, and this has now grown to 40 companies.

**Dublin City Council's Strategic Development Zone (SDZ)** The (SDZ) plan identifies a future 40 hectares of the Docklands to be developed. This includes an estimated €3 billion investment in office space residential units; all built to the highest resource efficiency standards, underpinning Docklands21 ambition.

A key element of the Smart District project will be the identification of opportunities to attract financing to realise the vision for the district. This will identify areas such a public private partnerships, EU, national mechanisms etc..

## Challenges

**Lack of Co-ordination** how do you bring together a wide range of different stakeholders and align projects against priority challenges. Smart City projects have up until recently been poorly co-ordinated across Dublin City Council. The City Council has and is participating in a number of smart city projects in collaboration with academic institutions and businesses. However the approach to date (pre – 2015) has been somewhat ad hoc with the City Council responding to requests from outside agencies rather than proactively setting the agenda and aligning projects/pilots with its own priority needs.

**Knowledge sharing / best practice:** Require more examples of large scale and successful deployments . Understanding the business models - In many cases there are high levels of uncertainty and risk with deployment of smart technologies (distance to market of technology solutions and ability to achieve scale)

**Ownership:** 80% of the land that is to be turned into a smart district is currently owned by the National Asset Management Agency (NAMA). It was part of the repository for bad loans, which came into life after the financial crisis in 2008. Today NAMA wants to rapidly build out prime sites, leaving little time and space for negotiating the right conditions with regards to requirements on infrastructure, social housing, transportation etc. in the Docklands.

**Mobility & Environment:** Up until now, there is no coherent mobility concept that would go along with the development of the new Dockland district. 600.000 m² of new residential and commercial areas will exponentially increase traffic in and around Dublin city centre, if no smart alternative solution is found. The originally planned Metro has been postponed and it is not likely to have Metro access close to the Docklands before 2025. Along with this goes a sensible ecosystem that is linked to the Docklands: Europe's only UNESCO Biosphere reserve in a city. The core zone of the **Dublin Bay Biosphere** directly connects to the Docklands, which themselves are considered as a Biosphere "transition zone". Developing a smart solution for a sustainable transportation towards and within the Docklands is an imperative and a key challenge for the city authorities in Dublin.

**Lack of awareness of proven solutions:** There are few examples of large scale rollouts internationally with robust evaluation and impact measurements. There is also an internal lack of awareness and understating of where the market is in relation to smart city solutions (both in relation to new business models and technology innovation)

**Understanding organisational priorities/needs:** organisational priorities are not well defined – this makes it difficult to prioritise smart city projects and align projects of real value. Work is underway to address this.

**Communication and promotion:** There is already a lot of activity that is disconnected, opportunity to better brand and promote best practice already happening. Building out a Smart Docklands brand.

**Lack of citizen engagement:** Limited engagement with citizens and little articulation of the results and benefits of the various smart city projects (little visibility of existing projects)

**Financing:** How can we attract investment to fund and build out new smart solutions. There is limited awareness of the financing options available. "an initiative that benefits many departments but is to be paid for by only one will often fall by the wayside". There are many funding opportunities including EU (ERDF, Horizon, Innovation Action Fund, Urbact), PPP's and National Investment Funds. However there is a need to better understand these funding mechanisms and to best leverage them for the benefit of the city.

**HR / change management:** Lack of enthusiasm amongst key workers/management to get involved in pilots and to embrace the changes associated with implementation of smarter solutions and new ways of working.

**Current procurement approaches block innovation potential.** Standard approach tends to restrict the level of innovation potential. Need to change the current approach and procure by challenge through challenge setting and competitive dialog rather than specifying solutions

**Technology risk / interoperability.** The technology becomes quickly redundant. Who takes the risk on this and how do you price it into the contract?

**Reputation risk** - unease at the technology and how it is used - big brother surveillance issues. trust etc

## Good practice

Dublin City Council has extensive experience in working on a wide range of European and International Projects. This includes multiple projects under FP6, FP7, Horizon 2020, InterReg and Urbact. Through its Office of International Relations it has also developed a number of international collaborations designed to support economic development opportunities and exchange of best practice. This includes active relationships in the areas of technology innovation with cities such as San Jose (Silicon Valley), Guadalajara in Mexico, and Barcelona.

Dublin City Council is engaged in the following collaborative initiatives:

- City Protocol – Founding Member http://cityprotocol.org/
- Cities Standards Initiative: https://futurecities.catapult.org.uk/project/cities-standards-institute/
- Open and Agile connected cities initiative: http://www.oascities.org/open-and-agile-smart-cities/
- Founding member of the Wireless Broadband Alliance (CCAB) Connected City Advisory Board.
- Founding Member of the TM Forum Smart Cities Global Leadership Team. https://www.tmforum.org/smart-city-forum/

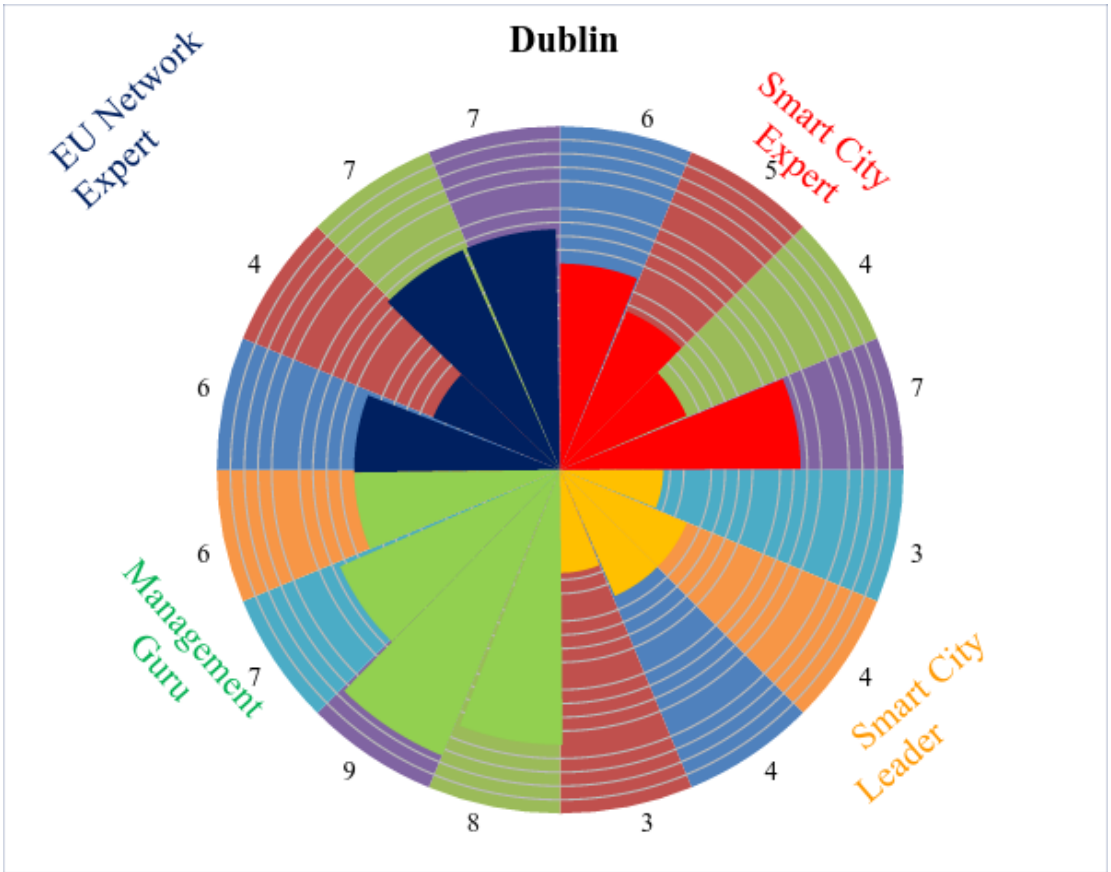
# Section 6

## SWOT- analysis

The analysis of strengths and weaknesses in the relevant action fields for SmartImpact is based on a mixed-assessment approach. Each city was asked to complete a self-assessment by rating the own state of performance in 16 areas of action and expertise. The scale ranges from 0 (not at all) to 10 (best city in Europe). The self-assessment by the city representatives was matched by an assessment of the Lead Partner and the Lead Expert after the baseline visit.

The figure below shows the merged values of the self-assessment and the SmartImpact LP/LE assessment.

**Figure 1: SMART IMPACT SWOT Analysis for Dublin**




| SmartImpact Assessment – scale = 0 - 10 | | |
|---|---|---|
| 1 | Experience of Dublin with smart city projects | **6** |
| 2 | Decisions by the council on smart city / smart districts | **5** |
| 3 | Level of expertise within municipality | **4** |
| 4 | Level of expertise within ULG | **7** |
| 5 | Priority of Smart City / Smart district at political level | **3** |
| 6 | Clear smart city goals and measures defined | **4** |
| 7 | Degree of implementation of smart city measures | **5** |
| 8 | Existence and implementation of monitoring framework | **3** |
| 9 | Well developed ULG (established working relatinship) | **8** |
| 10 | Local coordinator attached to decision making in city | **9** |
| 11 | Local coordinator linked to business, research & civil society | **7** |
| 12 | Organization of strategic cross-cutting issues within administration | **6** |
| 13 | Existing transnational exchange on smart cities | **7** |
| 14 | Application of Operational Programmes (ERDF, Jessica, ESF) | **4** |
| 15 | Experience in EU city networks (URBACT, Polis, Eurocities etc.) | **7** |
| 16 | Successfully applied to EU-funded innovation projects in last 5 years | **7** |

## Conclusions and recommendations

In summary, Dublin has a large potential to channel significant upcoming private investments into smart and sustainable district development processes. The key challenge that needs to be addressed is the coordination and governance of complex planning and investment processes at the interface of the municipal institutions and private corporations. Increasing the "smart city" capacity of the city administration will be key for leveraging this potential throughout the years to come. This will refer to the capacity to:

a) deal with cross-cutting issues within the city administration with regards to planning, procurement and operation
b) systemically calculate costs and benefits of a large range of alternative technologies and infrastructures,
c) set the right frame for private investments into public goods
d) collaborate on a regional level with other Dublin municipalities on cross-boundary solutions like mobility, management of extreme weather events, , environmental protection and overall economic development

Throughout SmartImpact the focus should thus be put on the following points:

**The municipal role in smart city business models and replication**

1. Smart solutions operate in the private realm and in the public realm. This implies that smart solutions create benefits for different kinds of stakeholders, amongst which the municipality is a core stakeholder. The benefits of smart solutions for municipalities are broad, but they are often difficult to measure and they differ from solution to solution individually. Working with a concept of Smart City Modules will allow the SmartImpact network to identify costs, benefits, risks and the necessary preconditions for a broad range of smart city solutions. This then will lead to a much better understanding of the municipal role in financing, co-coordinating, implementing and operating different smart city solutions. Ultimately it will allow for categorizing Smart City solutions according to their costs and benefits for cities.

**Organisational development within the municipality**

2. Which institutions and structures are most likely to successfully co-ordinate cross-departmental collaboration within the city administration of Dublin? Looking at the broad spectrum of organizational approaches within the SmartImpact network will help to understand what structures and frameworks increase the likelihood of successfully delivering on planning, procuring and monitoring complex systems solutions that touch upon various departments and offices (energy, lighting, traffic, waste, public space etc.).

**Regulations and incentives - new urban governance for smart investments**

3. What is the regulatory frame that real estate developers and private investors need, in order to leverage public benefits through their investments into the Docklands? What incentives are needed to activate local businesses to co-invest into smart solutions and efficient infrastructures? Learning from examples from across Europe and working towards own regulations and incentive models will help Dublin to set the new governance frame that is necessary to guide a future smart district development.

# SMARTIMPACT

# Baseline Review Report – Eindhoven, NL


European Union
European Regional Development Fund

Connecting cities
Building successes

# Contents

## Summary

The City of Eindhoven demonstrates impressively how a living-lab approach towards a smart city can successfully build on good and intensive co-operations between the municipality, the private sector, research and civil society. Eindhoven has the ambition to be energy neutral by 2045 to contribute to a drastic reduction of the overall CO2 emissions and to sustain human life in the city. With this target, Eindhoven put the engagement of all stakeholders in its policy and decision-making processes at the center of its policy processes. For Eindhoven creating a "Smart Society" is the way how to achieve these ambitious goals.

Throughout the last 5 – 10 years Eindhoven has started several important pilot projects. With two different districts under redevelopment, Eindhoven is experimenting how to convert a brownfield and former production site and a social housing area from the 1960s into smart districts.

Eindhoven now wants to take the next step and make use smart solutions and smart processes as the normal way of providing urban services and developing and operating the city. Therefore it needs to make sure that it enhances municipal learning and communication process, provides for new finance and investment models and fully engages with civil society around the deployment of open data and data-driven urban services.

# Section 1

## SmartImpact in Eindhoven – aims and objectives

Eindhoven defines its development into a smart city and smart society as follows:

*"Smart City Eindhoven is: a city that uses the power of technology, ICT (open data and fast connections) and design (thinking) for the benefit of its citizens. A city that actively offers test labs for business and knowledge institutes, with the aim of enhancing welfare, jobs and sustainability. Application fields are for instance energy, traffic, public space and smarter and better organization of care, education and culture".*

SmartImpact will drive forward to the smart agenda for Eindhoven municipality, bringing together senior city executives, stakeholders and provide a basis from which to deliver projects across the city. Cutting across a range of services, policy and geographical area, the need is for smart city technologies to improve service delivery for better outcomes and reduced inefficiencies. The municipality needs to embrace innovation in the way it carries out its core business. Eindhoven will produce an integrated action plan (IAP) that provides a roadmap to planning, financing and operating smart solutions and services as key aspect of everyday city development and maintenance. The desire is to mainstream smart city approaches into the operational environment of the city in order that all aspects of city delivery think smart.

The goals of the IPA can be described as:

**Goal 1:** Developing (and potentially testing) workable models to enhance and finance regular maintenance/governance programs in order to get a step-to-step transformation of city areas towards a smart city while the public space becomes Smart City and field lab proof.

**Goal 2:** Developing a vision/strategy for the city centre: in this the city will also try to develop & prototype methods for quick and clear interventions of the multi-stakeholder demands, solutions and value models, including the conditions and standards

**Goal 3:** Realisation of a state-of-the-art city beacon program in the center of the city, including development of pilots for multi-thematic usage.

**Goal 4:** Development of suitable third party cooperation on creation, analysing and using (open) data based ambitions.

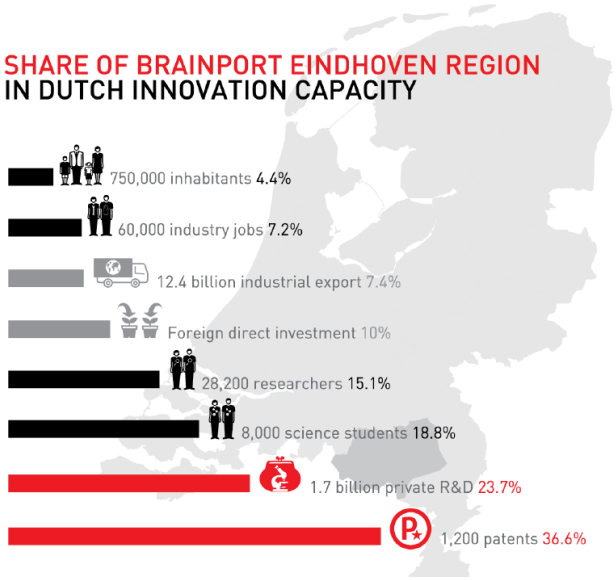
# Section 2

## Short description of the city

The City of Eindhoven is the fifth largest city in the Netherlands with over 230,000 inhabitants (ca. 1,4% of the total population). In the Greater Eindhoven region more than 750,000 people live and work. Eindhoven is located in the south of The Netherlands and is the centre of the "Brainport Region", today one of the three top economic engines of the Netherlands, delivering about 14% of the national GDP.

The term ‘Brainport’ exists to indicate the specific economic status of the wider Eindhoven Region, next to the other two economic drivers of the Dutch economy, the Seaport Rotterdam and the Airport Amsterdam. It is located in south-west Brabant in the province of Brabant in the Netherlands. Brainport Eindhoven can be considered a ‘triple helix cooperation’ between businesses, governments and knowledge institutes, working together with employers and institutes for professional education. The focus in this region lies in the development of ‘value chains’ which have economic potential: high tech systems and new materials, the creative industry, the food industry and life sciences. At the heart of Brainport Eindhoven region is the city of Eindhoven. Among the numerous innovative and renowned knowledge and research institutes located in this region are for example: Philips, DAF, ASML, TomTom, Eindhoven University of Technology, TNO Industries and Technique and High Tech Campus Eindhoven. Knowledge industry and manufacturing industry meet each other in the Brainport Eindhoven region. The majority of the technology companies and the research institutes are located within a 40-kilometre radius around the city. Brainport’s geographic boundaries are difficult to define, which is consistent with the relational approach described earlier. The region is characterised by flows of ideas, information and products, a network economy with numerous partnerships across regional boundaries and international frontiers. The triangle Eindhoven - Louvain - Aachen (ELAt) for instance, is an important knowledge area.

Source: City of Eindhoven, 2015




In 2011 the Intelligent Community Forum (ICF), an international think-tank on economy and social development, declared Eindhoven as ‘the smartest region in the world’. The region was praised by the ICF for creating 55.000 jobs in the technology sector in the last 10 years. In 2011 this strategy became the core of the ambitious project ‘Brainport 2020’ which is considered as one of the economic motors of Dutch economy. The strategy of Brainport Eindhoven is based on 4 pillars:

- people (human capital and entrepreneurship);
- business,
- technology (which includes design)
- basics (the facilitation of conditions by governments such as quality of life and location climate).

The Brainport Eindhoven region belongs now to the three European top regions when it comes

to patent density. The region has with 36% the largest share in the overall Dutch private R&D expenditures; 55% of the Dutch patents and 35% of the Dutch export is stemming from this region1 .[1]

## Short overview of national/ regional policies and incentives

Essential within the Smart Eindhoven approach is information. Information to create solutions, to get information on effects and to foresee relevant developments. For this the usage of multi-stakeholder information (data) is key. For this Eindhoven plans to roll out a robust (open) data platform, including a processing unit and dashboard and data analytic tools.

Government, citizens and business alike plan to offer their data, according to common and agreed standards, and develop and implement the integrated solutions that raise the quality of life in Eindhoven. In this way technology contributes to achieving the behavioural change they need for increased energy efficiency in housing and mobility leading to reductions in energy consumption and environmental improvements.

With this strategy Eindhoven and its triple helix partners, are setting out a smart sustainable future for the city and region. At the same time Eindhoven continues to place the engagement of all stakeholders at the centre of its policy processes. This is best shown by the city wide commitment to work according to the principles of "The Natural Step". On the road to a sustainable Eindhoven our activities are guided by the 4 principles of the Natural Step.

However there is no strategic framework or measurable overall smart city development goals that Eindhoven. Strategies start at a lower, sectoral level: Eindhoven works with jointly developed thematic roadmaps. The Energy roadmap, Lighting roadmap, the Sustainable Urban Mobility Plan ('Eindhoven Op Weg!'), setting out the overall vision and strategic goals, and also the expected timeline and means necessary to achieve these results. Stakeholder and citizen awareness, participation and engagement are of vital importance to the city and have only become more acute in recent years as the municipality has been forced to deliver more with less.

*Smart city initiatives:* Eindhoven has the ambition to be energy neutral by 2045 to contribute to a drastic reduction of the overall $CO_2$ emissions and to sustain human life in the city. With this target, Eindhoven put the engagement of all stakeholders in its policy and decision-making processes at the center of its policy processes. This is best shown by the city-wide commitment to work according to the principles of "The Natural Step".

The Eindhoven's political commitment to offer its urban space as a living lab for innovative, co-created, solutions strongly supports this Smart City process. So far, Eindhoven has implemented a series of smart city initiatives based on quadruple Helix Model (Shown in **Error! Reference source not found.**). These initiatives include development of thematic roadmaps, Energy roadmap, Lighting roadmap, the Sustainable Urban Mobility Plan ('Eindhoven Op Weg!') and the ICT-Kompas.

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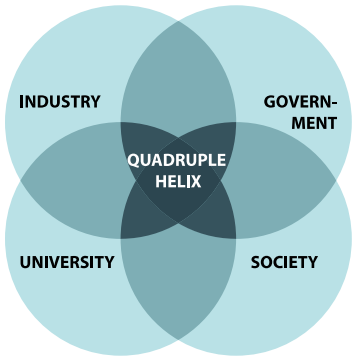
[1] http://www.regionalstudies.org/uploads/Horlings_Leadership_in_Brainport_Eindhoven_paper_RSA_conference_2013.pdf

These roadmaps set out the overall vision and strategic goals, but also the expected timeline and means necessary to achieve these results. The on-going projects include

1) open data platform, which is the core of the smart Eindhoven approach. It is focused on the roll out of a robust data platform including a processing unit and dashboard.
2) Smart city studio - The city of Eindhoven introduces the concept of ‘testing grounds’ as a means to open the city to anyone who can add to the development of the city often recalled as ‘Brainport’. The idea behind it is that not only the municipality ‘makes’ the city, but its citizens, its entrepreneurs and its higher education; this requires an ‘open’ city that could facilitate initiatives and that leaves the leading role in the improvement of an area or neighbourhood to anyone who fits that role the best.
3) Smart city lighting - The consortium of Philips Nederland B.V./Heijmans Wegen B.V. is the proposed contractual partner to use Eindhoven as a pilot area in coming years, for the development of intelligent lighting applications in the public space. The tendering procedure was based on the 'Vision and Roadmap Urban Lighting Eindhoven 2030’. The municipality has a clear goal: to use lighting in the public space in such an innovative way that it contributes to improving the quality of life in the city.



Quadruple Helix Model

# Section 3

## Description of the baseline review focus

The baseline review for Eindhoven focussed on the identification of the current state of smart city developments in Eindhoven and the achievements made in the past and the challenges that still exist today.

Over the past years the Eindhoven has developed and successfully implemented a large amount of pilot projects and inspiring IT-based solutions.

Examples include:

- PLUS
- Triangulum
- Smart Lighting in Eindhoven (Enigma)
- CICC (Complex Challenges Innovative Cities)
- Community Portal Open Eindhoven & SOCRATA
- WIRELESS EHV 365
- Eindhoven City Beacons (being implemented)
- Dynamic traffic Management (under construction)
- Dedicated network for social city developments (Under development)
- Several thematic Roadmaps
- The environmental measuring network AIREAS

The focus of the review is to examine current activity in that falls under the smart banner and look at what steps are necessary for the city in order to achieve its ambitious development goals. The process is to develop the right tools and processes that support the City of Eindhoven in pushing the lessons learned from pilot projects to become core of the way Eindhoven is planned, financed, developed and operated.

**The integrated action plan will focus on the following:**

- Mainstreaming of “Smart Solutions” and cross-data driven processes within the daily operations of the city administration
- Development (& possibly test) of workable models to enhance & finance smart maintenance/governance programs
- Understanding best practice case studies of existing smart city districts and successful deployments of smart solutions that will inform future opportunities.
- Development of key targets that can be used to monitor success and help prioritise pilot selection.
- Identify new financing opportunities
- Development of a strategic approach to a smart city - integrated management of urban development and maintenance processes based on clean and connected technologies,

which is based on clear objectives and cross-sectoral management.

# Section 4

## *Baseline review activities*

1. Assessment of Indicators through the Eindhoven City Council

2. Baseline visit of Fraunhofer IAO to Eindhoven within the EU-project Triangulum in September 2015. Subject of this visit was to assess the current state of activities in Eindhoven that address Smart District development projects.

3. Within this baseline visit 21 interviews were conducted with local stakeholders, political leaders and local smart city practitioners. Amongst others the Mayor of Eindhoven, Rob van Gijzel, and several representatives of the URBACT local Group (e.g. Volker Wessels, Woonbedrijf, KPN) were interviewed. The content for the baseline for SmartImpact had thus been assessed already in September.

The Eindhoven baseline review was completed through a personal meeting between the Lead Partner, the lead Expert and representatives of Eindhoven during a 4-days smart city conference in Berlin and through a follow-up phone conference to agree on the concrete goals.

# Section 5

## *Key findings:*

Eindhoven is a highly advanced city in terms of applying smart technologies and ICT for improving urban services and realizing a sustainable development. Numerous innovatin-oriented smart city projects have been trialled and executed in Eindhoven already. The municipality is in the process of developing a smart city strategy, which will work as key instrument to integrate the sector-specific roadmaps for the urban development with the living labs that are already underway. While having started many pilot projects and initiatives around data, sustainable development and smart technologies, Eindhoven has not yet managed to mainstream lessons learned from pilot projects into the everyday business of cit development and operation, and to create a strategic approach towards a smart city. The Smart City Strategy Eindhoven (to be finalized 2016) is planned to

- create one solid (integral) communication program around Smart City (projects), their future and their benefits,
- develop better access to financial means
- develop multi-stakeholder business cases for a future proof realisation,
- improve the government (internal & external)
- Upscale the living labs

Through **SmartImpact** Eindhoven wants to investigate how “standard” maintenance & governance programs in public space can be used for creating the required basics needed for

(future) smart city functions on all relevant themes.

**Ambition**: **the development (and possibly test) of workable models to enhance & finance regular maintenance/governance programs** in public space in order to get a step-to-step transformation of city areas towards a smart city while the public space becomes Smart City & field lab proof. Part of the ambition is to seek the best model in which regular budgets create and enhance innovation budgets and how to deal with the problems of the current models in which the different budgets aren't synergetic to each other.

Furthermore Eindhoven is currently working on a number of developments such as:

- **Developing a vision/strategy for the city centre**: in this the city will also try to develop & prototype methods for quick and clear interventions of the multi-stakeholder demands, solutions and value models, including the conditions and standards

- **Realisation of a state-of-the-art City Beacon program** in the center of the city, including development of pilots for multi-thematic usage. The big challenge is to determine the different forms of usage and in these forms: the impact, the willingness of usage by users & content providers, the information politics (legal, esthetic, financial, etc.), thematic service development, etc.

- **Development of suitable third party cooperation on creation, analyzing and using (open) data based ambitions**. This includes the question how to come from a thematic challenge to the data collection/usage required for the required durable solution in an often multi stake holder environment. In this multiple challenges arises around the best way to deal with this information and to make participation of third parties attractive, acceptable and allowed.

## *Challenges*

Although Eindhoven is highly advanced as a "Smart City" and is successfully transforming two districts into "smart districts" (Eckart-Vaartbroek and Strijp S), there remain several challenges to deliver smart solutions and realise smart districts:

- Individual sectoral/thematic roadmaps and ambitions which lack an integrated holistic geographical approach. Also smart city projects still tend to be isolated from colleagues in the municipal organisation. Currently an integrated action plan around Smart Cities is being developed for the upcoming two years.
- From isolated smart city living labs in dedicated areas, Eindhoven is moving towards larger integrated solutions at district level. The next step is the up scaling from successful solutions from Living Labs to city level and beyond.
- The increasing importance of joint development of durable social/economic value and /or business cases. Projects with a number of public/private partners based on expertise often have intrinsic friction with their business models
- Eindhoven has developed clear policies on ownership and usage of data however there is no practical experience with the use of these policies.
- Dissemination – there is a backlog of usage of knowledge and experiences from smart city solutions to other projects, activities and colleagues than needs to be shared.
- Challenges to integrate in public space, required for smart city transitions, in "regular"

city projects and programs
- Smart city development means iterative steps, flexibility to react on the unexpected and an open mindset

Taken together the following challenges need to be addressed for a successful development of smart districts in Eindhoven for the future:

**Mainstreaming "Smart Investments" within the city administration:** normal workers within the city administration or municipal enterprises need to better understand the relevance of smart city solutions and what this actually means for their everyday work. A lot of money is invested, but usually this is done without looking beyond their own office. Facilitating the uptake of responsibility for smart city issues through the personnel of the city administration is a key issue that needs to be addressed in Eindhoven. Many smart district pilot projects have been successfully implemented in Eindhoven. Now the lessons learned need to be transferred into everyday business of the city administration, municipal enterprises and third parties. Departments and offices need to identify themselves as parts of a connected organism that builds on using data and IT-based tools for increasing the intelligence in service operations and for enhancing the efficiency and reducing costs of urban processes and services in Eindhoven.

**Knowledge:** Eindhoven needs to acquire better knowledge on smart city / smart district related issues on two scales:

a) Better understand which smart solutions are available under what conditions, and their potential benefits for the entire city. The goal is to think in holistic value models instead of simple business models related to smart solutions.
b) Better understand the new and integrated processes that are necessary to plan, finance, build and operate connected and smart solutions that relate to multiple stakeholders.

**Strategy and Management**: A lack of knowledge on the availability of smart solutions and their potential benefits has a significant impact on strategy. An unclear picture of own benefits leads to unclear priorities and often also unclear targets with respect to smart solutions. Eindhoven needs to improve its strategic grip on smart solutions, coming to an integrated management of urban development and maintenance processes based on clean and connected technologies, which is based on clear objectives and cross-sectoral management.

**Finance:** The budgets for urban development and maintenance are shrinking. At the same time the demand for high-quality public services and sustainable infrastructure are is on the rise. Therefore Eindhoven needs to find new forms of public-private co-investments and financing instruments that would make use of private investments to support the development goals of the city.

## *Good practice*

Eindhoven has extensive experience in working on a wide range of European and International Projects. This includes multiple projects under FP6, FP7, Horizon 2020, InterReg and Urbact.

Eindhoven is engaged in the following initiatives:

- **Triangulum:**
  Triangulum is one of three large smart city lighthouse demonstration projects granted

under HORIZON 2020 in 2014. As a lighthouse city Eindhoven has been granted 6.4 Mio. EUR to implement large-scale smart city demonstration projects within the districts of Strijp-S and Eckart Vartbroeck. The objective of Triangulum in Eindhoven is to demonstrate an integrated approach towards developing smart districts through a combination of Energy- Mobility, - Building technologies and integrated infrastructures. Eindhoven has thus combined a set of technology-based projects to enhance energy-efficiency in buildings, provide renewable energies and sustainable mobility to the districts based on an ICT and data-related approach. Triangulum is currently in the implementation phase. By 2018 all smart solutions will be installed.

- **Plus:**
  The overall objective of PLUS is to contribute to the achievement of the EU CO2 emission reduction objectives and those committed to by cities that have signed the Covenant of Mayors by strengthening and enhancing local and regional public policies in the field of public lighting through the capitalization of existing best practice in the partnership.

- **ENIGMA**
  The objective of the enigma project is to initiate a pre-competitive procurement process geared towards the establishment of an intelligent public lighting infrastructure for the city of Eindhoven which allows for the delivery of new and innovative services for citizens.

- **CICC (Complex Challenges Innovative Cities)**
  The CCIC project main OBJECTIVE is to improve regional policies by enhancing innovation in the public sector and increasing collaboration between local and regional authorities, public entities and other stakeholders. Thus, CCIC aims to increase the levels of innovation in 13 diverse partner-regions.

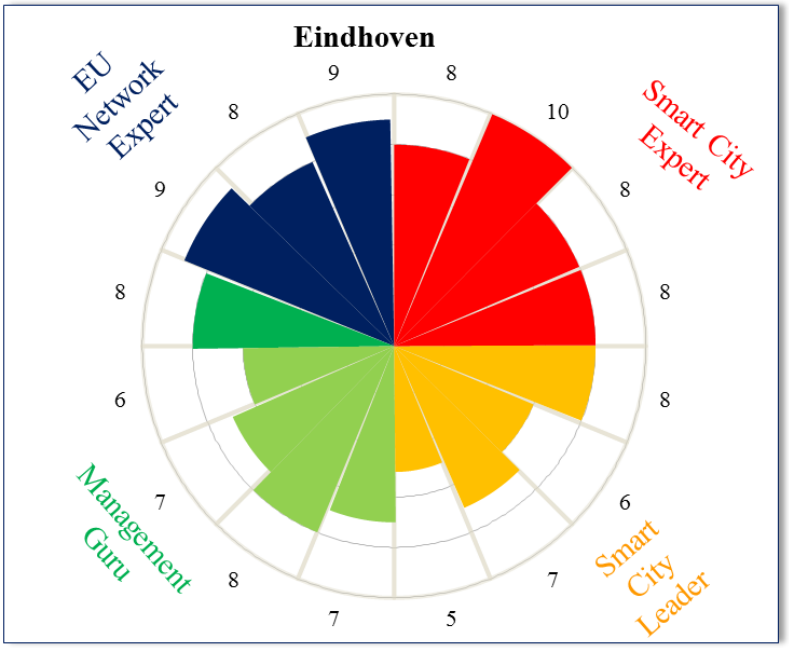
- **Roadmaps for Energy (R4E)**
  R4E is a project funded under the European Union's Horizon 2020 research and innovation program. In the R4E project the 10 consortium partners will work together to develop a new type of energy strategy, which they call their Energy Roadmap. R4E focuses on developing vision creation and roadmapping capacities within municipalities to initiate joint activities to spur development and implementation of innovative energy solutions in cities.

# Section 6

## *SWOT- analysis*

The analysis of strengths and weaknesses in the relevant action fields for SmartImpact is based on a mixed-assessment approach. Each city was asked to complete a self-assessment by rating the own state of performance in 16 areas of action and expertise. The scale ranges from 0 (not at all) to 10 (best city in Europe). The self-assessment by the city representatives was matched by an assessment of the Lead Partner and the Lead Expert after the baseline visit.

The figure below shows the merged values of the self-assessment and the SmartImpact LP/LE assessment.




| SmartImpact Assessment – scale = 0 - 10 | | |
|---|---|---|
| 1 | Experience of Eindhoven with smart city projects | **8** |
| 2 | Decisions by the council on smart city / smart districts | **10** |
| 3 | Level of expertise within municipality | **8** |
| 4 | Level of expertise within ULG | **8** |
| 5 | Priority of Smart City / Smart district at political level | **8** |
| 6 | Clear smart city goals and measures defined | **6** |
| 7 | Degree of implementation of smart city measures | **7** |
| 8 | Existence and implementation of monitoring framework | **5** |
| 9 | Well developed ULG (established working relationship) | **7** |
| 10 | Local coordinator attached to decision making in city | **8** |
| 11 | Local coordinator linked to business, research & civil society | **7** |
| 12 | Organization of strategic cross-cutting issues within administration | **6** |
| 13 | Existing transnational exchange on smart cities | **8** |
| 14 | Application of Operational Programmes (ERDF, Jessica, ESF) | **9** |
| 15 | Experience in EU city networks (URBACT, Polis, Eurocities etc.) | **8** |
| 16 | Successfully applied to EU-funded innovation projects in last 5 years | **9** |

## Conclusions and recommendations

Over the past years the city of Eindhoven has developed and successfully implemented a large amount of pilot projects and inspiring IT-based solutions. Eindhoven is clearly one of the most advanced cities in Europe when it comes to innovation and living labs for sustainable and connected urban technologies. The triple helix approach has been successfully implemented in Eindhoven and can now serve to push the smart city agenda for Eindhoven. Yet, there is no strategic framework or measurable overall smart city development goals that Eindhoven is following. Working through SmartImpact Eindhoven will be able to improve the strategic approach towards a smart city and the management of smart technologies within the municipality.

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SmartImpact
Local Impacts from Smart City Planning

# SMARTIMPACT

# Baseline Review Report – Porto, PT

Porto.

European Union
European Regional Development Fund

Connecting cities
Building successes

URBACT

**Contents**

## Summary

Porto is well placed to develop its smart city aspirations building on its existing portfolio of projects, the commitment of the municipality and its strengths as a centre for start up and scale-up innovation businesses. The development of an Integrated Action Plan (IAG) will enable a coordinated approach between the municipality and other stakeholders and bring together key areas on green technology, city reform and urban renewal. By developing and implementing the IAG, the aim is to create a set of instruments which will reduce the risks of public investment and attract private investment.

# Section 1

## *SmartImpact in Porto – aims and objectives*

### The integrated action plan will focus on the following:

The results of the implementation of the Integrated Action Plan (IAG) are related to the main goals below:

• Cooperate, share and learn from examples of good practice that may be identified in the project;

• Learning to identify accurately the role and importance of each stakeholder in the "Lighthouse[1]" and models of commercial development of "smart city districts."

• Learning to identify, analyse and develop pragmatic solutions to the set of risks associated with the development of "smart cities"

• Find, develop and adapt alternative forms of public funding, promoting the participation of public-private financing.

[1] Porto is a "follower" city in the Horizon 2020 Lighthouse project "Grow Smarter"

# Section 2

## *Short description of the city*

The city of Porto is a major city in Portugal and the centre of one of the main urban areas in Southern Europe, with significant importance at a European scale, particularly on what concerns competitiveness and territorial cohesion. The city is undoubtedly an economic, educational and cultural centre of vital importance for the development of the region and the country. Porto is the centre of a large metropolitan area with more than 1.8 million inhabitants and a 2.040 km2. The historic centre of Porto was classified by UNESCO as a World Heritage Site in 1996. Porto is a major centre of research and innovation, with a rapid growing sector of creative industries, and the centre of the nation's main exporting region.

Porto City has around 220.242 inhabitants (census 2014), down from over 300,000 in 1991. The northern region of Portugal, where the Porto stands out as the most significant city, is heavily dependent on manufacturing industry, activities, businesses and services. This region was responsible for 38% of Portuguese exports, in 2014. The unemployment rate in Portugal has been growing rapidly in the last years, and in 2014, Porto 15,6% of inhabitants were registered as unemployed.

However in 2014, 8,2% of Portuguese adults were involved in startups or managing new businesses[2] and Porto has 28% of Portugal's "scale up" businesses.

Tourism has come to be an important and significant development in recent years. In less than ten years, the number of overnight stays in the region increased from 3.3 million in 2004 to 4.9 million in 2013[3]– one of the highest growth rates in the country and in 2012 and in 2014 Porto won the European Best Destination Award.

[2] SEP Monitor - Portugal Rising: Mapping ICT scale ups

[3] National Institute of Statistics; Reports of Touristic Activity, 2004-2013


## *Short overview of national/ regional policies and incentives*

In 2013 the new constitution of the Porto Metropolitan Area, was approved establishing an area comprising of 17 municipalities. [4].

The AMP (Área Metropolitana do Porto), provides a platform for the seventeen mayors of the metropolitan area that allows for discussion about metropolitan policy issues. It does not have any formal powers. Portugal is divided into eighteen districts, of which Porto District is one. The state has also appointed a North Regional Coordination and Development Commission (CCDRN), aimed at adding a regional focus on national planning and development responsible for the management of Regional Operational Programmes. It acts as a regional think-tank, carrying out studies on a wide range of spatial development issues. Direct fiscal transfers from the central state account for 85-90% of local revenues. The central state thus has a strong influence in local policy making, while a strong regional layer is absent.

A key challenge for Porto is the lack of influence in transport policies and investments into the mobility system. All transport-related issues are dealt with at the national level, leaving the municipal authorities in Porto with little freedom to improve the mobility system according to the local needs.

[4] Arouca, Espinho, Gondomar, Maia, Matosinhos, Oliveira de Azeméis, Paredes, Porto, Vila Nova de Gaia, Santa Maria da Feira, Santo Tirso, São João da Madeira, Trofa, Vale de Cambra, Valongo, Vila do Conde and Vila Nova de Gaia.

# Section 3

## *Description of the baseline review focus*

The Municipality of Porto has only recently started to focus on developing a "Smart City Porto". Becoming "smart" for Porto means a whole city approach and to:

a) Use ICT, sensing and data to improve municipal services and urban processes

b) Use an intelligent and integrated approach to create entrepreneurship and ICT-focussed companies and start-ups that eventually become the backbone of an innovation-driven economy

c) Combine data on the municipal level across all departments and subsidiary institutions to enhance transparency and improve responsiveness to existing needs and problems in Porto's society

d) Invest into organizational development within and across the municipal departments in order to better manage a smart city across the responsible units.

The University of Porto previously lead smart city work in Porto, focused mainly on ICT-based solutions, the development of digital start-ups and connected devices and apps. Since 2014, the municipality has started to take a leadership role on the smart city development and it is building up a wide stakeholder group with the University, local companies and other stakeholders. Porto aims at centralising the smart city leadership role within the municipality.

There is a short term priority to complete the ICT platform and expand available data sets which will underpin a Smart City management team. This central multi-agency team (Integrated Management Centre) started to work together in July 2015. It covers health, tourism, environment, mobility, city maintenance, police and fire department. This is important work in establishing the roots of a multi-disciplinary approach to city management. Porto wishes to grow a shared understanding with citizens, other stakeholders in both public and private sectors. This multi-agency approach will help to support this. Also, the City is seeking views of its citizens through the use of apps, citizen surveys, consultations and contests.

A main focus for Porto is to "scale up" start-ups and SMEs in Porto. And to look at the role of the Porto Innovation hub as a showcase/showroom for Smart Porto.

<u>Organisation in Porto</u>

The Mayor and officers are totally aligned on the Smart City Agenda for Porto, looking to build a consensus across other partners. They are aiming to develop an independent unit to focus on technology and infrastructure – Porto Digital – which will cover data management, analytic and operating systems and will act as a smart city "utility company" for the city. The city will focus on strengths such as Tourism and the Start-up Community. Although tourism is not especially "smart" in itself, it is well placed to communicate with visitors to the city with up to date information which in itself can aid in city planning.

The large number of start ups in the city means that there is a need to further develop companies that can "scale up" to create jobs and economic growth and to identify at an early stage those companies that are suitable for growth and help them on their journey.

The city has strong universities, many workers and entrepreneurs with knowledge economy

skills and a perception within the region and the country of being a good place to develop a new business. The city wants to build on these key competitive advantages to accelerate the success of these new businesses.

# Section 4

# *Baseline Review Activities*

The Porto baseline methodology was developed during a 2 day study visit in December 2015, attended by the SmartImpact expert, Alanus Radecki from Fraunhofer Institute and the project coordinator and head of future cites from Manchester City Council. During the two days a series of presentations on projects activities, and start up companies alongside visits to the Porto Management Centre, Centre of Competence for Mobility (CEIIA) and the University of Porto and Science Park (UPTEC).

**Section 5**

***Key findings***

In February 2010, the Porto Digital association founders, led by the City Council, launched a new strategic plan, which aimed to foster the development of Porto as a knowledge based city and in which innovation has paramount importance, leveraging the investments by the municipality since 2005 on a large scale fibre optic backbone and an advanced ICT platform.

Porto has also designed and embraced strategy aiming at implementing measures for the implementation of Smart City principles. Citizen's centred sustainability, energy efficiency; R&D and economic growth are the main areas of interest of the City. The implementation of this innovative strategy adopted an interdisciplinary approach in which the city strengths are aligned with the excellence of the work developed by the Academic sector. With the support of reference industry partners, the strategy has contributed to the creation of hundreds of qualified jobs transformed the city centre into a place where people, especially young entrepreneurs, are inspired by a new risk culture and integrated in a new multicultural and international ecosystem. As a result the city is now attracting more people for the city centre, creating new jobs, developing solutions required by citizens, reducing social exclusion, and increasing the city security.

As an example of the impact of the aforementioned strategies, the University of Porto was awarded a grant of 1.6M€ from the FP7 Capacities program, justified by the development of the Porto Living Lab and the expansion of the Centre of Competence in Future Cities of the University of Porto. Also as another example of this strategy 'impact, UPTEC, the Science and Technology Park of University of Porto, won the RegioStar 2013 award in Smart Growth.

Another example is the Porto´s Sustainable Energy Action Plan (SEAP-P), which was created aiming at responding to the commitments assumed under the Covenant of Mayors. The Municipality together with AdEPorto (Agência de Energia do Porto - Energy Agency of Porto) had previously foreseen an Action Plan following the energy diagnosis and $CO_2$ emissions inventory, the Energy Matrix, published in 2007 with data referred to 2004. The Porto Smart City strategy is fully aligned with the sustainable Energy action plan developed. The interventions in progress reflect this this alignment of strategies. The rehabilitation of the different areas of the city take into consideration the energy efficiency of buildings, the reduction of CO2 emissions and the behavioural transformation of citizens by involving them

in the decision making process.

Within the strategy of the city, several initiatives have been undertaken with a special focus on the implementation of the projects in accordance to the Porto´s sustainable strategy. With the support of the designed strategies (essentially based in Porto's Sustainability Strategy of 2009), Porto has been implementing the several projects aiming at addressing sustainability and energy efficiency issues.

Porto's SEAP defines ambitious goals for greenhouse gas reduction in several areas, but foremost important is to highlight that the new smart City Strategy expands this targets to new areas. For instance, the public lighting infrastructure is already being replaced by a LED technology and the end of 2015 at least 10% of the total infrastructure will be replaced

Equally a Local Action Plan was developed in the context of the CSI (City Sustainable Investment) programme (integrated in the URBACT initiative), conceived as to explore European Structural Funds to achieve a smarter city. Amongst the objectives of this Plan, it is important to emphasise the creation of a UDF (**Urban Development Fund)** specialised in sustainable and affordable projects, and the strengthening of technical training and information improvement.

The Local Action Plan comprises three main actions: Support Fund for the Renovation of Buildings of the Historic Centre of Porto; Technical Assistance; and Pilot Project.

Porto Municipality has been consolidating the local ecosystem for the creation of a multidisciplinary and cross-sectorial strategy for the implementation of the Smart City concepts.

Within this strategy, Porto Digital, a company owned by the Municipality of Porto, has emerged as one of the main organisation/infrastructure capable of supporting this intervention.

The aim of Porto Digital is to contribute decisively to a structural change in the operating mode of the city, to make it ready to improve and address the challenges. Recognizing the difficulty of this task, four key points were conceived as a goal to achieve measurable results:

- **Education** - make a qualitative leap in terms of infrastructure to support the use of ICTs in education covering all the way from primary school to university and R & D laboratories.
- **Employment** - to increase the competitiveness of the business fabric of the city of Oporto and make it more attractive for investment.
- **Bureaucracy** - reduce inefficiency and bring citizens closer to the public administration.
- **Quality of life** - improving urban quality of life for residents, workers and visitors to the city of Porto.

Porto Digital will act at several levels, to ensure that citizens, academia, industry and Public Authorities can cooperate, benefit and be active partners in the process of creating a Smarter City. Porto Digital acts therefore at the level of:

- **Infrastructure** – to allow a generic access to the digital world (looking at digital as a basic services, equivalent to energy, communications, water or sanitation)
- **Promotion** - enticing real communities to the digital world, looking to its articulation with the real world by producing contents in areas such as scientific, informative, tourist, recreational and cultural
- **Accessibility** - spreading access points to the Internet and services throughout the city
- **e-Government** - redesigning administrative processes, exploring the notion of e-citizens

and adding transparency to local government

- ***Sub-sectorial projects*** - representing an intervention at the level of a sector area (such as employment, economy or culture) aiming at modernizing the economic fabric and increasing competitiveness through business cooperation activities, research and development, investment attraction, increased productivity and increased qualified employment.

The urban strategies for smart city and sustainable development include projects and programmes which, in some cases are already being implemented. In this context it is important to highlight projects such as Porto Living Lab (Future Cities) in which the main areas of intervention are already identified. In this case, the creation and promotion of a local ecosystem, working as a Living Lab plays an essential role in the entire field. The Porto Living Lab is the result of a long term partnership between the Porto Municipality and University of Porto, with strong support of the Industry and relevant partners.

The Porto ecosystem, developed in the last years aims at turning Porto into a smart city, by:

- Providing it with a wide range of sensors and communication equipment, thus creating the conditions for future research and development using advanced technologies for data collection;
- Implementing solutions for Smart governance and monitoring. Several initiatives are already in place and more are being programmed for administrative simplification and participatory governance;
- Increasing visibility and public awareness for different fields such as sustainability, mobility, urban planning and information and communication technology;
- Promoting energy efficiency through refurbishment, innovative technological solutions and community participation;
- Increasing the usage of alternative energies ( solar , biomass , geothermal ) in order to reduce the dependency for the classic energy sources ( coal, petrol )
- Supporting companies at different stages, from start-ups to scale-ups and stimulating public and private investments;
- Implementing integrated solutions for mobility, through the creation of integrated infrastructure and mobility and urban planning. Implementing the electro mobility and sustainable urban transportation and traffic.
- Separating waste collection and recycling implementing measures for citizen behaviour transformation
- Innovative PPP financing schemes for Smart City Projects.

**Realisation**

The stakeholders involved in this process include the structure described below.

The governing bodies of the Municipality of Porto are the City Council (the executive office) and the Municipal Assembly (deliberative body). Porto Digital will, as described above, act in different domains to ensure the cooperation between the stakeholders of the city.

As an example of other stakeholders involved from the City side, the urban regeneration plans in the city centre are managed by Porto Vivo, SRU - Sociedade de Reabilitação Urbana da Baixa Portuense, S.A. (Society of Urban Rehabilitation of the Centre of Porto); the Integrated Management Centre will play an important role in the strategy; and APOR (Agência para a Modernização do Porto – Agency for Porto´s modernization) is a partner which creates synergies for better cooperation between public and private entities and promotes the

upgrading and modernization of the urban, industrial and business fabric of the city.

The aim, and very much the reality, is to involve all the relevant stakeholders from the local ecosystem considered important for such developments. Those stakeholders are from the academia side, such as the University of Porto, the Polytechnic of Porto, from the research side, such as INESC Porto, and from the entrepreneurial side, such as UPTEC.

In the last 5 years Porto has been part of several projects that are very relevant in the Smart City domain and in coherence with the Political strategy to transform Porto into a Smart city.

- Enter.Hub - European Network exploiting Territorial Effects of Railway Hubs and ***their Urban Benefits.*** The Enter Hub project aims at:
    - Supporting and promoting a global vision of transport and territorial development, considering mobility, transport networks and in particular the TEN-T as a European backbone in terms of connections and interaction but also in terms of territorial development;
    - Promoting sustainable, common and easily available transport systems all over Europe, to make cities and regions more accessible, more attractive and more competitive;
    - Sharing practices and using an exchange and learn approach in order to enrich their common and strategic vision of future Europe at different territorial scales, also in view of the new financial programming period 2014-2020, concerning urban and infrastructures development.
- CIVITAS – ELAN – Mobilising Citizens for vital cities:

    The mayors of the cities of Ljubljana, Gent, Zagreb, Brno and Porto have agreed to a common mission statement “To ‘mobilise’ our citizens working with them to develop clean mobility solutions for vital cities, ensuring health and access for all.”

    As a policy-driven project, CIVITAS-ELAN will make significant contributions to major global, EU and national policy processes. In responding to citizens’ needs, CIVITAS-ELAN has identified 18 common headline objectives for each CIVITAS policy field:

    - Increasing energy efficiency
    - Using alternative fuels
    - Cleaning up vehicle fleets (electric, hybrid, integrated strategies)
    - Implementing effective, high quality mobility solutions
    - Planning intermodal infrastructure with public participation
    - Charging for access
    - Managing public space and access
    - Improving mobility management
    - Making walking and cycling more attractive
    - Establishing a mobility dialogue with the citizens
    - Developing integrated & target-group specific safety/ security strategies
    - Increasing road safety
    - Improving security in PT
    - Implementing flexible mobility services

- Rationalising freight distribution
- Giving priority to clean modes
- Enhancing traveller information & ticketing
- Introducing telematics for clean modes

- Future Cities: Porto Living Lab

  The Future Cities Project aims to turn Porto into a smart city, a living lab, by providing it with a wide range of sensors and communication equipment, thus creating the conditions for future research and development using advanced technologies for data collection through mobile platforms, wireless communication and large-scale information processing. This living lab enables the development of research in areas such as sustainability, mobility, urban planning and information and communication technology.

  As in all Living Labs the main methodological approach is based on open and user centred innovation: the pilots and experiments already accomplished (e.g. with taxis, buses) show how important has been for the city to adopt such a methodology as potential future solutions benefit from an early validation and adoption by citizens.

- CSI Europe:

  Porto Vivo, SRU participated in the project "CSI Europe: City Sustainable Investment in Europe - Making Financial Instruments Work for Cities", which aims at analysing the role of financial instruments in the planning of sustainable urban development. Some concrete results deserve a lot of credit, namely in the context of urban revitalisation.

- Scale up Porto:

  The project ScaleUp Porto emerges as an initiative that aims to stimulate the Innovation ecosystem targeting existing high growth and high potential businesses and giving them access to opportunities in the area of financing, skills and customers.

  The Municipality of Porto has already carried out several initiatives in the area of entrepreneurship and innovation with the objective of consolidating the city ecosystem of innovation, fostering employment, economic development, internationalisation and the well-being of citizens.

The district areas of intervention for the next 5 to 10 years are mainly identified by the ARU (Areas of urban Rehabilitation) defined by the Porto Municipality. There are 7 ARU created in the Porto City which aim at addressing different issues all around the urban area.

- ARU do Centro Histórico do Porto

The ARU of the Historical City Centre is the first of seven ARU to be created in accordance to the provisions of RJRU (Regime Jurídico de Reabilitação Urbana – Legal System for Urban Rehabilitation) which provides that municipalities must, within 5 years from the date of entry in effect of this law, implement a strategy for urban rehabilitation of the SRU areas (Sociedade de reabilitação urbana – Society of urban rehabilitation), converting them into one or more ARU (área de reabilitação urbana – area of urban rehabilitation).

- ARU dos Aliados

The Aru of Aliados, consists of an urban fabric which suffered a profound transformation since the late nineteenth century. This transformation gave Aliados a prominent role at a city and regional level, as this location is considered the administrative, economic and civic centre of the city. The concentration of services and activities on this site, translated into an emptying of their housing function. According to the last population census (2011) there were registered less than thousand and a half residents, which correspond to a density lower than the average. However, in recent decades, due to the relocation of several activities, especially those related to the financial sector, public and private investments in transport infrastructure and urban regeneration, touristic activities and others, the area of the Aliados has been reversing this trend and is also the aim of the ARU contribute to this recovery.

- ARU do Bonfim

This ARU is characterized by its morphologically homogenousness, due to the urbanizing process that began in the mid-nineteenth century. Traditionally this area included a wide variety of uses, ranging from the housing through the existence of small industrial units, commercial spaces and services. However, this area has suffered in recent decades a gradual abandonment process for its population, leaving the elderly.

- ARU da Cedofeita

The ARU Cedofeita is a territory resulting of an urban structure designed in the late eighteenth and early nineteenth century and was gradually filled in during the following centuries. Traditionally it includes a mix area of housing, commerce, services and several higher education institutions.

- ARU de Miragaia

The area included in this ARU is a scenic drive and very characteristic and striking the city. The touristic potential of this area is evident by the presence some of the most emblematic gardens of Porto. There are also many public buildings and collective use equipment located in its ARU, such as the Customs building, the Santo António Hospital, the Library Almeida Garrett and even the Pavilion Rosa Mota. There are some narrow residential fringes and rehabilitation initiatives, thus, it is intended with this ARU give a new framework and encouragement to these initiatives, creating for such, tax benefits of Municipal levels, complementing already provided for in the Statute of Tax Benefits to support urban regeneration.

- ARU da Lapa

The ARU da Lapa is characterized by a urban fabric formed from the nineteenth century, The urban fabric and its buildings, and the existence in this place of a diversified commercial offer, supported by some services and facilities, are more than enough reasons to make this highly attractive region in housing terms, and evidence of this is the fact that it has the highest population density of the city (102 res. / ha, Census 2011).

- ARU de Santos Pousada

Along with the residential area, there are still, in this ARU, many old industrial buildings (now emptied of that function and in an advanced state of degradation), urban voids and old workers blocks. It is therefore an area with a discontinuous urban fabric, which fall within built-up areas of considerable size, as those remaining

industrial units are now abandoned, and whose recovery and destination are factors to take into account when drawing up a strategy for rehabilitation and revitalization of this part of town.

- ARU de Campanhã

This ARU covers part of the parishes of Bonfim and Campanhã, comprising an area of approximately 112ha. Despite the problems of physical degradation and socio-economic vulnerability that persist in this urban area of the city there is a set of urban transformation opportunities that, once implemented, may significantly contribute to the revitalization of the eastern part of the city, which is the specific goal of this ARU.

All these areas, due to their particularities aim at addressing different challenges and implementing several solutions that include mobility, energy, refurbishment, ICT and others.

According to the goals of the project, the needs of intervention and the evolution of each programme (ARU), the selected District for intervention is the Campanhã area. This area of intervention will be characterized more in detail bellow.

**Financing**

The strategy for the city of Porto included, so far the use of different funding's to ensure the valorisation of the city ecosystem. As an example it is important to refer the creation in July 2009 of the JESSICA Holding Fund Portugal (JHFP), with a total amount of 130M€, from which Porto clearly benefitted. Its Investment Committee comprises the Managing Authorities of the five Operational Programmes as well as the Operational Programme for Territorial Enhancement (OPTE) and the Directorate General of Treasury and Finance. The tender process that took place between 2010 and 2011 resulted in the creation of three UDFs run by three separate entities (Caixa Geral de Depósitos, Banco Português de Investimento and Turismo de Portugal) in five regions of continental Portugal. In Porto, there are two operational UDFs, one managed by Banco Português de Investimento and the other by Caixa Geral de Depósitos. 54% of the 20 projects identified until today in the city are related to tourism. Tourism has an element with an important impact In the city transformation. Its significant influence in the cities growth and rejuvenation, given its cross-cutting impact on the society, leads to strong effects on the many aspects of the economic, social, cultural and territorial city life.

In the city, the multiplier effect of JESSICA is of 5 with one Euro of JESSICA investment leveraging five Euros of private investment.

Other Operational programmes available for the Porto city are the European Regional Development Fund (ERDF), the ESF (European Social Fund), Regional OP Norte (operational Programme Regional Norte), OP Human Capital, OP Social Inclusion and Employement. Several national, interregional and international programme funds are also available for the implementation and support of the actions foreseen by the project, such as funds from the FCT (Fundação para a Ciência e a Tecnologia), Agência de Inovação, CCDRN (Comissão de Coordenação e desenvolvimento regional do Norte), H2020, Interreg and others.

## *Challenges*

The local challenges faced by the city of Porto in the domain of the Smart Impact are especially in the Smart City related topics and business area. The main issues are related to creating conditions to overcome the vendor lock-in, the lack of solid normalization and standardization

frameworks and the funding for scale solutions across borders.

Although the evolution of the city has been consistent and based on a long term political and urban strategy, there are still challenges to empowering and sustaining the urban ecosystem.

The urban strategy includes the interaction between social, economic and environmental issues. In addition to the aforementioned challenges, we also highlight the degree of alignment between the priorities of the city and the available funds, there is a need to not only align them at a local level, but also consider the national level regulations and aids in order to implement successfully the project and its outcomes (such as the municipal plan).

The goal is to advance the global competitiveness of Porto´s economy by introducing innovative infrastructures for cost-effective creation and delivery of services. To overcome the identified issues the projects need to be designed to meet the demands of key city stakeholders across many different sectors by engaging them in a co-creation process.

Another challenge is posed by the continuing process of suburbanization away from Porto's city centre. Both inhabitants and businesses leave the inner city and relocate to the surrounding municipalities. There are several reasons for this. Historically low rents in the city centre (through rent controls) have led to poor quality residential stock, meaning that the inner city area is inhabited mostly by vulnerable social groups and many abandoned buildings. Reversing these key trends as more affluent people move to the suburbs is a challenge.

## *Good practice*

Smart City policy issue is definitely a high priority in the political agenda with several commitments that the Municipality has already made.

The main success factor in a successful implementation of this project is a change of mentalities at all levels, not only at the Local Public Authorities, but from all the local ecosystem, and the ability to exploit the articulation of local and regional/national initiatives, mutually reinforcing and creating the relevant scale and impact. Enabling the adoption of Smart City concepts by linking the advanced thinking of innovation clusters with the administration's practices.

The Porto Municipality has implemented in June 2015 the new Integrated Management Center in the Town Hall. This center brings under one roof the services responsible for Mobility, Municipal Police, Fire department, Civil and Environmental Protection, and its main objective is to contribute to increased efficiency and effectiveness in areas such as street cleaning and waste collection, security and civil protection and traffic control, among others.

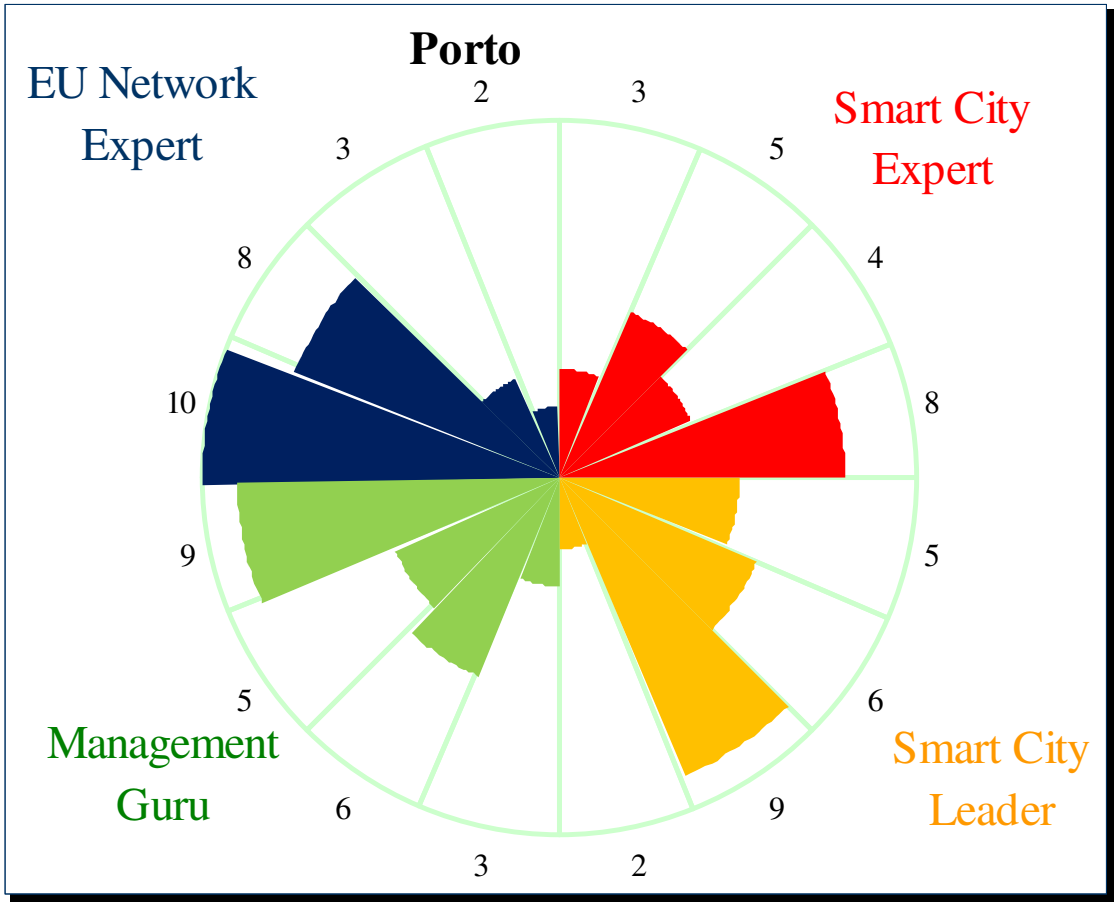
The Integrated Management Center is a key step in the creation of the first National City Operator, the municipality is developing, and where the use of collection tools and advanced data analysis, implemented within a "Smart City" concept, will promote an effective "smart" management of the municipal services.

In addition to the initiatives presented above, the Municipality decided, in 2001, to implement a Monitoring system of Urban Life Quality (MSCQL). Running since then, this project has been able to compile data on the living conditions and wellbeing of the city, monitoring the progress in several dimensions providing aa platform for better policy making and stimulating collaboration between citizens and local government.

Good practice also comes from participation in a wide range of international projects including the previous URBACT project “CSI Europe” which developed a local action plan. This experience will feed directly into SmartImpact.

# Section 6

## *SWOT- analysis*




| Porto | | | |
|---|---|---|---|
| | | | *Scale from 0 - 10* |
| **Smart City Expert** | 1 | Experience of partner with smart city projects | **3** |
| | 2 | Decisions by the council on smart city / smart districts | **5** |
| | 3 | Level of expertise within municipality | **4** |
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| **Smart City Leader** | 5 | Priority of Smart City / Smart district at political level | **5** |
| | 6 | Clear smart city goals and measures defined | **6** |
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| | 14 | Application of Operational Programmes (ERDF, Jessica, ESF) | **8** |
| | 15 | Experience in EU city networks (URBACT, Polis, Eurocities etc.) | **3** |
| | 16 | Successfully applied to EU-funded innovation projects in last 5 years | **2** |

## Conclusions

Porto's position in its region and country makes it perfectly placed for developing a smart city programme. Municipal initiatives around fibre connectivity, the establishment of Porto Digital and establishment of an Integrated Management Centre highlight the city's commitment to using technology in a transformative way. Past and current projects with a range of city partners have addressed issues around open data, green technology and new financing models. As the centre of Portugal's major export region, Porto has an international profile which is reflected in its strength as a tourist destination. Its universities and start-up culture makes it a popular place to establish and grow new businesses, and together these initiatives can look to rejuvenate poorer areas of the city. The ambitions of the city need to be matched by national and international funding to enable further smart projects to be developed, and the development of an IAP (integrated action plan) will provide the roadmap for taking this forward.

SmartImpact
Local Impacts from Smart City Planning

# SMARTIMPACT

# Baseline Review Report – Stockholm, Sweden

Stockholms stad | City of Stockholm

European Union
European Regional Development Fund

Connecting cities
Building successes
URBACT

# Contents

# Summary

Stockholm has a relatively long history of developing innovative measures to promote environmental sustainability in designated new development areas and in different projects. Promoting sustainability stands high on the political agenda and the City of Stockholm has ambition to become an international actor within the fields of clean tech and sustainability. Even though the sustainability measures and strategies have been very successful, Stockholm is just starting to experiment with connected technologies, digital services and smart processes in general. Through the EU H2020 lighthouse project "GrowSmarter" Stockholm is now starting to implement several pilot projects in this area. Yet, there is a lack of explicit strategies or actions plans with the aim of integrating successful measures developed in designated sustainability development areas or internally and externally financed projects. An Integrated Action Plan will help to support continuous improvement.

# Section 1

## SmartImpact in Stockholm – aims and objectives

**The aim of Smart Impact is to fulfil the targets in the Master Plan, Environmental Programme, Climate Action Plan and the Roadmap for Transportation**

**Goal 1: Develop an integrated planning approach for smart cities in Stockholm**
Stockholm needs to improve and/or alter processes in the organization in order to adapt to the needs of a smart city. Being a big organization with many employees the different areas or tasks in the planning process is being undertaken by different administrations in the city. This work is characterized by "silo thinking" are there is not much cooperation between the different administrations. In order to utilize the potential in the organization, Stockholm needs to develop processes that ensure that all relevant administrations are included in when developing new projects.

**Goal 2: Understanding the process of moving from best practice to common practice**
Stockholm has been quite successful in developing smart measures and solutions in different projects, especially related to urban planning. The integration of these measures within the line of the urban planning process of the city has not been systematic though. Some measures and solutions have been picked up and implemented in development projects while others have not. There is a lack of knowledge within the organization about why some measures successfully move from best practice to common practice while others don't.

**Goal 3: Set up a cross administration task force**
To identify how Stockholm can improve as a smart city the city administrations need better understanding of each other's processes. A task force will be established with strategic members from all relevant administrations with the aim of identifying where in the processes interaction will be most fruitful.

**Goal 4: Set a up a project database**
The city of Stockholm has been initiating and participating in many different projects in wide range of areas. The projects are usually run by one administration and there is often little knowledge of the

projects outside the responsible administration. The city also gets many propositions of joining different projects and I can be hard for the actors that receive the proposition to judge the benefits and relevance of the project. An easy accessible project database with finished and on-going projects would make it a lot easier to choose the projects that will give the city the most benefits.

# Section 2

## Short description of the city

Known as the capital of Scandinavia, Stockholm has a rich and unique history. By most historical accounts, Stockholm, the capital of Sweden, was founded in the 13th century by Birger Jarl. With origins as a leading trade post because of its strategic location, Stockholm's name derives from the words "stock" (log) and "holm" (islet) in acknowledgement of the city's distinctive bridges and waterways. The population of Stockholm is estimated at 897,000 in 2014 with a population density of 4,700 people per square kilometre, or 12,000 per square mile. The Stockholm metropolitan area has 26 municipalities with a population of more than 2.1 million, while the Stockholm urban area has an estimated population of 1.4 million.

Stockholm is a city built on water, with 30% of the city's 4,900-km2 area being water. Another 30% of the area is made up of parks and "green zones." The city has a number of highly regarded universities, and holds a high percentage of the country's professionals.

A visionary capital city, Stockholm today represents the merger of its rich and vital history with modern and revolutionary advances in science and technology. The sophisticated city is recognized throughout Europe and all over the world as an economic and political centre with an ethnically diverse population of residents,

Today Stockholm is growing like never before and faces challenges of both keeping and developing its unique city character. One of the main priorities is to make sure that Stockholm remains a sustainable city, while offering an attractive and inspiring living and working environment.
The City of Stockholm's **Environmental Program** for 2012-2015 is based on the vision of Stockholm as an attractive and growing city, where the needs of people and nature complement each other in an environment characterized by functionality, quality and biological diversity.

Currently, the majority of public funding support for green enterprise is provided through general business initiatives supported by the Swedish Government. Within Stockholm, green business support is provided by smaller scale organisations such as STING (Stockholm Innovation and Growth), a Kista-based non-profit incubator and dedicated venture capital fund, and the Stockholm Cleantech Association. Support from city and national governments has not yet translated into particularly strong growth in the green business sector. Turnover in Stockholm's green business sector grew by an average of 3.0% per year between 2004 and 2009. Over the same period, the number of green sector firms grew by 4.2% - similar to the 4.3% growth overall in firms, while employment in the green sector declined more rapidly than overall employment during the global recession.

Unlike most European cities, the municipality of Stockholm owns >60% of the actual land of the city. This results in a large leverage of the city on investments that enable a smart and sustainable

development. The City of Stockholm's spending on procured goods and services amounted to US$2.86 billion in 2012. Consequently, green and innovation based public procurement has substantial potential as a policy instrument for shaping green business markets and driving a strong innovation based economy. While the city has various targets for green procurement, other cities have comprehensive public procurement policies that are integrated into the detailed procurement guidelines of the authority and its public agencies – an area that the city authority could investigate further.

## Short overview of national/ regional policies and incentives

Stockholm has a well-structured policy strategy for transitioning to a low carbon, resource efficient economy, underpinned by an extensive range of policy instruments. Key frameworks include Vision 2030, the Environmental Programme and the Climate Action Plan. However, while Stockholm has achieved substantial success in reducing carbon emissions, the city's ambitious target to be fossil fuel free by 2050 requires major strategic decisions on pathways to eliminate carbon entirely from the economy. Smart solutions and a strong digital economy will need to play a major role in this. However, this will require strong and early policy action over the next few years to overcome long-term lock-in of high carbon infrastructure, systems and technology.

**Master City Plan**

"The walkable city", Stockholm City Plan was adopted by Stockholm City Council on 15 March 2010 and is currently being revised. With the city plan Stockholm aims to establish a walkable city of interconnected neighbouring districts. The City Plan is also a key strategy document for the city, as it highlights four urban development strategies for sustainable growth as part of the city's drive to achieve its Vision 2030 of being A World-Class City. The strategies are: Strategy 1 – Continue to strengthen central Stockholm , Strategy 2 – Focus on strategic nodes, Strategy 3 – Connect city areas, Strategy 4 – Create a vibrant urban environment .

**Climate Action Plan**

The action plan for climate and energy is the fourth of its kind and provides an overview of the City's climate work. The goal of the plan is primarily to describe measures and conditions for achieving the climate and energy objectives of the Stockholm Environment Programme for 2012–2015. Apart from these short-term goals, the plan also embraces the wider goals of the City's Vision 2030. Since signing the Mayors' appeal, the City reports its climate and energy plan to the Covenant of Mayors Office in Brussels. Every second year, a report regarding the implementation of the plan must be sent to the Covenant of Mayors Office for evaluation and monitoring. The Stockholm action plan for climate and energy has been produced by the Environment and Health Administration by order of the City Executive Office.

**Roadmap for fossil free Stockholm 2050**

A document that provides a road map on how Stockholm will become fossil independent by the 2050. It is currently being revised to 2040 as target year. The City of Stockholm has declared its ambition to be fossil fuel-free by the year 2050. In the budget for 2012 the Environment and Public Health Committee was commissioned to produce a roadmap to demonstrate how this goal can be achieved. This roadmap is based on the same parameters that have been followed up since 1995 and that are reported to the Environment and Public Health Committee each year.

**The Environmental Programme 2016-2019**

The environmental programme is a city-wide regulatory document which breaks down the municipal council's operations goals into more manageable interim targets. The programme identifies municipal committees and boards that have a key role in implementing and/or following up measures. However, all municipal committees and boards should take measures that lead to target fulfilment within their own operations, regardless of whether they have been given a specific interim target in the environmental programme. All municipal committees and boards are also bound by the environmental programme to clarify their own environmental impact and describe ways to reduce it in an environmental action plan.
The environmental programme is since 2008 integrated into the City's system of governance and follow-up of operations and economy, ILS. The integration means that execution and follow-up of the interim targets of the environmental programme takes place in the action plan of the respective municipal committee or board.

**Climate and energy strategy for the Stockholm region**
The County Administrative Board has been given a government mandate to develop a climate and energy strategy to guide the county's overall work on climate change and energy conversion. The strategy formulates goals and provides a basis for actions that the actors within the region develop and implement. The objectives have been developed in consultation with regional actors. They reflect a high level of ambition while being realistic on the basis of the Stockholm region conditions. The strategy should also found the basis of the monitoring and evaluation that is needed for a successful conversion

# Section 3

## Description of the baseline review focus

The City of Stockholm has stimulated innovation by developing new-build eco-districts. The eco-districts at Hammarby Sjöstad and Royal Seaport are clean technology demonstrator projects delivered through public private partnerships. These ecodistricts have made Stockholm one of the leading cities in the world for developing and demonstrating innovative green solutions at the district level.

The baseline review focused on the policies and incentives above surrounding sustainable environmental, transport and energy efficiency projects. The main purpose of the baseline review for Stockholm was to understand the implementation state of policies, technologies projects and management approaches that have supported (or hindered) the development of the eco-districts.

In the given timeframe it was clearly impossible to gain a deep understanding of all existing strategies and plans, as well as of the detailed challenges of Stockholm in the quest of becoming a smart city. The focus of the baseline review was therefore to understand the larger challenges which Stockholm needs to address with digital and connected technologies and smart services, as well as to understand the governance system and management approach of Stockholm.

A second important focus of the baseline review was to meet local decision makers and project officers from the city administration of Stockholm and to visit implementation sites of smart-district related projects in Stockholm.

# Section 4

## Baseline review activities

The Stockholm baseline activities included various presentations delivered by lead officers regarding the main projects mentioned above and demonstration site visits to the Royal Seaport and Grow Smarter Project area.

- Gustaf Landahl, Head of the Department of Environment and Health and Coordinator of GrowSmarter, introduced the overall structure of the Stockholm Municipality, and especially with regards to the Environmental Management Programme. Gustaf Landahl is also co-ordinator of the EU H2020 Smart City Lighthouse project “GrowSmarter”.

- Lisa Ennarson from the same department introduced a range of activities and challenges that derive from the Smart Cities and Communities activities in Stockholm.

- Kerstin Alquist, Strategic Transport Planner from the Department of Transport introduced the Urban Mobility Strategy of Stockholm and explained the Stockholm Parking code – a unique approach to link the parking regulation to a large multitude of sustainable mobility activities and infrastructures. Like many other cities, Stockholm has not yet managed to address car-and fossil fuel depended mobility in a comprehensive way.

- Anna-Karin Stoltz Ehn Manager SRS innovation at the Stockholm Royal Seaport introduced the innovations that have been put at work in the Royal Seaport development area.

- Visiting the Royal Seaport, Christina Salmenhofer, head of the development team, gave insights into the development process and showed sustainable technologies in the waste, energy and environmental sector that were successfully put into place in the development area. These included:
    - A Reflow Model that was tested in Hammarby . It is a Visual System Dynamics tool showing the interaction of resource flows at the district level. Not yet quantified!
    - Mobility Index -> tool for planning the property for sustainable transport
    - Plus Energy Houses
    - Waste-automated-system that sorts Paper, plastic and residual waste.
    - Smart City SOS -> Augmented Reality of performance of the buildings!
    - Construction Consolidation Centre! -> Increases efficiency of the construction! -> Construction workers wait or search for material 20% - 40% of their time!
    - Stormwater management –through Soil & Water retention
    - Green roofs
    - CitySkylines -> Mohjang -> Using Gaming industry for developing planning tools!
    - E.g. "Block by block" by Microsoft!
    - Innovation Procurement -> Incorporate re-use centre into Stockholm Royal Seaport & in the rest of the city! -> Waste needs to be combined with many other activities!

- KTH (Stockholm Institute of Technology) -> Smart City Stockholm Royal Seaport -> Connecting all different data sources across the city -> measuring the performance of the district! -> PhD!
- 

- A visit to the **Grow Smarter project** helped understand the social dimension of the smart city in Stockholm. Several low-budget apartment- blocks are to be refurbished and upgraded to meet high requirements of sustainability and liveability. The project aims to reduce energy consumption and brings together cities & industry to stimulate uptake of smart city solutions. The Grow smarter project focuses on an area called Valla Torg. The area was built in 1961 and is in need of refurbishment -similar to the Sustainable Jarva Project. However, struggles with the tenants have led to some delay in delivering an integrated and extensive refurbishment to the buildings.

# Section 5

## Key findings

Stockholm is a leading city in Europe when it comes to environmental management and sustainability. Yet, Stockholm is facing a range of challenges that require the municipality to go beyond environmental management and sustainability planning. The city needs to embrace innovation and agility to tackle the problems of today. To this end, Stockholm needs to develop a new approach towards managing innovation and smart & connected solutions from within the municipality. The Innovation Platform for a Sustainable Stockholm is a good initiative which tries to push for a more innovative and inclusive approach towards urban development, integrating Start-ups, SMEs, Citizens and research.

### Master City plan and 140 000 apartments

The plan focuses on specific areas for development. The first is strengthening the central city by expanding the dense inner city structure. Developing the science clusters (Kista Science City in ICT and the Karolinska institute in life science) is also an important priority. The second focus is development of strategic nodes (places with good infrastructure), we want to build more of everything in these spots. The existence of high capacity and efficient public transport is an requirement if the growth of Stockholm is going to be sustainable. PT is the main focus on transport when Stockholm builds 40 000 new homes to 2020 and 140 000 to 2030. The pace of the development is to a large extent determinate by the market. With the completion of the Royal Seaport Area, the brown field development that has been the focus since the former comprehensive plan will conclude. There are now only a couple of small brown field areas left to develop with the former concrete factory Lövholmen being the most notable.

The third focus of the comprehensive plan is to connect city areas. Stockholm have a finger formed public transport system and while it is convenient to reach the inner city even from far away, the cross connections between areas around the inner city and suburbs are lacking. The connections that needs to be improved may be infrastructure, especially tracks, but also green infrastructure like new parkways,

The fourth focus is the promotion of vibrant urban environments. There are certain focal point areas that have been identified in the comprehensive plan where complementally development will help create a larger base for commerce and urban qualities.

In general the development of Stockholm has to be sustainable in all possible ways, the social dimension must not forget as new apartments tend to be quite expensive.

The planning process in Stockholm has been complicated and there have been a long process to build housing in Stockholm. This is something that might have been contributing to the high prices. There are efforts going on to make the planning process less complicated. There is a housing target of 140 000 new homes to 2030 and there is a coordinated leadership in central position of the administration. The coordinated leadership is responsible for making sure that the housing target is met. The city has also appointed a special coordinator to make sure all of the city administrations are coordinated. The joint organization for more housing, have a controller function that makes sure there are enough plans in the pipeline and an operative problem solving function that will make sure that any obstacles that occur will be dealt with instantly. The city tries to be proactive.

Strategy and development is an important component in the process of accomplishing a large number of new homes. It is a learning process for the organization and new methods may have to be developed in order to reach the goal. Due to high prices and rent levels of new developments in Stockholm the city have developed a new concept called rapid homes. These are houses with temporary permits that will be moved around every 15 years. The ambitions are still high however and the houses should have a life span of at least 40 years. Another concept is that has recently been developed is the Stockholm Houses. The Stockholm Houses are concepts houses that will be mass produced and adjusted to fit in different locations. The Stockholm Houses also includes a development of the detail planning process to get them into the rental market as soon as possible. The Stockholm houses are build be the municipality landlords. At the moment there are 700 of these in the pipeline.

**Environmental programme and Road map fossil free city 2040**

Gustaf informed that the there is new plan for a carbon neutral city by 2040 up for review. After this announcement he gave a brief introduction to the organization of the city. The council has operational goals that are three-fold. The city of Stockholm is basically self-financed through municipal tax. The steering of the administration is dual. For the office of environment and health there is political steering directly from the elected vice mayor of environment Katarina Luhr and there is the also the city manager Ingela Lindh. Ingela is a civil servant but is appointed by the political majority. The city has a web based management system called ILS, where every

administration has to show how their operations relate to the overall goals of the city. There is annual monitoring of the targets. The city is good at monitoring but it does not necessarily leads to improvements. There are efforts to better integrate the goals of the environmental programme with the budget. One of the recent improvements is that the city no longer has a waste plan, now it is seen as resources. Indicators for ILS: Sustainable energy use; CO2 emissions per capita is now 2,8 ton from 5,3 ton 1995. There are energy goals for new buildings and when making renovations, 30 % drop in energy use on big renovations. We try to reach passive but are at 55 kwh/sqm now, including hot water. We try to get more solar power, but hard due to stupid EU regulation.

The environment programme is out on review at the moment. There should be a new programme before the summer. The environment programme is integrated in the ILS. Every sector board will have to come up with measures to reach the goals set in the programme. For the department of environment and health this means 13 strategic decisions that show what the administrations have to do by certain dates. The district heating system is a big reason behind the drop on CO2 due to energy consumption. Transport sector is the largest source of emissions. The city is currently working on e-mobility and the switch to public transport, cycling and walking. To reach a fossil free transport system we will probably need a bonus malus system and/or prohibit fossil fuel cars and/or prohibit fossil fuel. Transport related emissions are the biggest challenge. Building machinery also need to switch from diesel to renewable energy. Some of the incentives for buying e-cars have disappeared, but they still sell a lot. Biogas is also having a strong development.

## Challenges

Stockholm is a fast growing city. One key challenge for Stockholm today is to supply its citizen with adequate housing in a sustainable way. Other challenges refer to the development of a learning organization: Stockholm has a relatively long history of developing innovative measures to promote sustainability in designated new development areas and in different projects. Even though the measures in general have been successful in these areas, they have failed to become mainstream practice in common development projects. The failure in disseminating successful measures from one part of the administration to another is to some extent explained by the downpipes in the organisation of the city. One of the biggest challenges Stockholm faces in promoting sustainable innovation in the organisation is finding ways to cut across these downpipes in a formalised way.

Main challenges for Stockholm include:

- Implementation: How to implement smart solutions in existing areas to reach sustainable development in the whole city, when new buildings are not an issue.
- Holistic approach: How to organize the municipal structure and the process of integrated planning to plan, finance, build and operate projects in the building, energy and transport sector in a holistic and interdisciplinary way.
- Engagement, knowledge and commitment: To reach and convince all parts that need to be convinced to be able to roll out the smart solutions.

- Business models: Socio- economic benefits, Business Benefits

## Good practice

**Innovation Platform Sustainable Stockholm**

Anna-Karin presented the royal seaport innovation platform that has been developed within the frame of the royal seaport project. The platform covers innovation in a wide area of fields The next step is the Innovation Platform Sustainable Stockholm. One of the identified needs is that the city will have to create more flexibility in our organization in order to promote innovation. The city need to focus even more on triple helix and develop our niches into common practices and identify where the obstacles are. The project will start a network to make sure that competence gained in different projects is spread within the organization. We have an innovation strategy, but no means to carry it out and it is not integrated in the everyday work.

To be successful in creating innovation within in the organization we need to work across administrations, but that is hard to implement in administration centric organizations. In trying to develop new business models in Royal seaport we might need to reinvent ourselves as an organization.

**Stockholm Royal Seaport**

There is an overall vision for sustainability in the Royal seaport project that is put in to practice through different strategies in different areas. The Royal seaport development project consists of a former brown field area. It will be a mixed development with 40 property developers. The area is situated almost as en enclave in a nature preserve area and the green areas on both sides needs to be connected. The work is based on political will and through collaboration with all the involved actors. Governance is an import aspect in order to make the project successful. The sustainability work is divided into six focus areas. Hard with energy in building as building companies doesn´t follow this up naturally, have to force them to do that.

When the Royal seaport was founded the ambition was higher than the existing knowledge so R&D has been very important. The royal institute of technology has been involved throughout the process, monitoring the performance of the area. It is now mandatory with automated waste system in new developments; it was not when the project was initiated. Augmented reality on the performance of buildings is something that now being development. The logistic consolidation centre have helped to make the construction phase a lot more efficient, studies have shown that when these are not in place, workers spend almost half their time waiting for material. It has however been hard to get the construction companies to buy into this; they are not used to working this way. Some of the features of the area is storm water reserves under all the pavement and green roofs. The projects have also developed an interactive tool that shows how the energy flows are working. There is another tool called the:

City skylines tools. Bulky waste is an area of development, people have throwing away a lot of useful things, like furniture. Projects are going on to try to change, alter, improve these or just reuse. The project has applied for a permanent mobile facility for this purpose.

**C/O City**

The care of city project is trying to utilize the eco system services developed in the academic area in the planning of urban environment. The project will continue to 2017. The ambition is to collect data from different eco system service measures. The Swedish government fund for innovation, Vinnova is financing. The project will try to calculate the value of ESS for different kind of measures like green roofs and have developed different tools and methods to make use of ESS in practice. The project has also tried to import successful measures from other countries, for instance green area factor from Berlin and Malmö. A new green area factor for public spaces like infrastructure has also been developed. Target is to adapt the city to future challenge resilience.

**Grow smarter – Valla Torg**

The Grow smarter project focuses on an area called Valla Torg. The area was built in 1961 and is in need of refurbishment. The landlord is one of the city own landlords and there will be a total refurbishment. Grow smarter is an add-on on this refurbishment project. He project has initially had a difficult time trying to get the tenants to agree to the refurbishment (which they have to according to Swedish legislation if the landlord should be able to carry out the refurbishment). 10 of the tenants have said no but 50 % are yet to decide. The tenants will be evacuated for one year, which is longer than usual

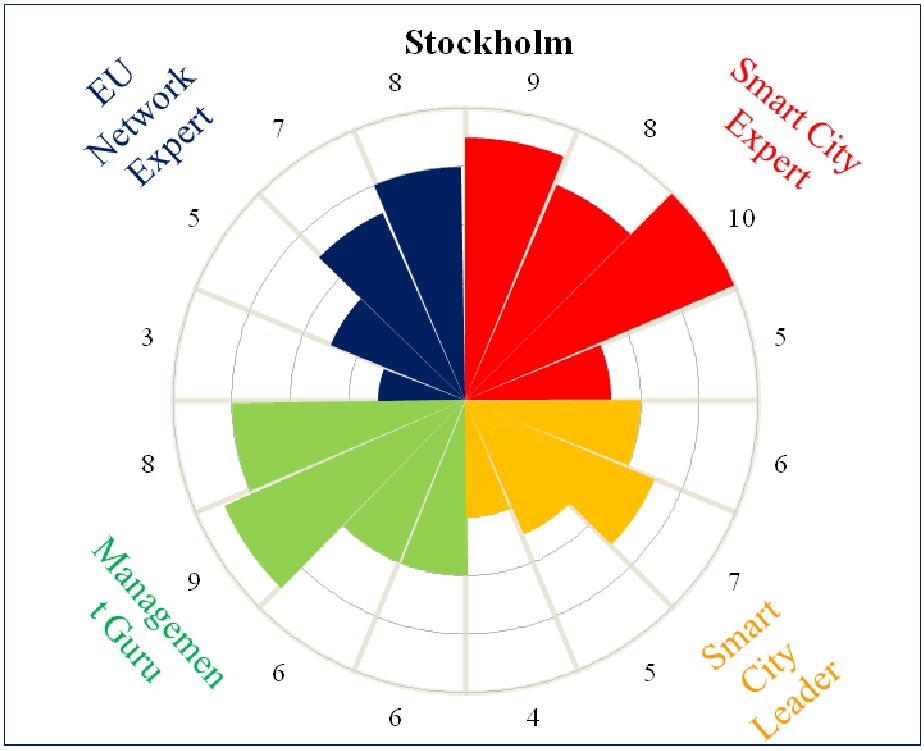
**Grow smarter – the project**

The project has very ambitious targets and 4 overall themes, A logistic centre will be established in an already existing logistic area, with rail provision to decrease the number of building transports. The project is also a test ground for trying out the concept of active house and see if it works in an already existing building, The energy company Fortum have developed an Active house application and there are other add-ons such as a car club. There are a lot of measures being planned to decrease the energy consumption of the area but these need to be developed in dialogue with the tenants. There will a test with sensor activated bike light lane, with the potential of large energy reductions from lightning. A waste heat integration system from the supermarket and computer centre is also being proposed. There will be big data collection. The data IBM collects will be sent to other sites like Dublin. A bicycle delivery company, Movebybike, will make deliveries in the area. There will also be GPS in cars to make the rides smoother through optimization of traffic signals. The project has five follower cities and I if one is interested in the project there is a city interest group.

# Section 6

## SWOT- analysis

The analysis of strengths and weaknesses in the relevant action fields for SmartImpact is based on a mixed-assessment approach. Each city was asked to complete a self-assessment by rating the own state of performance in 16 areas of action and expertise. The scale ranges from 0 (not at all) to 10 (best city in Europe). The self-assessment by the city representatives was matched by an assessment of the Lead Partner and the Lead Expert after the baseline visit. The figures below show the merged values of the self-assessment and the SmartImpact LP/LE assessment.

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## Conclusions and recommendations

has been working with an integrated management approach to Environmental Management for a long time already and is currently showcasing several smart and sustainable solutions within the large EU H2020 demonstration project GrowSmarter, which includes smart solutions and urban lighting, transport and housing. However, Stockholm needs to take the next step towards an innovation-based management approach within the public administration that enables the city to facilitate cross-departmental collaboration and investments, to organise collaboration with the private sector and to spur a maximum uptake of data-driven and ICT-based solutions to deliver public services in an efficient way.

Stockholm needs to focus on the development of processes, organisational structures, programmes and communication-based instruments that help them use “smart solutions” and “smart processes” in the everyday business within departments of the city administration.

## References

**Grow Smarter** www.grow-smarter.eu

**Sustainable Jarva** www.stockholm.se/ hallbarajarva

# SMARTIMPACT

# Baseline Review Report – Smolyan, BUL

European Union
European Regional Development Fund

Connecting cities
Building successes

# Contents

## Summary

As a small city located in a mountainous region of Bulgaria, the importance of smart has the potential to have a large impact on Smolyan's future. The city wishes to utilise the opportunity provided by SmartImpact to create a plan that will support growth and development and impact on demographic and economic sustainability. The smart city agenda in Smolyan is in its infancy. The SmartImpact integrated action plan (IAP) will embed the concept of smart in to these aspirations. There are real opportunities for Smolyan to learn from other more advanced partners as well as to develop their own approach to tackling their own issues alongside finding routes to transform municipal revenue to more efficient and transparent public services.


# Section 1

## SmartImpact in Smolyan – aims and objectives

SmartImpact will support Smolyan to develop its smart city vision and begin to take the necessary steps towards the delivery of smart activity. The aspiration is that the SmartImpact Integrated Action Plan (IAP) will support the city to reach their goals by creating correct strategies and partnerships, both at a policy level and for delivery. The goals of the IAP for Smolyan are:

- Goal 1: Developing a concept and feasibility study on changing to renewal energies principally in the energy sector, including funding options.
- Goal 2: Defining a concept for e-government / e-services for Smolyan
- Goal 3: Defining the sustainable growth model for Smolyan – innovations; economic; tourism

# Section 2

## Short description of the city

The municipality of Smolyan is located in a mountainous area (1000m altitude) of southern-central Bulgaria in the Rhodope Mountains, with neighbouring Greece at the southern border. Geographically it is a linear valley location, spread over 20km's. The town inhabitants number 35,000, with 44,000 in the wider municipality (60 – 70, settlements many in the mountains). Importantly, Smolyan is 10km from Pamporovo, Bulgaria's second largest ski resort (40Km of piste). Annually 350,000 people visit the wider area, 70 per cent of whom go direct to ski at Pamporovo.

Outside of the ski season there are other tourism opportunities such as caving, hiking, rock climbing, wildlife and spas. Alongside tourism, the economy is based on mining, timber and machine industries and livestock. The main crop is potatoes (about 30% of the national production). There is also a polymer moulding industry producing parts for the automotive industry. Unemployment is around 10 percent with an older demography and many young people leaving for opportunities

elsewhere. The city is also host to two university campuses – branches of Plovdiv University and Varna Free University.

## Short overview of national/ regional policies and incentives

The Municipality of Smolyan has developed its main strategic programme – the Municipal Development Plan which presents a vision of prosperous and attractive place for living with developed economy, good infrastructure and communications and preserved cultural and natural resources. The municipality has identified 5 main priorities:

- sustainable economic growth,
- improved infrastructure,
- effective cooperation, improved educational,
- health and social services
- increasing the employment rate and overcoming the emigration of the young people from the area.

All the actions are aimed at sustainable development with intelligent use of resources, energy effective measures and innovations. For the last period, Smolyan has implemented a number of projects that have led to the improvement of the urban areas, renovation of buildings for better social and educational infrastructure, including energy effective measures, building of new tourist infrastructure, preservation of cultural and historical heritage and a number of projects aimed at improving the administrative capacity in terms of equipment, software and human resources.

There is also a national programme for eServices - National Development Programme: Bulgaria 2020 which requires Smolyan to deliver services online by this date.

# Section 3

## Description of the baseline review focus

This will be the first URBACT project for Smolyan and as a less developed partner, the city has minimal experience in smart activities. As a relatively small city in remote location their focus has been principally on infrastructure. SmartImpact provides a real opportunity to maximise investment and to influence “smartness”. The city has some very real challenges for example, a 6 month winter period leading to heavy demands on fuel, the need to create jobs and attract investments to maintain population balance, becoming a pilot city for green investments and developing opportunities for sustainable tourism.

# Section 4

## Baseline review activities

The Smolyan baseline methodology is drawn on a day long meeting with 3 members of the municipality: Mr Marin Zahariev (one of 3 deputy mayors), Mr Adrian Petrov (Deputy Regional Governor of Smolyan Region), Mr Denislav Kostov (Director of State Fund Agriculture for Smolyan Region) and two representatives from Manchester City Council along with the lead expert for

SmartImpact. Due to the remote nature of Smolyan this took place in Stuttgart prior to the full partner project meeting in February. The city also provided supporting documentation in the form a city poster, partner profile and baseline study / indicator document.

# Section 5

## Key findings

Smolyan is a small town in a small city in a mountain area. Its aspirations to develop as a smart city are to be congratulated. The proximity to the boarder with Greece (20 km from boarder) provides opportunities to combine mountain and sea tourism with access to regional government finances for cross boarder programme. A new road is currently under construction by Greece along with a boarder point at Bulgaria.

Economic development is active and there is a desire to attract technology companies related to polymer shaping. There are also meetings underway regarding a data centre. Realistically the area will not support the development of a large sector

In terms of infrastructure, the city is at its limits. The authority has to buy land to make any changes e.g. car parking and is in competition with foreign companies for land and properties. The area has many large structures e.g. unused buildings including factories established under communism. This means that refurbishment rather than new build is the priority.

There has been some developments in the city in relation to smart. For example, the Bulgarian central government has financed PVs. A sport hall adjacent to one of schools used for city events utilising PVs to supply the chillers and a solar system on the roof for hot water. There are also feasibility studies underway to look at creating a biogas facility.

## Challenges

Smolyan faces a number of challenges.

- Building refurbishment and heating: Numerous buildings require refurbishment (there is 20,000 square meters of main municipality property. Other municipal properties total more than 150 000-200 000 sq. meters). With a six month winter heating period, there is a significant requirement for energy. The most commonly used fuel is wood with resulting air pollution. There is no gas supply, although LPG/not LPG, but CNG/ is supplied via large tankers in parts of the city. Some of the public spaces are fuelled by pellets. An oil based power plant have to be converted to biomass, CHP is under discussion as the cost is high. There is no CHP so far and the pipeline is old. Geography - as a border region, there is a need for improvement of the accessibility. The current population is reducing, and Smolyan needs a boost that will increase the attractiveness of the area for young people to live and work. The city is linear (spread over 20km) and a high level of car ownership means it is congested with associated air pollution issues.

- Public transport is privately run and hence the city can not access public funds. Using electrical cars is considered a suitable option. A feasibility study is necessary as well as finding the suitable financial instruments.
- Flooding – two rivers run through the town (plus snow melt) and whilst flooding has not taken place recently, the threat is ever present and there is potential to put sensors in to provide early warning.
- Citizen engagement - the need to engage with citizens and local stakeholders on "smart" development and have knowledge about the right solution and the right partners to develop and install the solutions.
- Funding - Finding and developing the right business and financing models to fund innovative solutions

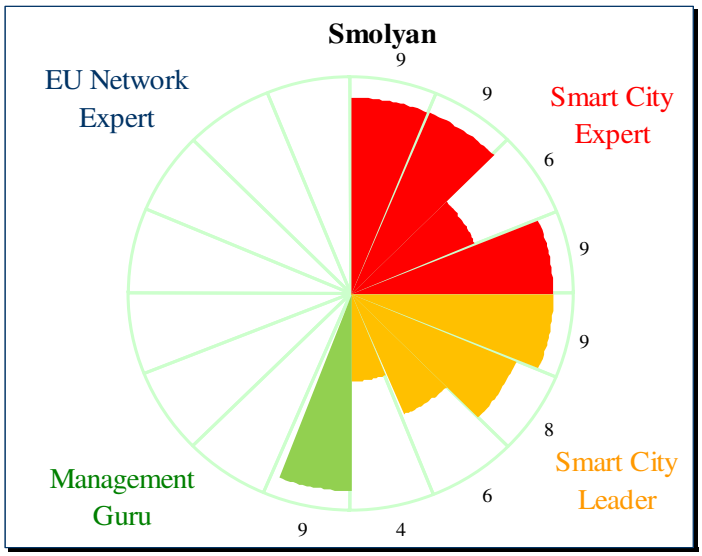
## Good practice

The Municipality of Smolyan has long-term experience in town twinning projects together with its twinned towns Kispest (Hungary), Voru (Estonia), Suhl (Germany) and has shared good practice on different topics. The municipality has also participated in "Active Citizenship Development Through Town-Twinning" conference (October 2013) in Kispest, Hungary.

Smolyan is a partner in the MUSTER (Multi-level Governance for an Integrated, Sustainable, Regional Development ) Project and also "Europe for Citizens", engagement and civic participation in the action in which five cities - Città di Castello (I), Joué lès Tours (F), Lörrach (D), Sighisoara (RO), Smolyan (BG) and the Utopias Agency are working together for long-term collaboration between the five local governments in the framework of the European Commission's Urban Agenda of the 2014-2020.

# Section 6

## SWOT- analysis



| Smolyan | | |
|---|---|---|
| | *Scale from 0 - 10* | |
| **Smart City Expert** | 1 Experience of partner with smart city projects | **9** |
| | 2 Decisions by the council on smart city / smart districts | **9** |
| | 3 Level of expertise within municipality | **6** |
| | 4 Level of expertise within ULG | **9** |
| **Smart City Leader** | 5 Priority of Smart City / Smart district at political level | **9** |
| | 6 Clear smart city goals and measures defined | **8** |
| | 7 Degree of implementation of smart city measures | **6** |
| | 8 Existence and implementation of monitoring framework | **4** |
| **Management Guru** | 9 Well developed ULG (established working relationship) | **9** |
| | 10 Local coordinator attached to decision making in city | **1** |
| | 11 Local coordinator linked to business, research & civil society | **1** |
| | 12 Organization of strategic cross-cutting issues within administration | **1** |
| **EU network expert** | 13 Existing transnational exchange on smart cities | **0** |
| | 14 Application of Operational Programmes (ERDF, Jessica, ESF) | **0** |
| | 15 Experience in EU city networks (URBACT, Polis, Eurocities etc.) | **0** |
| | 16 Successfully applied to EU-funded innovation projects in last 5 years | **0** |

## Conclusions and recommendations

As a less developed city, Smolyan does not have a wide portfolio of smart activity. An IAG will provide a real opportunity to develop and integrate a smart city programme and routes to funding. The city has numerous issues to tackle, and whilst on a different scale to others in the partnership, they are no less of a challenge. Located in a mountainous region of Bulgaria, the importance of smart has the potential to have a large impact on the city's future. The city wishes to develop a plan going forward that will support it's growth and development alongside demographic and economic sustainability. There are real opportunities for Smolyan to learn from other more advanced partners as well as to develop their own approach to tackling their own issues.

# SMARTIMPACT

# Baseline Review Report – Guadalajara, ES

## Summary

Guadalajara is small city with ambitious smart city plans for the delivery of services. Their vision is to create a sustainable, smart, efficient, revitalized and integrated city. The city has a number of examples of good practices, some of which are in deployment and others in operation as living lab pilots. The city has a progressive city platform which is already delivering services. However, its continued development raises issues such as suppliers lock and difficulties in integration. They need to solve these issues and design a plan for a near future. An Integrated Action Plan (IAP) will allow the city to bring together the governance structures, processes and business models that set the foundations and basis to carry out the objectives indicated in the Integrated Strategy for Sustainable Urban Development.


# Section 1

## SmartImpact in Guadalajara– aims and objectives

The city of Guadalajara wishes to participate in the SmartImpact project in order to further develop their smart city infrastructure and, create a sustainable city, delivering services intelligently. In Guadalajara a number of smart initiatives are underway, including a smart city platform both delivering services to the citizen and providing management information for the city.

The objectives of the Integrated Strategy for Sustainable Urban Development (EDUSI) form the basis for the Guadalajara IAP. The key challenges identified by the city are detailed in the strategy as:

1. Smart management and delivery of urban services and public administration.
2. Sustainable urban mobility and accessibility.
3. Energy efficiency at urban scale.
4. Recovery of the old town area.
5. Care of the city environment.
6. Economic development and regeneration of the social framework.

In terms of the delivery of these objectives, the IAP aims to find ways to replicate the smart solutions deployed and to address the challenges that their city activity has raised to date.

Specifically the plan would address the following:

Goal 1: Governance and ownership. Having deployed a smart city platform, a number of issues have been uncovered relating to the management of data and governance. For example, the portal is managed by one company, Telefonica, and as the city has negotiated contracts with other providers and wishes to use the platform to host the data, the other companies have declined to interact with them. Having made the investment, going forward, the city needs to understand routes to the management of data and ownership of systems.

Goal 2: Pilots to permanence.- Similar to many other cities in Europe, Guadalajara has a number of pilot projects in operation as well as the aspirations to widen delivery of online smart city services. The challenge for all cities is how to incorporate these activities in the mainstream. Integration of further data into the platform and the exploitation of all data in order to provide better and more efficient services are key challenges Guadalajara aims to address.

Goal 3: Organizational development. Along with the uptake of cross-cutting activities and the development of an urban platform, Guadalajara has recognized the need to move away from the traditional hierarchical organization of the city administration to a better cross-departmental organization structure that supports full integration of strategies, measures and impact monitoring across all departments and offices.

Goal 4: Delivery of services on line. Due to a Spanish national directive all public services are to be offered online within one year. Guadalajara is requested to implement this directive on a local level throughout the year 2016. The city has well recognized the opportunity of this step. Moving from analogic/traditional to digital services will improve services and enhance efficiency of the city. In addition, completely new services can be offered and useless processes can be eradicated through an e-government approach that makes full use of data integration. However, this requires Guadalajara to not only shift manual and traditional processes to the internet, but rather setup to a smart process management for a fresh and radical new approach to smart urban services.

Goal 5: Involvement of citizens into the development of a smart city. Guadalajara has managed to install first pilot projects that are able to integrate citizens into the improvement of the city. Citizens have the possibility to directly interact with the city administration through a city application. By this, they are able to make claims and report unpleasant issues and the administration will respond quickly. This first approach towards ICT-based citizen participation now needs to be supported through new ways citizen engagement that combine analog and digital processes in a smart way.

# Section 2

## Short description of the city

The city of Guadalajara is located in central Spain 60 kilometres northeast of Madrid in the Castilla-La Mancha region on the Henares River, and has a population of 83,391 (2015). It is the capital of the province of Guadalajara. The area was given little attention by the central government until the late 1950's when plans for moving industrial development out of Madrid began to favour Guadalajara and the Henares corridor. New industries and improved communications (Guadalajara is on Spain's 3,100km Spanish high-speed AVE trains, the longest high-speed network in Europe) have brought prosperity. Due to the proximity to Madrid, Guadalajara will play a major role in logistics via national designation as a "Future Transport City". Impressively 90% of homes have fibre optic broadband.

The strategic location of Guadalajara in the corridor of the Henares and economic dynamism, coupled with the fact of being a comfortable city and of medium size, is the main opportunity for the future of the city as a hub of the territory in which it is inserted. Throughout the history of evolution in primary sector it has been marked by progress in agriculture and livestock, both in the traditional way and ecologically, with the latter struggling to put a major dent.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The main pilar of **secondary** production sector is the industry (e.g.: Industrial Estate 'El Henares' and Industrial Estate 'El Balconcillo'), important engine of the economy of Guadalajara in recent decades, thus promoting a high socio-economic boost and favoring urban expansion along the municipality.

**Tertiary** activities (Health, Education, Commerce, Tourism) are what really nesting territory, generating relationships influence or dominance, and therefore, delimiting an area of influence that is socially and economically connected to the urban core.

As for industrial challenges, Guadalajara is continuously facing with recovery of retail activities, especially in the old town, and the growth of production around transport and logistics. The Alcalá de Henares University is located in the city and has two local campuses. There are plans to upgrade one of these. The academic focus is architecture; translation; education and the new developments will allow the curriculum to expand. In Spain universities fall under the remit of regional government and Guadalajara has facilitated the space for the redevelopment. There is also a technology and science park linked to Castilla-La Mancha Region University in the city. The park is also home to the Centre for the Innovation in Intelligent Infrastructures (CI3), a non-profit public-sector foundation whose remit is to become a national and international reference centre in the research, development and innovation of technology services and products for urban and inter-urban environments.

## Short overview of national/ regional policies and incentives

CI3 (www.ci3.es/en) was appointed to deliver the Urban Sustainable and Integrated Strategy of Guadalajara (EDUSI) as part of a bid to the URBAN EU programme. This will provide 44M € of ERDF funding for regional strategies**,** bidding for 18M € (15M € grant) – the outcome will be known in June 2016. The strategy identifies actions for next 5 years based on six performance guidelines:

1. Becoming a reference city for the governance of urban services and administration
2. Ensuring sustainable mobility and urban accessibility
3. Improve urban measures for improved EE
4. The importance of urban life and heritage of historic centre
5. Improving the environment

6. Economic recovery and growth

These ERDF funds have already been granted (they are different from the EDUSI ones). They were granted by the National Company Red.es and the corresponding projects will be deployed en 2016, 2017 and 2018.,

Within the URBAN EU programme, it is compulsory to have an urban sustainable and integrated strategy for each city to get funds. As for Guadalajara, CI3 (www.ci3.es/en) was appointed to deliver the Urban Sustainable and Integrated Strategy of Guadalajara (EDUSI) as part of a bid to this programme, which will provide 44M € of ERDF funding for regional strategies, bidding for 18M € (15M € grant). The result of Guadalajara bid will be known in June 2016.

The integrated strategy identifies actions for next 5 years based on 6 performance guidelines:

1. Becoming a reference city for the governance of urban services and administration
2. Ensuring sustainable mobility and urban accessibility
3. Improve urban measures for improved EE
4. The importance of urban life and heritage of historic centre
5. Improving the environment
6. Economic recovery and growth

Following with ERDF funds, but in a different programme to the ones requested to implement EDUSI lines of action. The National Company Red.es has granted additional funds, through the first Spanish Smart Cities Call (70% funded grant and starting in 2016), for one only company to deploy different projects in the Guadalajara city from 2016 to 2018. Detailed plans of such projects, based on upscaling and improving the existing smart city infrastructures and services, have been drafted to:

- Expand fibre optic network for traffic/surveillance, 9 totems, internal communications
- Develop a contact centre
- Upscale intelligent parking
- Install urban totems to provide public information
- Further the city FIWARE platform
- Develop and deploy a smart tourist applications

In addition, Guadalajara is part of Spanish Intelligent Cities Network (RECI) (www.redciudadesintelligentes.es), a join initiative that includes both municipalities and companies. The goal is to share experiences across five working groups: social innovation; energy; environment; infrastructure & habitation; urban mobility; government, economy and business.

# Section 3

## Description of the baseline review focus

As a small city the focus of the baseline is the delivery of city services via smart for all citizens. In collaboration with partners, the city subcontracts their city services. For example some city management services are delivered through Valoriza, the city platform is managed by Telefonica. The city of Guadalajara has taken first steps towards a smart management of its service partners based on data analysis and individual KPIs, thus making sure the contracted companies contribute to

the goals of a smart city. The vision going forward is to expand the use of technology to facilitate sustainability and an improved quality of life as well as to grow the local economy. Their vision is focused on 4 areas:

- Citizens services
- Enterprises / business
- Urban services
- eGovernment – internal delivery and management

# Section 4

## Baseline review activities

The Guadalajara baseline draws on the combined input of the city representatives and their suppliers. The two day visit included inputs from politicians, city officers, Ferrovial (Management of Public Lightning and Traffic Light in Guadalajara), Telefonica (telecoms) and Valoriza (Waste Collection and Street Cleaning), Zitycard (Citizen Card XGUADA) and the Centre for the Innovation in Intelligent Infrastructures (CI3). CI3 (www.ci3.es/en) is a non-profit public-sector foundation. Their mission is to become a national and international reference centre in the research, development and innovation of technology services and products for advanced infrastructure projects in urban and inter-urban environments. They are based in Guadalajara at the science and technology park ('Nuevas Empresas' Building) and are supported by the region of Castilla-La Mancha, University of Alcalá (UAH) and Ferrovial. They are important in the support of city council and city administration to strategically plan, conceptualize and implement strategies and measures that actually refer to smart solutions and the use of data for an improvement of urban services.

The baseline visit included presentations from the above and site visits to see some of the CI3 living lab projects. The city has a political member who is responsible of Sustainable Urban Development and Smart Cities local area (Jaime Carnicero de la Cámara) who attended the baseline visit meetings.

# Section 5

## Key findings

Since 2007 & 2008 Guadalajara has been working on closing the gaps between public and private sector. Guadalajara wanted to create a PPP framework to take advantage of the positive aspects of local governments (long-term stability of contracts) and companies (efficient services and innovations). The goal was to improve the services for citizens, to become more sustainable, to increase transparency and accountability of the local Government.

Today, Guadalajara has an active smart city programme which enjoys high level political support in the city with a political post for Sustainable Urban Development and Smart Cities. The city is active in smart city delivery particularly in terms of the delivery of services online and the management of contracts via key performance indicators. Due to its considerably small size, the city administration and city council benefit from flat hierarchies and direct communication flows. The Vice Mayor [Jaime

Carnicero], the Councillor for Environment and Parks and Gardens [Francisco Úbeda], the Councillor for Urbanism and Officers Representative [Blanca Causapié] and the Systems Technical Manager [Ignacio Lirón], all attended the baseline meeting and show a high degree of interaction and a good working relationship in their everyday activities.

The city works with a number of suppliers to deliver services and to a degree has successfully engaged them in the smart journey. For example, Ferrovial has implemented a Smart Lightning system with the capacity to monitor and control remotely each lamp through a website, Valoriza has their own innovation department, Telefonica supplies its smart city platform based on FIWARE (set of tools and applications which enable use of a wide range of "future internet technologies" which is an open source platform for cloud based services). Telefonica has plans to setup a FIWARE iHUB in Guadalajara and to link datasets and ICT-related activities of Guadalajara into the FIWARE LAB – a programme that supports start-ups and SME's to develop new services and products based on FIWARE data. The city is also active in a number of forums, for example, Open and Agile Smart Cities (OASC).

## Challenges

The key challenges identified for Guadalajara on smart these are identified as:

- Supplier integration and management – the smart city platform has revealed the challenge of relationship management. For example sharing data on the Telefonica managed platform. Added to this the need for standards and uniformity for data exchange. What is the role of the municipality in the relationships and how to maintain control when suppliers are competitors? The need is for maximum flexibly and to avoid supplier lock-in.
- Infrastructure investment – what are the best routes to investment particularly in terms of interoperability and future proofing?
- Data management – smart city platforms invariability generate vast amounts of data. How can a city manage big data and how to extract the useful information intelligently?
- The city adapting to smart - eGovernment is driving services online and city departments need to move from silo working to a broader cross sector approach.
- Engagement with citizens – how do we bring citizens with us on the smart journey?
- Organizational development – how does the city administration need to restructure its organization and communication flows in order to provide for an improvement and strategic management of smart solutions in the everyday business of the city?

## Good practice

The city is able to provide a number of examples of active smart city delivery, a number of which are working towards a single point of access for citizens.

**Smart City Platform –** contracted to Telefonica in 2015, the city has delivered some of its services via a smart city platform. Functionality includes an incident reporting tool for citizens and management of the waste contract. The city is working on integrating the public transport platform (information in bus stop screens, website and mobile application) in this big one platform, but currently it runs independently. Based on a Fi Ware platform, the city uses the tool for performance management.

- **Incident reporting -** 1300 reports in last 2 months. An app is currently used but there is an intention to web based services in the coming months. Users can log on to the site and see the status of their report. The city can monitor the action rate and service companies are assessed partly based on the speed and quality with which the complaints are being dealt with.
- **Waste Management** - waste trucks are GPS tracked and their location can be identified at any point in time. There are also plans to look at RIF to develop predicative maintenance of bins – the RIF would store the history of the item.

**Public transport –** bus stops have screens with live information. It can be accessed via a website and app.

**City Touch Luminaries Management System** – there are 14K luminaries in the city. To date 9,200 have been renewed for LED technology ones and can be remotely controlled and monitored. This is a 12 year contract which promises 70% savings (7.6M€ investment 4,425 Tn/CO2 saved).

**Centre for Innovation in Smart Infrastructures** – in 2013 an innovation space opened in the city (CI3). They operate a living labs model and currently have 5 demonstration projects.

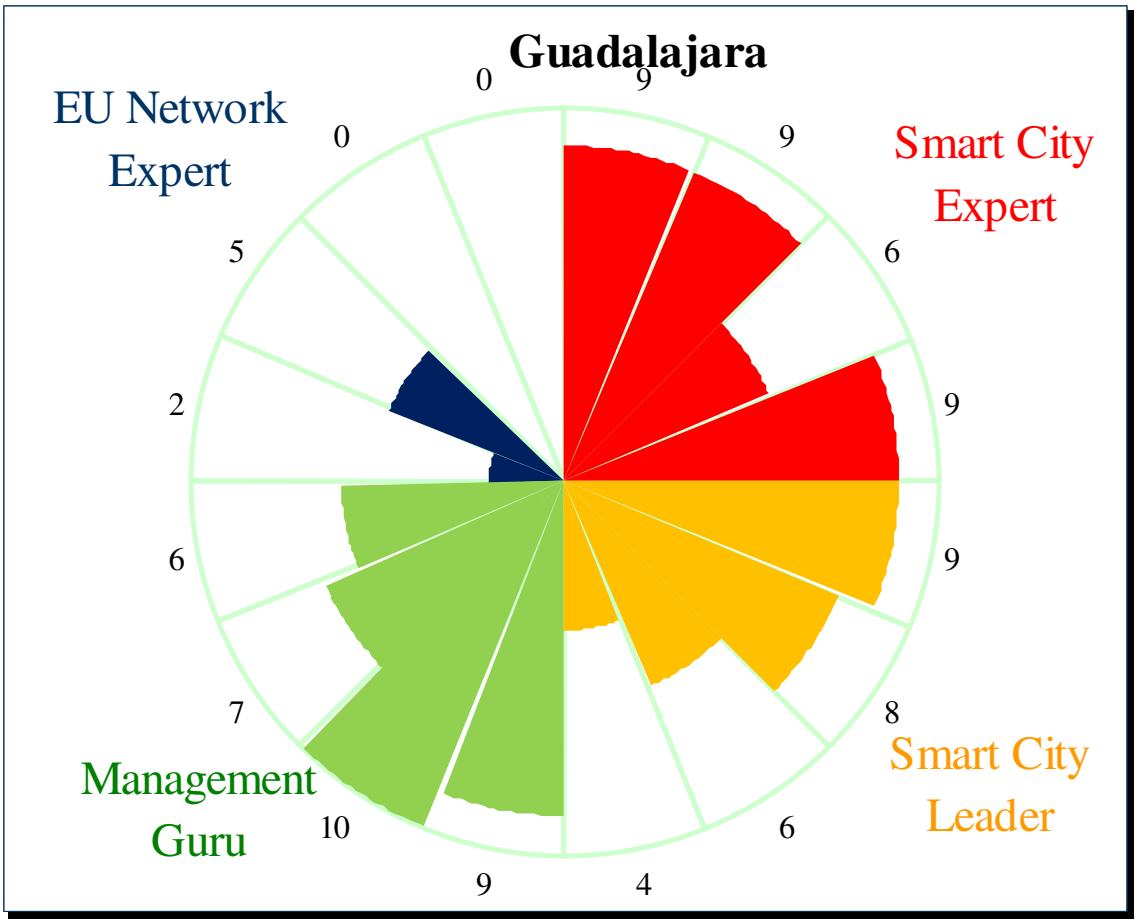
- Tuciudapp – Tourist information via QR codes (CMS connected).
- Bindogs- dog waste bin opened via the XGUADA cad (Zitycard) giving discounts to pet supplies.
- SmartCross and SmartAparc – using cameras to monitor parking and a street crossing.
- SMairT – sensors monitoring air quality and relayed to the public via a screen in the street.

**XGUADA Card (Zitycard)** – smart city card currently registered to 33K out of a total population of 85K. The card can be used as identification for voting and has pay and prepay (has to be integrated with banking systems)**.**

# Section 6

## SWOT- analysis

The analysis of strengths and weaknesses in the relevant action fields for SmartImpact is based on a mixed-assessment approach. Each city is asked to complete a self-assessment by rating the own state of performance in 16 areas of action and expertise. The scale ranges from 0 (not at all) to 10 (best city in Europe). The self-assessment by the city representatives is matched by an assessment of the Lead Partner and the Lead Expert after the baseline visit. The figures below show the merged values of the self-assessment and the SmartImpact LP/LE assessment




| .SmartImpact Assessment – scale = 0 - 10 | | |
|---|---|---|
| 1 | Experience of the city with smart city projects | **9** |
| 2 | Decisions by the council on smart city / smart districts | **9** |
| 3 | Level of expertise within municipality | **6** |
| 4 | Level of expertise within ULG | **9** |
| 5 | Priority of Smart City / Smart district at political level | **9** |
| 6 | Clear smart city goals and measures defined | **8** |
| 7 | Degree of implementation of smart city measures | **6** |
| 8 | Existence and implementation of monitoring framework | **4** |
| 9 | Well developed ULG (established working relationship) | **9** |
| 10 | Local coordinator attached to decision making in city | **10** |
| 11 | Local coordinator linked to business, research & civil society | **7** |
| 12 | Organization of strategic cross-cutting issues within administration | **6** |
| 13 | Existing transnational exchange on smart cities | **2** |
| 14 | Application of Operational Programmes (ERDF, Jessica, ESF) | **5** |
| 15 | Experience in EU city networks (URBACT, Polis, Eurocities etc.) | **0** |
| 16 | Successfully applied to EU-funded innovation projects in last 5 years | **0** |

## Conclusions and recommendations

Guadalajara surprises the smart city community, since it represents a very good, but yet widely unknown example, of a stern and comprehensive approach towards becoming a smart city.

The city has established several important foundations for a successful smart city: it has developed a data platform and is strongly working towards integration of all relevant urban data and services; it is managing its service providers with a clear goal to have them contribute to smart city goals and the municipality is reorganizing itself to better manage the cross-cutting issues and data-driven projects in the future.

Guadalajara has taken an evolutionary approach to build a smart city. A living lab of smart solutions which are based on trial and error, as well as upscaling of those solutions that work, is the right way of dealing with innovative technologies in a complex system like a city. Guadalajara is successfully applying the living lab approach and seems to be learning from testing some smart ideas in the city. The political commitment in Guadalajara to becoming a smart city is very high. This – combined with a rather small city administration – has led the city to move quickly and to be agile in rapidly implementing solutions.

Guadalajara now needs to integrate more data into the FIWARE platform and better exploit this data for value added services. In addition, Guadalajara needs to better link the Smart City agenda with concrete goals of a sustainable development. When it comes to engaging with citizens as part of Smart Guadalajara, the city needs to identify new instruments and bi-directional communication channels that would help induce ownership and improve participation in the smart agenda.

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Sustainable Urban Development and Integrated Strategy of Guadalajara 2016.

SmartImpact
Local Impacts from Smart City Planning

# SMARTIMPACT

# Baseline Review Report – Suceava, ROM

European Union
European Regional Development Fund

Connecting cities
Building successes
URBACT

# Contents

# Summary

Suceava is a small to medium sized city in the North-Eastern region of Romania. The vision of Suceava is to become a prosperous and highly developed society, but in a sustainable manner. The city has a number of examples of good practices, some of which are in deployment and others in operation as infrastructure investments. Being a member of several European city networks and smart-city oriented projects, Suceava has a good basis to draw on European learnings and to transfer existing knowledge into tangible smart city projects for Suceava.

The largest problems that Suceava needs to tackle refer to negative impacts from a high volume of traffic and to the rather weak economy, which leads to ongoing out-migration of young and skilled labour.


# Section 1

## SmartImpact in Suceava – aims and objectives

Suceava Municipality would like to benefit from the transfer of knowledge and best practice experience of the city partners in SMARTIMPACT in order to increase the chances of a successful implementation process for the sustainable development projects planned for Suceava city .

It is expected that this new project should allow the city to gain more experience in managing smart city projects based on clean technologies and data. Suceava by this expects to attract additional EU funding from H2020, ERDF, EFSI or national funding, to actually implement technologies and infrastructure projects. In terms of a sustainable urban development, Suceava aims to achieve changes in people's behaviour regarding energy efficiency, mobility patterns and a better use of resources. As a key enable for a smart transformation of Suceava the city administration aims to improve the management skills of the local team and to further promote the local experience at regional and national level.

**Smart goals for Suceava:**

It is expected that the integrated action plan, which is to be developed throughout SmartImpact will focus on the following goals:

1. ***Organizational development***

- Create a smart check list – a list with indicators that can provide specific answers regarding successful implementation and achievement of the objectives – smart project impact verification.
- Improving of the transparency and efficiency of the organization – City Hall
- Development of a Strategy Unit inside the City Hall, as an independent department with different expertise (engineers , economists , sociologists , lawyers) – that will need to deal with smart planning and an integrated strategy for the city.

2. ***Stakeholders involvement***

- Development of a communication platform in order to improve the feedback from the citizens not only during the consultation phase, but also during implementation of the project and after. This platform will need to have a separate section designated to private sector communication.

3. ***Management***

- Development of an integrated approach to project planning and sustainable impact management

4. **Financing**

- Create a guide (state-of-the-art study) with the roadmap from an idea to a successfully implemented project – including sources for financing and practical examples

5. **Monitoring**

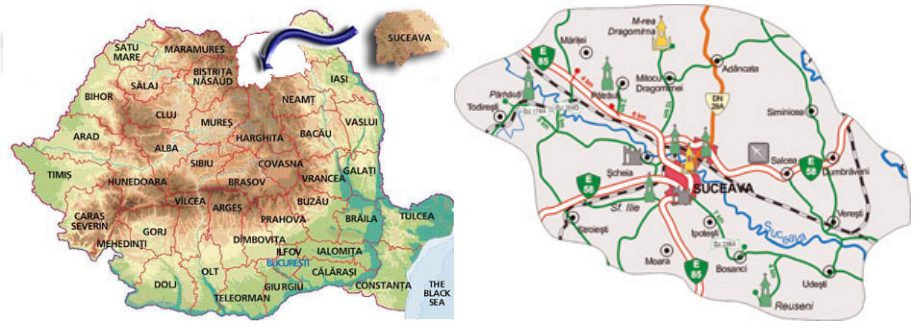
- Use a monitoring platform not only for infrastructure indicators but also for environmental indicators like air quality, or citizen-focussed indicators assessing peoples satisfaction in order to better monitor project implementation.
- Invite citizens to participate in the monitoring process

It is expected that after a successful implementation of the proposed projects Suceava City should become an example of integrated sustainable urban management and development for the rest of the cities in Romania.

# Section 2

## Short description of the city

Suceava is the largest city and the seat of Suceava County, in the Bukovina region, in north-eastern. Romania. As of 2011, Suceava has a population of 92.121, facing a constant decline of the population (in 1992 the city counted 114.462 inhabitants).




After the Second World War, Suceava underwent a significant social and economic development under the communist regime. In the North-East of the city, but also in the West, the most important industrial sites were built, which were processing raw materials from this part of the country (paper mills, wood processing, Car parts, glass, food industry, light industry).

Since the 1960s Suceava was rapidly industrialized, prompting the construction of new residential and public buildings. Another consequence of the industrial development was the growing transport, leading to the construction of Salcea airport (the airport is located 12 km from the city) and the modernization of three railway stations. Also, the public transport was improved.

With 9.500€ GDP per capita the North East Region of Romania is the least developed region in Europe with regards to economic strength and turnover. However, Suceava has been successful in attracting EU funding to the city for several research- and development related projects, which has helped the city to channel state funding and infrastructure investments into important urban development projects in the past.

## Short overview of national/ regional policies and incentives

In 2013 the Suceava Local Council approved a Sustainable Energy Action Plan (SEAP). The SEAP focusses on energy efficiency and on the implementation of projects that would increase the usage of alternative energies at local level and facilitate the uptake of electro mobility in the city. The main objective of the SEAP is to reduce the greenhouse gas emissions by at least 20% by 2020 and to promote the investments carried out within Suceava Municipality, which can lead to an efficient use of energy by improving the existing energy performance or the development of constructions, installations, transport, equipment and technologies enjoying high energy efficiency, including feasible renewable energy sources.

The SEAP is the main policy instrument according to which Suceava Municipality will reach its objectives by 2020. An important first step was the preparation of a Baseline Emission Inventory (BEI), which helped identify the most promising fields of action and the best opportunities in order to meet the local objective of reducing $CO_2$ emissions.

The SEAP focusses on measures that can be implemented and achieved within the competence and decision making of the local authorities. Therefore, the local authority of Suceava is expected to play an exemplary role in implementing measures and projects under the SEAP. These are expected to

relate to the local authority's own buildings and facilities, public and private fleets, the production of energy from renewable sources, sustainable urban mobility, etc.

In addition to the SEAP, which was enacted in 2012, a number of studies and strategies were approved at local level in the past 5 years: Urban Integrated Development Plan – 2010, Urban Sustainable Mobility Plan – 2014, Local Action Plan (electro mobility) – 2012 in order to implement a sustainable development of the city, reduce traffic congestion and air pollution. According to these plans Suceava will have to focus on the following issues in the next 20 years:

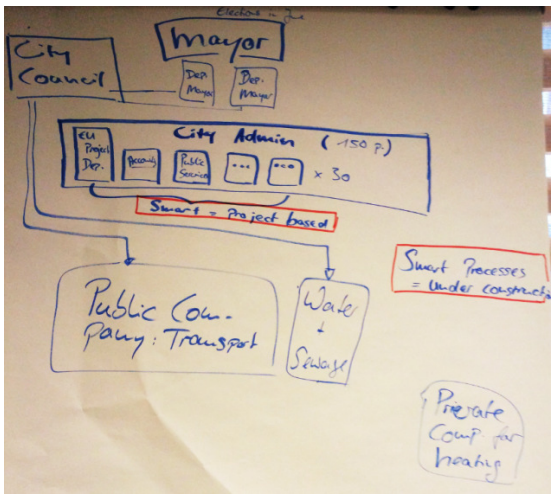
- Transport (municipal fleet, public, private and commercial fleets - including freight );
- Urban planning (strategic urban planning, sustainable mobility urban planning, development of local regulations to support sustainable mobility);
- Procurement (local energy-efficiency regulations, local regulations on the utilization of renewable energy sources);
- Electric vehicles ( private and public ) and electric busses for public transport

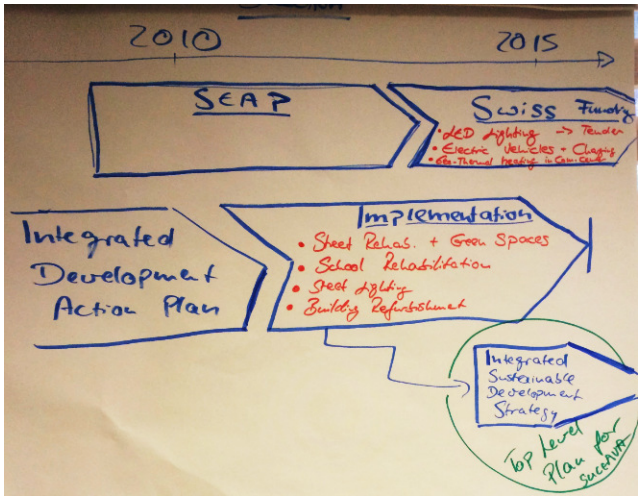
There are significant funds at EU level and at national and regional level, which support the policy goals of Suceava and shall be addressed in order to continue the implementation of sustainability and energy efficiency measures at local level. These include: central governmental funds for rehabilitation of public buildings, regional funds that address infrastructure development and can be accessed by forming an association of at least 2 municipalities for funding and implementation of common projects), private and public funds (620 mil Euro available at the regional level for the period 2014 -2020, 85 % from the EU and 12% from the national budget).

# Section 3

## Description of the baseline review focus

The baseline review for Suceava focussed on understanding the current strategies and policies for a sustainable development of the city and their interactions. In addition the study focus was on the management and administration structures of Suceava. The goal was to work towards tangible goals and activities that would form the main frame for the integrated action plan to be delivered under SmartImpact.


City Council
Mayor
Dep. Mayor
Dep. Mayor
City Admin (150 P.)
EU Project Dep.
Records
Public Service
...
...
× 30
Smart = Project based
Public Com-pany: Transport
Water + Sewage
Smart Processes = Under construction
Private Comp for heating


2010
2015
SEAP
Swiss Funding
• LED lighting -> Tender
• Electric Vehicles + Charging
• Geo-Thermal heating + Geo-Cooling
Integrated Development Action Plan
Implementation
• Street Reliab. + Green Spaces
• School Rehabilitation
• Street lighting
• Building Refurbishment
Integrated Sustainable Development Strategy
top level plan for success

# Section 4

## Baseline review activities

The Suceava baseline draws mainly on the input from Dan Dura, Head of the Municipal Department for European Projects. Suceava was the last municipality to join SmartImpact in January 2016, leaving little time for the baseline review. Since Suceava is located in the North-Eastern part of Romania (1.10h flight from Bukarest, 6h drive from Bukarest), all partners agreed that travelling to Suceava for two days would have overstretched the budget and the available time for the baseline review process. Thus LP, LE and Suceava agreed to meet half-way in Budapest for a one-day workshop on February 10, 2016.

The baseline visit included presentations from Dan Dura on Smart City activities and strategies of Suceava, discussions on challenges and opportunities and a workshop on potential goals and activities to be implemented under the integrated action plan for SmartImpact.

# Section 5

## Key findings

Several important developments took place in Suceava in the past 15 years, with the most important being the development of the commercial area which is located in the middle of the city. This new commercial area is connected to the main boulevard which is crossing the city from south to north. Due to this larger development project services, constructions and goods delivery underwent a significant increase in the past 10 years. This resulted in a significant increase in commercial transport and vehicle trips for goods delivery, leading to traffic congestion and high level of air pollution in Suceava. Today, traffic and transport related emissions are one of the largest challenges for local authorities in Suceava. Since the Municipality has committed to the goal of “sustaining the local development but in a sustainable way”, today there is an important demand of local actions, measures and regulation for freight delivery (timing, routes, access , speed , weight , restrictions ).

As consequence a number of studies and strategies tackling these issues were approved at local level in the past 5 years: Urban Integrated Development Plan – 2010, Urban Mobility Plan – 2014, Sustainable Energy Action Plan – 2012, Local Action Plan (electro mobility) – 2012 in order to implement a sustainable development of the city, reduce traffic congestion and air pollution.

Based on these strategic documents, Suceava Municipality was able to implement a number of projects, summing up to the total amount of EUR 22,4 million. Projects included the rehabilitation of main streets and boulevards, traffic lights, underground parking places, the extension of the pedestrian area in the city centre, the modernization of the public transport fleet and the development of cycling lanes. All projects served the main purpose of fostering sustainable mobility, reducing traffic congestion and traffic emissions and increasing the quality of life in the city, and they

were backed by a strong political support from the local decisions makers, town hall's leaders, and local councillors.

Another major objective of the Municipality of Suceava is to demonstrate the catalytic effect of urban markets on generating sustainable growth by supporting the regeneration of the historic city centre, the development of low-emission economic activities and the promotion of local entrepreneurship.

Being at the bottom end of economic development in Europe, Suceava faces the need to leapfrog traditional development patterns and to move directly to a clean and smart urban development based on digital technologies and services without focussing on traditional economic development pathways. This, however, requires a sound engagement process of citizens and a recognition of the need to change patterns of behaviour and consumption.

Suceava hopes that an increased economic welfare will lead to a change of mentality and to a different view of what a qualitative life means. In the meantime the municipality focuses on education, information and a continuous life-long learning approach to improve urban services and to engage with citizens.

## Challenges

Like many other cities, Suceava faces the challenges of an increased motorised traffic, leading to high transport emissions and unsustainable mobility patterns. At the same time Suceava is confronted with ambitious environmental and energy targets at European level that directly relate to the reduction of traffic emissions, waste recycling, economic growth and increase in energy efficiency.

In order to tackle these challenges, Suceava needs to secure funding for the implementation of local infrastructure projects and its local plans for sustainable development. Economic growth in Suceava, however, is strongly linked to commerce and related commercial transport services. Thus, new financing models are needed that actually help shift towards sustainable mobility patterns by at the same time embracing markets and commerce as key element of Suceava's economic activities.

Several challenges that come along with this, relate to the capacity of the city administration to deal with complex sustainability challenges and to help leverage state funding and private investments into the right development projects:

- On an organizational level, for instance, the city hall has not yet been able to link the strategic development with a corresponding organizational structure. Strategies are still located within a silo-structure of departments and offices.
- The same accounts for decision making, managing and monitoring of smart solutions or integrated sustainability projects. Up until now, no methodologies or tools are used by the

municipality to make sure that municipal investments really serve the complex goals lined out above.

- Citizens are not fully integrated into engagement processes yet. There are initial concepts for consulting the civil society at a certain phase of project development, but this approach is far from a real co-creation and citizen engagement process, which is needed to spur bottom-up economic activity towards becoming a smart city.
- Financing and Procurement processes in Suceava do not yet make use of the potential for innovation. Thus there is a challenge to build capacity on innovation-based procurement of smart solutions and innovative forms of (public and private) financing of smart and connected solutions.

## Good practice

The municipality of Suceava has already taken part in initiatives to encourage sustainable urban development including the CIVITAS II (2005-2009) Smile Project, MIDAS (2006-2009), part of the Intelligent Energy for Europe's STEER Programme, “Sustainable Urban Markets” and “Electric Vehicles in Urban Europe” EVUE co financed by the European Union through the European Regional Development Fund, under the Interregional Cooperation Programme URBACT II.

Also the “Grow smarter” project will be implemented between January 2015 and January 2019, which is financed by the European Commission under the research programme Horizon 2020.

In the past 5 years a number of studies and strategies were approved at local level: Urban Integrated Development Plan – 2010, Urban Sustainable Mobility Plan – 2014, Sustainable Energy Action Plan – 2012, Local Action Plan (electro mobility) – 2012 in order to implement a sustainable development of the city, reduce traffic congestion and air pollution.

Currently Suceava Municipality is implementing two projects financed by the Government of Switzerland through the Swiss-Romanian Cooperation Programme. The main activities included in these two projects refer to the rehabilitation of the public lighting system (all public lights in the entire city will be replaced with LED lights in order to reduce the energy consumption) and to the implementation of the E-Mobility concept of Suceava by purchasing 15 EV's and 10 electric bikes for the municipal fleet and by installing 28 charging points in the city.

**Actions already undertaken:**

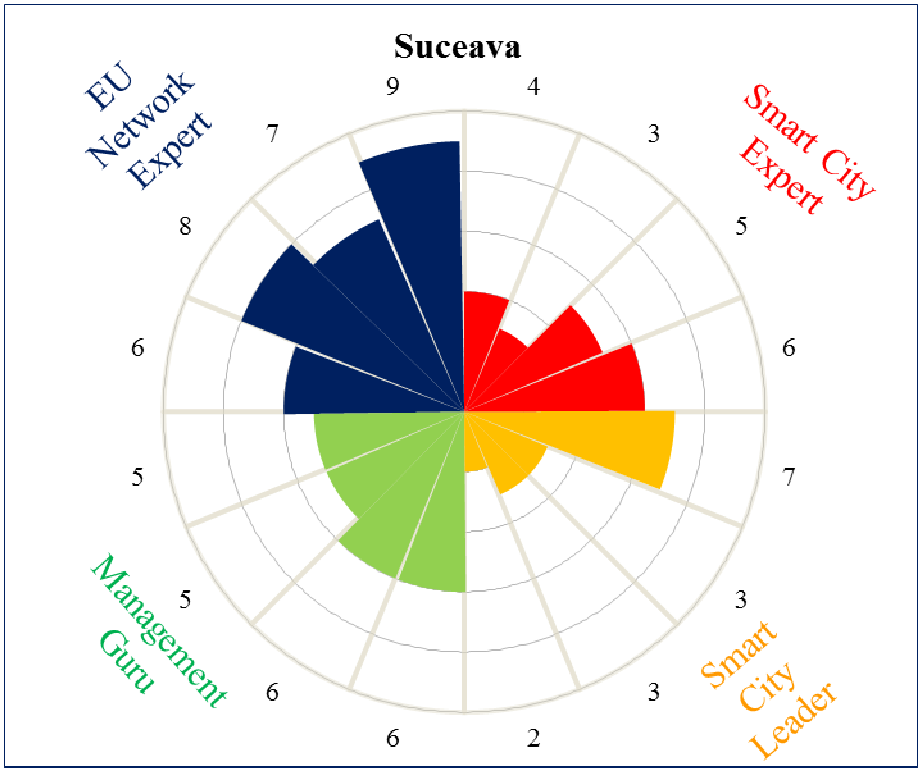
- New city power plant since 2013, based on biomass. Provision of both heating for the entire city and green electricity.
- Refurbishment of 55% of the urban heating system (isolation, pipe lines, transfer points) – including 102 km of pipes and 28 heating transfer units - in order to reduce energy losses and increase the efficiency of the system
- Refurbishment of 380 apartments (structure, heating system) in order to reduce the waste of energy

- Modernization of the public lighting network (24 km of network) through replacing the old lamps with new and energy saving ones and implementation of a management system in order to reduce the energy consumption and increase the efficiency
- Implementation of a new waste management system (on county level) with transfer stations, a new landfill that builds on a biogas production plant and separate recycling facilities.
- Refurbishment of 26 km of city streets and construction of 22,4 km of cycling lanes in order to reduce the traffic congestion and increase the number of PT passengers
- Construction of a 164 underground parking facility in the city center together with the rehabilitation of the main pedestrian area in the city center in order to create facilities for reduce traffic congestion , traffic emissions and encourage walking instead of driving

# Section 6

## SWOT- analysis

The analysis of strengths and weaknesses in the relevant action fields for SmartImpact is based on a mixed-assessment approach. Each city is asked to complete a self-assessment by rating the own state of performance in 16 areas of action and expertise. The scale ranges from 0 (not at all) to 10 (best city in Europe). The self-assessment by the city representatives is matched by an assessment of the Lead Partner and the Lead Expert after the baseline visit. The figures below show the merged values of the self-assessment and the SmartImpact LP/LE assessment.




| Suceava | | | |
|---|---|---|---|
| | | | *Scale from 0 - 10* |
| | 1 | Experience of partner with smart city projects | **4** |
| | 2 | Decisions by the council on smart city / smart districts | **3** |
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| **Smart City Leader** | 5 | Priority of Smart City / Smart district at political level | **7** |
| | 6 | Clear smart city goals and measures defined | **3** |
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| | 8 | Existence and implementation of monitoring framework | **2** |
| **Management Guru** | 9 | Well developed ULG (established working relationship) | **6** |
| | 10 | Local coordinator attached to decision making in city | **6** |
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| **EU network expert** | 13 | Existing transnational exchange on smart cities | **6** |
| | 14 | Application of Operational Programmes (ERDF, Jessica, ESF) | **8** |
| | 15 | Experience in EU city networks (URBACT, Polis, Eurocities etc.) | **7** |
| | 16 | Successfully applied to EU-funded innovation projects in last 5 years | **9** |

## Conclusions and recommendations

Suceava clearly faces several challenges to become a smart and sustainable city. The economic indicators position Suceava at the bottom end of European Regions, in terms of economy and prosperity. However, there is a considerable opportunity to leapfrog traditional development patterns and become a “smart city” right away. Suceava has been able to co-operate with leading European cities through EU networks and different types of EU-based funding instruments. Especially the status as follower city within GrowSmarter will allow Suceava to draw insights from the implementation of real-world solutions for smart districts and to develop an own agenda for replication of solutions where possible and needed.

The crucial next step for Suceava is to involve citizens, local companies, research and the local leadership into an integrated approach towards becoming a smart city. In order to be able to do this the city now needs to build the capacity for planning, financing, managing, operating and monitoring a smart city within the municipality. This will give the right basis for successfully channelling future investments so they serve the sustainable development goals of the city.

## References

Romania Insights – Suceava: http://romania-insights.com/listings/city-of-suceava/

City Population Index Romania: http://www.citypopulation.de/php/romania-suceava_d.php

SmartImpact
Local Impacts from Smart City Planning

# SMARTIMPACT

# Baseline review report – Zagreb, CR

European Union
European Regional Development Fund

Connecting cities
Building successes

URBACT

# Contents

# Summary

As well as being the capital city, Zagreb is also the largest city. It exhibits many of the characteristics of a capital city with strong cultural, economic and administrative assets.

The country faces significant challenges since the cessation of the Croatian Homeland War; key is the need to address depopulation and its resultant socio economic impacts. The embryonic emergence of a technology sector heavily focussed on SMEs is seen as key solution to addressing these challenges within Zagreb. Bringing together the university and city council in a more collaborative way will be fundamental to the success of a tech focussed SME strategy.

The city has developed demonstrable experience of smart city projects funded through the European Commission, national programmes and via mainstream core budgets. It is in the process of developing its own open data portal and has established its own version of 'down your street' – this aligned to the implementation and roll-out of a business management system within the city council provides a robust basis on which to build a strong homegrown technology sector.

# Section 1

**SmartImpact in Zagreb – aims and objectives**

The City of Zagreb's key aim for how SmartImpact can contribute towards activity in Zagreb is focused on ***the provision of smarter services for citizens and entrepreneurs and developing a range of measures for shifting towards smarter business***.

To achieve this vision a series of key objectives are proposed to be implemented during SmartImpact:

- Development of a local action plan and organizational framework
- Transferring knowledge on URBACT method to other stakeholders in Croatia
- Utilising strong network links across Croatia and Europe to help provide good practice
- Production of a Dissemination Plan for City of Zagreb and across Croatia itself

The initial scope of the local action plan will:

- Defining the local stakeholders, including city departments, university and business
- Identify priority actions in specific areas
- Designing in detail specific measures and their individual implementation plans
- Alignment with City of Zagreb Strategic Development Directions till 2020 and other related documents
- Dissemination of results to wider public

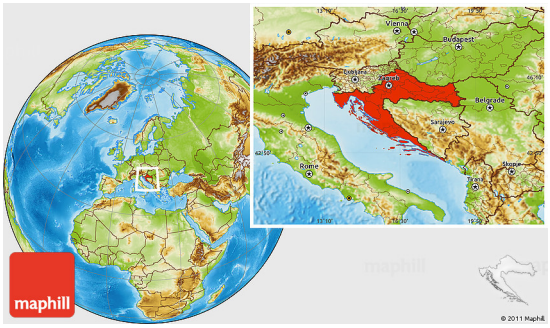
# Section 2

**Short description of the city**

As well as being the capital city, Zagreb is the cultural, scientific, economic and governmental centre of the Republic of Croatia. It has a population of 790,017 inhabitants within the city boundary, which covers an area of 641.32 $km^2$. The metropolitan area has a population of 1,088,841 and includes smaller cities of Samobor, Velika Gorica and Zaprešić. Zagreb has the highest GDP per capita in Croatia (18,503 EUR in 2011). In 2014 the average unemployment rate in Zagreb was around 11%, almost half the national average. Zagreb is also strategically located as a 'gateway' linking central with South-eastern Europe, it has significant potential for investment and development being important international trade and business centre.

Economically, Zagreb is focused on the development of higher value-added sectors and business activities. There has been rapid growth across these sectors in the last five years; and even during the period of severe economic crisis, these industries were resistant to overall contraction.

As well as being an important gateway for investment it is also a travel destination within its own right, possessing a range of natural and cultural assets. Since the end of the Croatian Homeland War, it has attracted a rapidly increasing number of visitors. In 2014 it had 911,000 visitors with more than 1,600,000 overnight stays.




# Section 3

**Description of the baseline review focus**

The review included the following participants:

- Sanja Malnar Neralić, City office for energetics, environment protection and sustainable development;
- Damir Lončarić, City office for energetics, environment protection and sustainable development; Marijan Maras, (Head) City office for energetics, environment protection and sustainable development;
- Darko Šiško, (Assistant head) City Office for strategic planning and development of the city
- Igor Plavčić, (Head of the ICT sector) Professional service of the Mayor
- Mirjana Zubak, (Assistant head) Mayor's office
- Hrvoje Kalčiček, Mayor's office
- Ana Magdić, City Office for strategic planning and development of the city
- Sonja Sočivica, City Office for strategic planning and development of the city
- Anka Đurić, Mayor's office
- Steve Turner City of Manchester
- Frane Šesnić ,(Head) Development Agency Zagreb
- Dubravka Mendeš Poljak, Professional service of the Mayor
- Alanus von Radecki, Lead expert
- Steve Turner, City of Manchester
- Mark Duncan, City of Manchester

Zagreb is a reasonably sized capital city with a strong university and student presence coupled with an emerging tech sector. The focus of the baseline review is the provision of an open data framework that enables the tech sector to build and design applications and solutions which address key city challenges, which if successful will not only improve the lives of those who live and work in Zagreb, but also generate jobs and economic growth.

**Strategic context and approach**

**The City of Zagreb – Zagreb Strategic Development Directions for the Period Ending 2015**. sets out key drivers – with the aim to develop sustainable growth. The vision of the City of Zagreb as an urban incubator is a core strategic objective, building on other initiatives developed by the city council. A core focus is developing on the strong ICT assets to develop an approach that develops new ideas and opportunities. The vision has six designated strategic development goals:

1. A competitive economy
2. Development of skills
3. Environmental protection and sustainable management of natural resources and energy
4. Improving urban quality
5. Improving the quality of living
6. Improving the system for managing development

Whilst a number of challenges exist for Zagreb, it has established a robust strategic policy framework, linked directly to these challenges. These are set out below.

Zagreb is the leading city in Croatia in terms of recognizing the importance of sustainable energy development. As one of the first European capitals the City of Zagreb has joined the Covenant of Mayors initiative, showing the will and commitment to go beyond the EU energy targets. The City of Zagreb is now part of the Covenant of Mayors Supporting Structure, assisting other cities in the region with development of their energy strategies. The City Office for Energy, Environment and Sustainable Development was established in 2009 as a department, which coordinates City's efforts in energy efficiency, sustainability, conservation of environment, and renewable energy.

**Sustainable energy action plan of the City of Zagreb (SEAP)** is the key document for the implementation of energy efficiency, renewable energy sources and environmentally friendly fuel projects at the city level and the City of Zagreb City Office for Energy, Environment and Sustainable Development is responsible for its implementation.

The Sustainable Energy Action Plan of the City of Zagreb was adopted by the city assembly in 2010 and complies with the institutional and legislative framework at the EU, national and local levels in all its segments and is adopted for the period until the year 2020. Stakeholder and citizen involvement in development and implementation of the strategy is crucial and the City of Zagreb stakeholder network is well set up and very effective.

The obligations from the Sustainable Energy Action Plan of the City of Zagreb refer to the entire territory of the City of Zagreb, both public and private sector. The plan defines a number of necessary activities in the Buildings, Traffic and Public Lighting Sectors; Implementation of the planned

measures will lead to 21% reduction in $CO_2$ emissions on the City territory.

**ICT System and e-Governance Development Strategy of the City of Zagreb for period 2014-2020**

The vision behind this strategy is the City of Zagreb as a leading city and a reference model for the development of new concepts and the use of advanced technologies in its functioning but also a provider of high-quality services for citizens.

The ICT Strategy has six goals.

1. To provide better services to citizens
2. To develop IT resources in an organized and cost-sensitive manner
3. To increase the work efficiency
4. To focus on green working
5. To provide direct access
6. To be innovative

# Section 4

**Core Focus**

The city has a significant number of start-up and innovation businesses, mostly in digital industries located in business incubators such as the Zagreb Entrepreneurship Incubator and Development Agency Zagreb. In 2012 the City of Zagreb started to implement an internal project designed to create a comprehensive business process management system across the whole authority. The goal of establishing the system is to prepare the city for more rapid adaptation to changes and enable the design and construction of high-quality, cost-effective and sustainable services. Effective business process management contributes to the simplification and modernisation of administrative procedures of the City, ensuring rapid and reliable support for citizens and businesses, facilitating the preparation and implementation of projects and increasing the transparency and competitiveness of the City of Zagreb, which will enable a higher quality enterprise development environment, which in turn will help attract investment and boost overall social and economic development.

In 2013 the development agency for Zagreb introduced “Zagreb forum”. The main objective of the conference is the transfer of knowledge and technology on a global level linking Zagreb with innovative partners in the European Union. The conference focuses on the new management models, concepts of smart cities and financial instruments needed for the development of creative cities of the future that will allow further development of the European Union and the region of Southeast Europe

In 2014 the City of Zagreb introduced an international start-up conference “Zagreb Connect”. The conference aims to connect start-up companies and their business ideas to potential investors, investment institutions and business angels.

In 2015 the development agency for Zagreb established Plavi Ured, the city's first entrepreneurial centre where all of the city's entrepreneurs and those who want to become one can come for advice, exchange of ideas or to further educate themselves.

# Section 5

**Key findings**

The three key challenges identified for Zagreb are:

- To create new opportunities to address worklessness and unemployment and to improve skills particularly amongst young people and long-term unemployed.
- Enabling creative industries and innovation businesses to develop and grow (e.g. entrepreneurial clusters, creative industries)
- Better access to public services through channel shift to digital services and improving business processes of the city of Zagreb

However, these should not be considered in isolation, addressing them successfully will require them to be considered within the wider strategic context of Zagreb and at national level within Croatia, namely:

- The ability to attract talent. Zagreb is facing significant challenges to stabilise its population and whilst not as acute as other areas of Croatia there is a need to begin to create and demonstrate population growth. This is particularly true for 'knowledge workers' as it will help address the three challenges and strategic priorities set out above.
- Linked to this first challenge is an ability to retain and nurture these knowledge workers, once attracted, such that they can go on and create jobs and growth
- Whilst the city has some major institutional assets such as the university and city council, the links and collaborative working between these needs to be strengthened such that a 'vision' is created with shared ambitions objectives.
- The city council has made good progress around open data, however, there is a need to join up departments in a more horizontal way breaking down *silos*, such that a culture of contributing to shared objectives is created. This will enable a deeper understanding of the potential opportunities, which smart city solutions, and technologies can provide to be developed. For this a clear and coherent smart city strategy is required.

**Good practice**

The city has a strong track record of developing projects across a broad portfolio of activity. Whilst not exhaustive, this includes the following:

**Zagreb Energy Efficient City (ZagEE)** – this initiative is the direct result of the implementation of Sustainable Energy Action Plan of the City of Zagreb and data gathered from the Energy Management Information System of the City of Zagreb. The overall objective of the ZagEE project is to implement energy efficiency measures and renewable energy sources in buildings owned by the

local public authority (City of Zagreb). Selecting a wide range of energy efficiency and renewable energy investments has allowed for a more comprehensive solution to be made, instead of investing into one particular measure. The ZagEE project can be divided into two specific investments: refurbishment of public buildings and public lighting. The refurbishment of public buildings will include standard energy efficiency renovation measures but also the installation of renewable energy sources (solar panels and collectors) on the very same buildings. The modernization of public lighting will be the first project of such size in Croatia, which will feature LED lamps with regulation during late night hours. The total foreseen investment is EUR 29.4 million.

The project supports the realisation of energy savings through the implementation of economically justified energy efficient technologies and measures. Key outputs include interventions around; 3 city administration buildings, 15 elementary schools, 7 secondary schools, 36 kindergartens, 6 retirement homes, 3 health centres, 17 buildings of local self-government; and the modernization of 3000 out-dated luminaries in the public lighting system by LED luminaries with time based lighting control system.

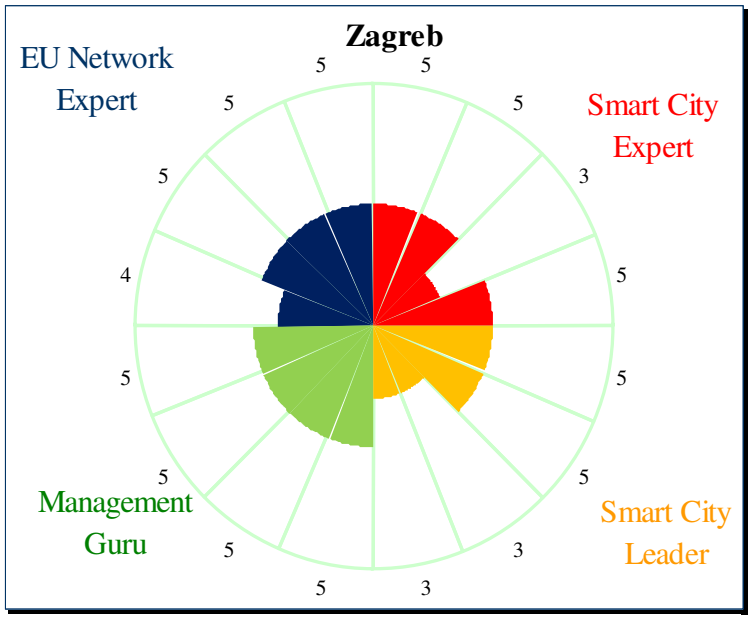
The project is implemented as part of the IEE program for technical assistance 2012 – Mobilization of local energy investments and includes financing of technical assistance as well as the production of the documentation necessary for energy refurbishment of objects, through the allocation of grants. This allows the beneficiaries to produce projects, feasibility studies and obtain the necessary documentation needed for financing the energy refurbishment of objects from sources other than the city budget, such as banks and EU funds.

**Future Policy Modelling Project – FUPOL** – Duration 10/2011-9/2015. The aim of the project was to research and develop advanced ICT tools for modelling policies, predicting the consequences of these policies, the development of new models of governance and co-operation of all stakeholders in addressing complex social problems. The city is now using the results of the project to deploy tools in communication with citizens in a process of decision and policy making.

# Section 6

## SWOT- analysis

The analysis of strengths and weaknesses in the relevant action fields for SmartImpact is based on a mixed-assessment approach. Each city is asked to complete a self-assessment by rating its own state of performance in 16 areas of action and expertise. The scale ranges from 0 (not at all) to 10 (best city in Europe). The self-assessment by the city representatives is matched by an assessment of the Lead Partner and the Lead Expert after the baseline visit. The figures below show the merged values of the self-assessment and the SmartImpact LP/LE assessment.




| Zagreb | | | |
|---|---|---|---|
| | | | *Scale from 0 - 10* |
| **Smart City Expert** | 1 | Experience of partner with smart city projects | **5** |
| | 2 | Decisions by the council on smart city / smart districts | **5** |
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| | 15 | Experience in EU city networks (URBACT, Polis, Eurocities etc.) | **5** |
| | 16 | Successfully applied to EU-funded innovation projects in last 5 years | **5** |

## Conclusions and recommendations

Zagreb is a capital city and therefore possesses significant assets to build upon. Since the end of the Croatian Homeland War it has begun to reprofile and restructure its economic base. Increasingly this is focussed on building a strong technology based SME sector.

In achieving this ambition however, there are major challenges facing Zagreb, in terms of creating population growth, particularly challenging will be the ability to retain and nurture talent. Creating strong collaborative partnerships will be critical to this, particularly those between the city council and the university. In its favour Zagreb has a high quality urban 'offer' in terms of cultural and leisure facilities as well as its geographical position as the gateway between central and south eastern Europe.

Zagreb has a strong foundation on which to build a homegrown technology sector. The presence of the university is core to this, but only if the collaboration with various city departments is strengthened. The university provides a pool of suitable talent from which businesses can draw from provided it works in close collaboration with partners in continuing to provide wrap-around business support for start-ups. The city council's work on the creation of an open data platform also provides a rich vein of data for some of these embryonic tech companies to mine, creating applications to improve the quality of the city for those who live and work in it. For example, developing innovation challenges around core city priorities and challenges would be a simple, easy quick win to strengthening collaboration.

The ambition to develop a 'Living Lab' approach also needs to be encouraged. A first step is to bring key partners together and scope out the vision for this, such that it is designed to meet a range of objectives and built incrementally accordingly. If successful, this will help improve the lives of citizens and improve the business environment as well as growing the tech sector.

On this basis Zagreb will benefit from the approaches and lessons learned by some of the other city partners, specifically Porto, Eindhoven and Manchester.

# SMARTIMPACT

# Baseline review report – Miskolc, HU

## Contents

## Summary

Miskolc is a small city located in north east Hungary. The development of the city is priorty at both national and local level and this is reflected by the Hungarian governments support via the Modern Cities Programme. To underpin this, the city has drafted its own smart city strategy which details a number of innovation and projects. The delivery of the smart city programme is therefore a key focus for the city with a vision of becoming a smart city by 2030. Within the city, the planning and leadership of the smart city program is at the City Government while the smart city delivery is being managed by Miskolc Holdings, a separate not for profit organisation owned by the city. An integrated action plan for Miskolc will support the development of a delivery road map for the smart city projects (13 potential areas). Some of the challenges for the city include the need to create ownership and stakeholder engagement; Organisational development, for example, Miskolc Holdings is currently the non-profit company for manage the smart city agenda – is this a good model, what other options are there?; looking at standards, regulations, processes and procurement issues. These translate in to the development of an integrated action plan (IAP) for the city developed within the SmartImpact project focused on five areas:

1. Organisation Development – defining the business model – how the city integrate stakeholders and solutions for smart city projects
2. Generating ownership with citizen's e.g. smart cafes as interaction format and with local decision makers – improved capacity to identify smart opportunities.
3. Integrated planning – develop and set up a smart city verification process to optimise use of resources and identify opportunities for smart investments..
4. Management and monitoring of projects are at pre-feasibility study – an IAG would roadmap a detailed concept for an integrated management and monitoring.
5. Co -financing and business models – developing intelligent ways of private investment.


# Section 1

## SmartImpact in Miskolc – aims and objectives

The development of Miskolc is a priority both at local and national levels. The Hungarian government have signed a cooperation agreement with the city called the Modern Cities Programme. This establishes guidelines for the development of the city of Miskolc and includes:

- Highway connection to the Slovakian boarder
- The smart Miskolc programme
- Industrial park development
- Educational programmes
- Tourism development

As part of this journey the city has drafted a first smart city concept that outlines 13 innovation projects as steps towards their vision. Substantial ERDF funding is planned to be channelled to sustainability projects for the coming years, offering a financial basis towards the smart city developments. Within the city, the planning and leadership of the smart city program is at the City Government while the smart city delivery is being managed by Miskolc Holdings, a separate not for profit organisation owned by the city.

The delivery of the smart city programme is therefore a key focus for the city with a vision of becoming a smart city by 2030. The aim for SmartImpact is to address key issues which are required for delivery and to support the city in the development of a roadmap for the journey ahead. The SmartImpact key areas are identified as follows:

- Organisational Development – how adapt processes
- Local innovation eco system – how activate university; SMEs
- Data integration and eGovernment – elect services, new ways of working
- Supportive regulations and incentives - private sector integrate into goals of the city – private sector incentives to work with city
- Smart financing and procurement

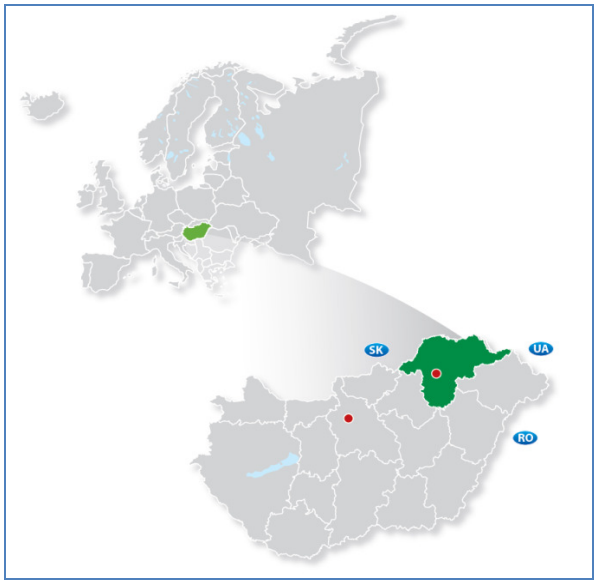
# Section 2

## Short description of the city

Miskolc is located in the north east of Hungary with three neighbouring countries accessible within 150 km (Slovakia, Ukraine, Romania) and 200km from the capital, Budapest. It is well located with InterCity trains hourly to Budapest and to other international destinations, motorway and an airports at Miskolc, Kosice (SK), Debrecen (HU) for international flights and Budapest, all meaning excellent logistical connections.

It is Hungary's fourth largest city (162.000 inhabitants) and is the administrative and economic, centre of the region (300,000 inhabitants). Known for heavy industry, the city is home to Bosch (with 3000 employees) and also Takata (vehicle manufacture). The University of Miskolc has 14,000 students. A key tourist attraction is the naturally occurring thermal cave baths and castle of Diósgyőr.

Unemployment is currently below 9%, a relatively low rate making the city less attractive for new employers.



Miskolc – location in Europe and Hungary

## Short overview of national/ regional policies and incentives

The city has developed the territorial planning documents which declare getting Miskolc a smart city by 2030 (Urban Development Concept and Integrated Urban Development Strategy). To support the implementation of the Strategy an Integrated Territorial Program was prepared for Miskolc for the period 2014-2020 including plans for the city development to be financed from the Territorial Operational Program (ERDF/ESF). As previously stated, Miskolc is part of the national Modern Cities Program where the Hungarian government has a cooperation agreement with the city to support projects including the smart city concept. The sources of financing are partly national sources, partly EU funding. For the implementation pre-feasibility studies for 13 actions were prepared. These include:

- Cameras / CCTV
- ePayment transport
- Intelligent traffic controls
- Ebike /public bikes
- Tourism info mobile app
- GIS city grid maintenance
- EC commission – citizens satisfaction with public transport – indicator 67% high
- Photovoltaics
- Public Pace failure reporting system (TIMI) – on way for delivery
- Digital inclusion 70,000 notebooks distributed to the public

# Section 3

## Description of the baseline review focus

The focus of the baseline review is the city's smart city concept plans, along with the activity undertaken to date. The 13 potential project areas require a roadmap for delivery and a well functioning management system at local level including all stakeholders and citizens. It is this role that SmartImpact can support, with particular focus on future management and smart governance, identified as a gap.

# Section 4

## Baseline review activities

The Miskolc baseline has included inputs from city officers and their discussions with senior politicians, as well as Miskolc Holding (a separate not for profit organisation owned by the city where smart city delivery is managed). A meeting was held with Miskolc Holding and two city officers and included presentations of the city along with discussions on the challenges and issues for a smart Miskolc. From these the needs of the smart city development were identified and ways in which Miskolc might use an Integrated Action Plan (IAG) to develop a smart city governance model for the city based on 6 key themes was outlined:

1. Creating ownership and stakeholder engagement - outside view – citizens and others
2. Organisational development – non-profit company
3. Protocols – standards, regulations, processes, procurement: Principals
4. Integrated planning – data based decisions for planning process
5. Managing system and monitoring e.g. Stockholm's management system tracking system
6. Co -financing and business models

# Section 5

## Key findings

The city has clearly stated ambitions to become a smart city along with extensive experience of participation in projects in the smart domain. The strategies and programmes of work enjoy clear political support and the city is active in smart city delivery particularly in terms of the delivery of transport services. This is supported by the transport company being wholly owned by the local administration. The city has also in the area of energy efficiency (green buses and trams) as well as energy generation (geothermal).

The Hungarian Government is committed to support cities on their way becoming Smart Cities: the programme includes Miskolc as pilot of a wider smart city programme for a number of cities in Hungary. A key part of the strategies is to improve the services for citizens, to become more

sustainable, to increase transparency and accountability of the local government departments. The city is also well engaged with local SMEs, working alongside at least a dozen companies providing services across the heat network, estate management and project management.

## Challenges

The key challenges identified for Miskolc can be described as:

- The need to create ownership and stakeholder engagement - outside view – citizens and others
- Organisational development – Miskolc Holdings is currently the non-profit company for manage the smart city agenda – is this the correct model, what other options are there?
- Ensuring protocols and standards, regulations, processes and procurement issues
- Developing an integrated planning and the use of data based decisions for the planning process
- System managing and monitoring - ways and options
- How to develop smart as a business model going forward

These translate in to a number of delivery goals with a particular focus on smart city governance:

1. Organisation Development – defining the business model – how the city integrates stakeholders and solutions for smart city projects, for example TinaVienna – where a percentage from local taxes allocated.
2. Generating ownership – for citizens e.g. smart cafes as interaction format - harmonise with communication, dissemination and engagement strategy and local decision makers – developing commitment for heads of private companies, municipals companies and universities and an Improved capacity to identify smart opportunities.
3. Integrated planning – set up a smart city verification process to optimise use of resources and identify opportunities for smart investments. This includes finding synergies and ways to integrate planning processes. The model is based on invest to save. This includes developing standards and protocols.
4. Management system and monitoring projects at pre-feasibility study – develop a roadmap and detailed concept for integrated management and monitoring.
5. Co -financing and business models – developing intelligent ways of private investment i.e. develop a basket of innovation financing tools at the interface of private and public investors (PPP), co-financing.

## Good practice

Miskolc is able to offer a number of examples of good practice smart activity across range of domains:

**Environment-friendly transport developments**: Public transport in Miskolc is provided by the company MVK Zrt., owned by the local government. The Green Arrow Project is supporting the modernisation of the tram network with new trams and real time information plus onboard wifi. 100€ Bn has been spent. Citizens were invited to vote for the new tram design. This will be followed by 75 CNG buses shortly.

**Energy Projects:** the city has an active energy and renewable program:

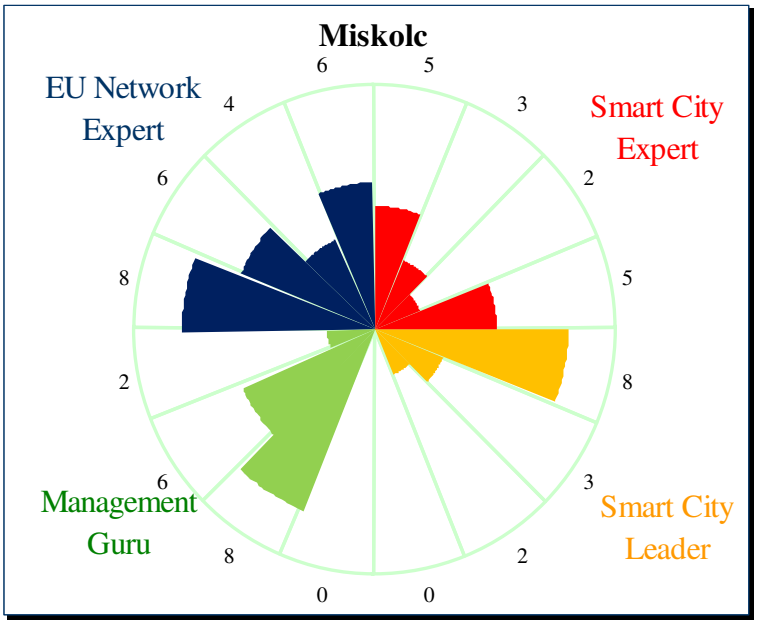
- Geothermal project supplying 25,000 apartments via a heat network
- Biomass – this was a research project. The aim is now to look at how buses could be run on biogas
- Landfill gas - Biogas plant - 3 MW (geothermal is 20 times higher)
- Panel Program – cladding blocks of flats has resulted in a 50% energy saving

**EC Funded Projects**: the city is active in a number of current EC funded projects:

- StormClouds – supporting the migration of IT based services to cloud (Miskolc Holdings is the partner)deploying an integrated city app for citizens for public space reporting (H2020).
- PROBIS – the promotion of bidding through innovative solutions aimed at increasing energy efficiency in public buildings.
- REMOURBAN H2020 – the city is a follower city on working with Nottingham as coordinator with the aim to set up action plan for a district for cross sectoral integrated development,

# Section 6

## SWOT- analysis



| Miskolc | | |
|---|---|---|
| | | *Scale from 0 - 10* |
| **Smart City Expert** | 1 Experience of partner with smart city projects | **5** |
| | 2 Decisions by the council on smart city / smart districts | **3** |
| | 3 Level of expertise within municipality | **2** |
| | 4 Level of expertise within ULG | **5** |
| **Smart City Leader** | 5 Priority of Smart City / Smart district at political level | **8** |
| | 6 Clear smart city goals and measures defined | **3** |
| | 7 Degree of implementation of smart city measures | **2** |
| | 8 Existence and implementation of monitoring framework | **0** |
| **Management Guru** | 9 Well developed ULG (established working relationship) | **0** |
| | 10 Local coordinator attached to decision making in city | **8** |
| | 11 Local coordinator linked to business, research & civil society | **6** |
| | 12 Organization of strategic cross-cutting issues within administration | **2** |
| **EU network expert** | 13 Existing transnational exchange on smart cities | **8** |
| | 14 Application of Operational Programmes (ERDF, Jessica, ESF) | **6** |
| | 15 Experience in EU city networks (URBACT, Polis, Eurocities etc.) | **4** |
| | 16 Successfully applied to EU-funded innovation projects in last 5 years | **6** |

## Conclusions and recommendations

The Modern Cities Programme and the Territorial Operational Program provides Miskolc with an excellent springboard to develop its vision of a smart future for the city and the confidence to make a vision statement targeting the year 2030. The city is able to provide examples of real intent as well as examples of activity along with a background in EC funded projects, supported by political commitment. It has also made significant advancements in energy efficient by exploiting natural assets to create a good supply mix which would be the envy of larger cities.

The next stage for Miskolc is to work towards a more structured framework and implementation and in doing so, fulfil ambitions for citizen engagement. SmartImpact will provide the opportunity for the city to learn from others, develop an IAG which matches their ambitions and also provides them with the governance structures which will deliver their programme.

## References

Hungarian Modern Cities Programme - www.kormany.hu/en/the-prime-minister/news/erd-to-receive-eur-125-million-in-development-funding-over-the-next-five-years

# Annexe;

## Partner Profiles

# URBACT III: Smart Cities Districts – Partner Profile

| | |
|---|---|
| **City** | City of Manchester |
| **Contact Officer** | Mark Duncan |
| **Contact Details** | Strategic Lead Resources & Programmes<br>Policy, Partnerships and Research, Growth and Neighbourhoods Directorate, Manchester City Council, Town Hall Extension, Albert Square, PO Box 532, M60 2LA..<br><br>Tel: 0044 (0) 161 234 3466<br>Mob: 07983 441 715<br><br>m.duncan@manchester.gov.uk |
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| 1 | *Profile of partner in relation with policy challenge to be addressed*:<br><br>Commercialisation of smart city districts.<br><br>Para 1 – the main characteristics<br><br>Para 2 – the regeneration challenge – the vision<br><br>Para 3 – smart city framework<br><br>Manchester is a city of 532,666 inhabitants (source: MCCFM W2014) and is set to exceed 600, 000 by 2023. The number of people living is Manchester is growing rapidly and the city is becoming younger. Between 2001 and 2011 the city's population grew by 19% making Manchester the fastest growing city in the UK outside London. The city has a much younger population profile than the national average, with 41% of residents aged between 15-34 compared to 27% across England (Census2011) and the number of 20-30 year olds increasing from 78, 300 in 2001 to 123,600 in 2011. There are now close to 50,000 residents living within the regional centre. The city's emerging urban tendency has been linked to the development of high numbers of apartments for rent and growth of high value sectors (financial & professional services, retail, science, digital and the cultural sectors). Manchester is forecast to create an additional 43,000 new jobs within the city by 2025 (Source: GMFM 2014)<br><br>The 2013 ONS Business Register and Employment Survey revealed that the number of people working in Manchester had risen from 326,300 in 2012 to |

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| | 341,500 in 2013. Manchester has a higher proportion of professional, scientific and technical jobs, 11% compared to 8% an average of the other seven English core cities.<br><br>The number of people in Manchester on out of work benefits is decreasing, falling from 62,290 in November 2010 to 51,090 in November 2014 (Source: DWP benefit claimants – working age client group). There does though remain a significant pocket of deprivation linked to health inequalities and some of the worst life expectancies in the country.<br><br>The city covers 117 $Km^2$ and is at the heart of the Greater Manchester City Region. The City Region is an agglomeration, a built-up area of connected neighbourhoods and employment centres that together form a single urban area. In recent years, the city centre has seen a rapid rise in the numbers of people who wish to live there and businesses who wish to locate at the core of the regional centre.<br><br>The Greater Manchester Local Authorities formed a Greater Manchester Combined Authority (GMCA) in 2011. The Combined Authority is the top-tier administrative body for the local governance of Greater Manchester. The Combined Authority consists of ten members, each a directly elected Councillor from one of the ten metropolitan boroughs that comprise Greater Manchester. The city is a regional centre, with a large and diverse business community. However, the city is also home to areas of multiple deprivation, and high levels of unemployment, as well as an ageing population.<br><br>The city has been very successful in attracting inward investment to major developments such as Airport City, Corridor Manchester, Manchester Airport – which is majority owned by the ten local authorities in Greater Manchester – New East Manchester and Spinningfields. In addition the city has a large number of start-up and innovation businesses, many in digital and health tech industries, and located in business parks and incubators such as Manchester Science Park, the Sharp Project, MMU Digital Innovation hub, and CityLABS. It is vital that the city is able to improve the outcomes for a wide range of residential and commercial districts throughout the city, building on 25 years of area-based regeneration. Manchester's key policy challenge to be addressed by this action network is to develop a range of smart city districts, and to leverage new investment to enable businesses and citizens to live and work in these development areas of the city. |
| 1.1 | *Local challenges in relation to the policy issue identified*<br><br>The Manchester Strategy sets out some key drivers – with the aim to develop sustainable growth.<br><br>Manchester is in a good position through its existing business spread, its connectivity, and its ability to attract public and private investment, to develop and commercialise new smart city districts.<br><br>The local challenges –<br>- Actions to reduce carbon in line with Manchester: A Certain Future, the city's carbon reduction strategy<br>- To create new opportunities to address worklessness and improve |

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| | skills particularly amongst young people and long term unemployed<br>- The jobs of "tomorrow" will require particular skills around digital, green tech, and high tech manufacturing and it is vital that Manchester-based companies are able to access the skilled employees they need, and that other companies are encouraged to move here because of our skills base.<br>- Enabling innovation businesses to develop and grow (e.g. data centres, smart city infrastructure, digital and creative, healthcare, creative, textiles, smart manufacturing)<br>- Better access to public services through channel shift to digital services<br>- Capacity building within local communities to address local issues around environment, social care, troubled families and better neighbourhoods.<br>- Evidence based policy making<br>- Accessing investment funds |
| 1.2 | Strategies and actions already implemented to tackle the policy challenge<br><br>- Developing Oxford Road Corridor as an exemplar Smart city district<br>- Digital strategy and smart city framework<br>- Devolution of powers to Greater Manchester enabling more local decision making<br>- Green and blue infrastructure plan<br>- GM investment fund and innovative use of other financial instruments<br>- Supporting a wide range of business networks<br>- Multi modal transport plan enabling areas such as Wythenshawe and East Manchester to be more accessible for jobs and residents<br>- Development of smart specialisations in eHealth (e.g. CityLABS), digital and broadcast (SHARP), logistics (Airport City) in different districts within the city<br>- Superfast Broadband providing connectivity to businesses and wifi in public buildings<br>- TRIANGULUM project – the city's largest smart city project funded under the EU "Lighthouse" programme focused on the Oxford Road Corridor. |
| 1.3 | *The experience of the partner in terms of working through transnational exchange in relation to the selected topic*<br><br>Experience gained from acting as Lead Partner on the successful CSI Europe project under URBACT II means that the city already has staff with the skills and experience to lead an URBACT project successfully. Experience gained as part of the Smart City network means that MCC has the technical knowledge required to oversee the network and appoint and support the Lead Expert. Its track record in CSI Europe and learning from that project will help inform the methodology for transnational exchange and learning.<br><br>In addition, the city's experience in developing Financial Instruments locally and working with partners in the CSI Europe Network to develop a FI Toolkit will enable us to help partner cities to take this learning further in relation to smart city developments. |

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| | The city has staff experienced in establishing and co-ordinating an URBACT LSG and developing a Local Action Plan and will be able to support learning on this key element of the URBACT method.<br><br>MCC, as lead partner, will identify staff to take responsibility for management and co-ordination of the project/network and it has the appropriate systems in place to manage the project (e.g. financial software) and has access to additional support as required (e.g. press office and communication team.)<br><br>Manchester is currently chair of the Eurocities Knowledge Society Forum and is on the council of the European Network of Living Labs, giving us good access to European knowledge exchange and dissemination opportunities. Core Cities<br><br>The TRIANGULUM project is Manchester 'flagship' smart city project. The consortia include a number of large industrial technology providers including Siemens. Other partners include Eindhoven, Stavanger, and 3 follower cities.<br><br>Manchester has a pipeline of some 30 smart city projects, being delivered by a range of public, private and academic partners. These include a variety of projects across strategic themes within the smart city framework of the city, including those around work, live, play and move. As well as the development of data platforms and 3D models, considerable focus has recently been on collaborative working with Chinese cities and businesses, to share policy and drive inward investment. |
| 1.4 | *The potential contribution to the network activities of exchange*<br><br>- Coordinating network activities<br>- Working with the lead expert to develop the scope<br>- Development of local action plan (inc. stakeholder identification)<br>- Specialist knowledge around financial instruments, urban regeneration<br>- Transferring knowledge on URBACT method to other partners<br>- Utilising our strong network links in the UK and Europe<br>- Developing dissemination plan |
| 1.5 | *The scope of the Integrated Action Plan to be produced*<br><br>- Who are the local stakeholders<br>- Identifying the domain areas covered<br>- Identifying comparative smart city districts to focus on<br>- Alignment with city strategies<br>- Measurement against Smart City Framework PAS182 |
| 1.6 | *The key stakeholders to be involved at local level*<br>- Universities<br>- Voluntary and community groups<br>- Business networks<br>- Public bodies e.g. TfGM<br>- Health agencies<br>- Technology providers |

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| | - Investment community |
| 1.7 | *Expected results beyond the production of the Integrated Action Plan (in terms of learning, capacity building, etc)*<br><br>- Adding an action learning element to the Triangulum project – reflective<br>- Increasing the number of local stakeholders informed and their capacity for developing smart city initiatives<br>- Dissemination to European cities via Eurocities<br>- Devo Manc – acting as a catalyst for the combined authority. |
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**URBACT III: Smart Cities Districts – Partner Profile**

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| **City** | Dublin City Council |
| **Contact Officer** | Jamie Cudden |
| **Contact Details** | Jamie.cudden@dublincity.ie<br>Ph: 00353 222 3081<br>Mob: 00353 87 7835411 |
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| 1 | **Profile of partner in relation with policy challenge to be addressed:**<br><br>Dublin is the administrative and political capital of Ireland; a member of the European Union since 1973 and strategically located between Europe and North America. Dublin is a multi-cultural city; a UNESCO City of Literature and home to people from over 200 nations. Dublin is an economic hub, the heart of a metropolitan region that generates just under 50% of national economic activity. The population of the Region is 1.27 million with the wider functional area comprising 1.8 million. It is an attractive location for Foreign Direct Investment with nine of the top ten global ICT companies based in Dublin. Between 1994 and 2007, Dublin experienced extraordinary and rapid socio-economic change, accelerated by a period of strong export-led growth but followed by a credit-fuelled property bubble and then the banking crisis. The city is recovering strongly from a deep recession from 2007-14 with a dramatic improvement in business performance and consumer sentiment. With the population growing, Dublin is seeking to build a sustainable and compact city from the centre out. A key organisation driving this vision for Dublin is Dublin City Council.<br><br>**City Governance:**<br>Dublin City Council is the largest local authority in Ireland. It is one of four local authorities that govern the Dublin metropolitan area. The city council has responsibility for a limited range of services compared to a typical European local authority. These services include housing; planning; roads; environmental protection; provision of parks, recreation and amenities and community infrastructure. It does not have responsibility for areas such as policing, education, social services and health nor does it have a directly elected Mayor.<br><br>The 2015 revenue (operational) budget of Dublin City Council is in the order of €773m and it has a 3 year rolling Capital Programme, covering the period 2015 to 2017, of €568m. It has just under 5,800 employees. The City Council provides a wide range of infrastructure and services, including some essential services, that impact on the daily lives of all residents etc. and that contribute in significant and diverse ways to their quality of life. It also makes a major contribution to the economy of the city, the region and the State. |

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| | Dublin City Council has been through a period of significant change/transformation over recent years. In part this reflects the financial pressures it has experienced as a direct consequence of the on-going programme of fiscal adjustment pursued by Central Government. It also reflects the adverse impact of the performance of the general economy on its revenues. In addition, the Council has been subject to a major local authority reform programme the implementation of which is continuing.<br><br>The demand for improved services and reduced Council charges, especially commercial rates, is likely to be reinforced by the resumption of strong economic growth. In these circumstances the pressure on the City Council to deliver increased efficiencies and greater value for money in order to fund improved services is unlikely to abate.<br><br>Dublin faces challenges in maintaining its competitive position and supporting economic growth, while simultaneously delivering a high quality of life and an acceptable environmental footprint. Smart city technologies and technology innovation can help address many of the priority challenges that Dublin faces by delivering more responsive and efficient city services. Implementation of smart city solutions can also help improve Dublin's Competitiveness. What can differentiate Dublin is how we drive urban innovation and the deployment of smarter solutions. This will help Dublin compete successfully for internationally mobile FDI, human resources and tourism.<br><br>**The City Council's 'Smart Dublin' initiative sets out the following ambition:**<br><br>*'To improve the liveability and attractiveness of Dublin as a city to live in, work in, invest in and visit by utilising technology in partnership with other agencies and citizens in order to address City challenges, to drive innovation and to improve service delivery.'*<br><br>**What do we mean by commercialisation of smart city districts?**<br>Dublin City Council as part of its smart city initiative is in the process of designating a number of 'smart city districts' across the city so that we can physically showcase the benefits of multiple smart city deployments in particular districts across the city. Concentrating solutions in particular districts will make it easier to measure the impacts of smart solutions and will also help to communicate the benefits to citizens and business. This will hopefully encourage greater levels of private and public investment. Developing a smart district approach will help us to understand interoperability issues between smart technology solutions and identify potential 'scale up' issues. We also intend to develop smart city districts to showcase Dublin as a great location for industry, SME's, entrepreneurs, start-ups, universities etc to testbed and validate new technologies and solutions. |
| 1.1 | **Local challenges in relation to the policy issue identified**<br><br>**Lack of internal co-ordination:** Smart City projects have up until recently been poorly co-ordinated across Dublin City Council. The city council is participating in a number of smart city projects in collaboration with academic institutions and businesses. However the approach to date has been somewhat ad hoc with the City Council responding to requests from outside agencies rather than proactively setting the agenda and align project with its |

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| | priority needs.<br><br>**Understanding Organisational Priorities/needs:** organisational priorities are not well defined – this makes it difficult to prioritise smart city projects and align projects of real value.<br><br>**Lack of project alignment:** Smart City projects were not necessarily aligned with the needs of the organisation.<br><br>**Vendor led approach:** The city has to deal with a vendor driven agenda to pitching solutions without understanding Dublin City Council needs and internal challenges.<br><br>**Poor communication: Lack of a 'smart city' engagement and collaboration model.** There was a lack of transparency and openness on engaging with the city council on smart city projects.<br><br>**Lack of citizen engagement:** Limited engagement with citizens and little articulation of the results and benefits of various projects (no visibility of existing projects)<br><br>**Policy implications:** Limited awareness of the potential policy impacts of future city innovations and how they will disrupt the city (in a positive and negative way)<br><br>**Financial constraints:** Economic Downturn and reduction of budgets making it difficult to fund proven solutions. Lack of joined up thinking amongst internal departments and also across the public sector – " an initiative that benefits many departments but is to be paid for by only one will often fall by the wayside".<br>There is also a limited awareness of appropriate financial instruments to scale proven solutions.<br><br>**Lack of awareness of proven solutions:** There are few examples of large scale rollouts internationally with robust evaluation and impact measurements. There is also an internal lack of awareness and understating of where the market is in relation to smart city solutions.<br><br>**HR / change management:** Lack of enthusiasm amongst key workers/management to embrace the changes associated with implementation of smarter solutions and new ways of working. Lack of appetite to test and trial new solutions and ways of working.<br><br>**Current procurement approaches block innovation potential:** Current procurement systems are too rigid and not suited to sourcing new types of service solutions and market place innovations. |
| 1.2 | **Strategies and actions already implemented to tackle the policy challenge**<br><br>Over the past year the city council has been evaluating its smart city projects portfolio. The *Smart Dublin* initiative aims to co-ordinate these projects, to put them on a more formal structured basis and to ensure that they address prioritised city challenges. The following actions are being implemented:<br><br>**Central Co-ordination.** The city council is currently bringing together all of its Smart City |

work through the establishment of a centrally coordinated function led through the office of the Chief Executive.

**Opening up opportunities for collaboration.** There is significant smart city expertise in the Dublin region. The emerging Smart Dublin framework will allow for greater flexibility for the city to work with universities, entrepreneurs and companies to co-innovate, test and deploy new urban solutions. In order to be successful the City Council needs to engage extensively and productively with the business, NGO's, third sector, and academic institutions to allow for co-innovation and demonstration partnerships.

Such collaborations will also help the city council better understand the latest technology trends and entrepreneurial approaches to solving urban challenges (and improved future procurement). Dublin is positioning itself as a leading city to test and deploy new technologies which in turn open up opportunities for people/companies to invent new things and to test and sell them into an international marketplace.

**An emerging 'Smart Dublin' framework will provide a more structured and flexible approach to engagement with external agencies.**

The city council seeks to build partnerships that demonstrate innovative solutions in the areas of transportation, environment, management of extreme weather events and energy efficiency. Advances in technology innovation can help the city deliver more responsive and efficient city services while at the same time support local economic development goals.

This Smart Dublin Framework will create new opportunities for entrepreneurs, SME's and multinational companies alike to address and testbed solutions that may be applicable to a wider global marketplace. The city council is interested in seeking partners for demonstrators/validation and R&D partnerships. As part of these collaborations Dublin City Council will offer "real world" testing of products, services or technologies by giving access to DCC infrastructure

**<u>Priority Actions Include:</u>**

**Establishment of a *Smart Dublin* Advisory Board** with representatives of the business sector, academia and other partners that have an interest in working with us to address key city challenges.

**Identification of key challenges.** Refinement and prioritisation of key challenge areas which will direct future smart city projects and collaborations: This involves a collaboration with citymart (citymart.com) to help frame and prioritise a number of key challenge statements that will form the basis of our Smart Dublin work programme for 2015-16.

**Collaboration Framework.** To identify opportunities to address these challenges under various collaborative / engagement mechanisms e.g. a) traditional R&D partnerships, b) small scale validation/ demonstrators c) larger services contract opportunities d) procurement (use of competitive dialog)

**Problem based approach to procurement.** Take a problem based approach to

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| | procurement of smart city solutions (e.g. procurement by challenge)<br><br>**Evaluation and Monitoring Framework.** To build out an appropriate selection criteria and weightings for prioritising ***Smart Dublin*** projects and proposals as well as the development of a robust project monitoring and evaluation framework.<br><br>**Seed Funding:** creation of a ***Smart Dublin*** Seed Fund to promote the development of apps and small scale smart city pilot projects will be investigated.<br><br>**Increased investment in our open data platform Dublinked**. In collaboration with the other Dublin local authorities, Dublinked - the Dublin local authorities open, real time web data platform - will be developed and additional technical and project management resources allocated to the project.<br><br>**Smart City Districts:** A number of smart city test zones will be developed to showcase Dublin pilot projects.<br><br>**Marketing and Communications**: Promotion of the ***Smart Dublin*** initiative through online articles, case studies and research publications. |
| 1.3 | **The experience of the partner in terms of working through transnational exchange in relation to the selected topic.**<br><br>Dublin City Council has extensive experience in working on a wide range of European and International Projects. This includes multiple projects under FP6, FP7, Horizon 2020, InterReg and Urbact. Through its Office of International Relations it has also developed a number of international collaborations designed to support economic development opportunities and exchange of best practice. This includes active relationships in the areas of technology innovation with cities such as San Jose (Silicon Valley), Guadalajara in Mexico, and Barcelona.<br><br>**An example of a selection of relevant projects include:**<br><br>-**City Protocol –** http://cityprotocol.org/whats-city-protocol/ An alliance of cities, industry and academics who seek to define a common systems view for cities. Development of protocols that will help modern cities deploy cross-sectoral solutions that can connect city silos.<br><br>- **FP6 project: ICING –** http://www.bcnecologia.net/en/projects/icing-innovative-cities-next-generation ICING was an international project in which the cities of Barcelona, Helsinki, and Dublin worked to develop a model and technology solution for cities to become more responsive, friendly, inclusive and intelligent.<br><br>-**Horizon 2020 project: ROUTE-TO-PA** http://www.routetopa.eu/<br>- aims to engage citizens through a “purposeful and personalized relationship” between citizens and Open Data, not seen only as one between government and individual citizens |

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| | but between government and networks of citizens that collectively attribute meanings to this information. The information by ROUTE-TO-PA is shared, interpreted, personalized, made easier to understand and discussed to assess its meanings.<br><br>**-FP7 project: Insight**. IBM and Dublin city council are partners on an EU FP7 funded project called Insight (Intelligent Synthesis and Real time Response using Massive Streaming of Heterogeneous Data). Other partners include Fraunhofer, Technion - Israeli Institute of Technology, TU Technical University of Dortmund and the University of Athens. The objectives of this project are: to advance our ability to cope with emergency situations and to combine sensor data with social media sentiment analytics and mobile data analytics to facilitate the detection of events in real time and allow for better decision making. |
| 1.4 | **The potential contribution to the network activities of exchange**<br><br>Dublin City Council has many years of experience in smart city collaborations. It will bring this experience and learning to the partnership. Examples of projects include:<br><br>-**Collaboration with Cisco to scope out potential future transport corridor pilots**<br>**-Building a smart street lighting feasibility study with Arup/MITSUI.**<br><br>**-Development of business models / procurement innovation for smart cities**. (Irish research/industry cluster initiative http://lero.ie/ , 2 million Euro initiative) Working with a team of 9 researchers working across multiple university and partners including Dell and Intel to enhance our understanding of business models for smart city solutions, procurement innovation and also the development of reference architecture / maturity model for a smart city. Starting Autumn 2015.<br><br>**-IBM Strategic Partnership**<br>DCC has partnered with the IBM Smart Cities Research Lab which is located in Dublin. This has resulted in the delivery of smart projects in the areas of flooding and traffic management.<br><br>**-IBM Smarter Cities Challenge**<br>DCC was one of 16 cities and regions around the world to be awarded an IBM Smart City Challenge in 2014. The selected challenge was to assess the potential of municipal building for solar/photovoltaic panels.<br><br>**-Intel Sensing City Partnership**: A Memorandum of Understanding has been signed in 2014 between DCC and Intel to develop Dublin as a 'Global Demonstrator for Smart City Sensors' using Intel Quark-based Gateway platforms. A number of sensing gateways will be placed around Dublin City to gather and monitor environmental data. The initial emphasis was on air quality and noise monitoring, but has now expanded to include rainfall and river level monitoring. Each of these gateways can deploy up to six sensors. The data gathered by the sensors will be made available to citizens and other stakeholders on an open basis, enabling the development of apps which will provide the city with real time information to assist in the emergency flood planning while also give Dubliners real-time information environmental performance. |

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| | **-DUBLINKED (Open Data Platform for the Dublin Region)**<br>DCC was one of the fist movers in the establishment of a regional open data platform called Dublinked in 2009. This was cited by both PWC and Urbact as a best practice initiative and has been showcased thorough international evaluations and case study reports.<br>DUBLINKED is the regional open data platform operated by the 4 Dublin local authorities. DUBLINKED currently publishes 245 datasets from 13 public bodies and has contributed to the development to over 30 products and services. Funding was recently agreed for 2 new positions to grow the network and also manage the technical elements of the project.<br><br>**-Dublin Dashboard.** Developed as part of an ERC funded initiative called the 'programmable city' which evaluates the development of Dublin and Boston as a smart city. Based out of NUIM University the project team have built a Dublin Dashboard which is one of the most comprehensive city dashboards in operation internationally. http://www.dublindashboard.ie/pages/index The Dublin Dashboard provides citizens, public sector workers and companies with real-time information, time-series indicator data, and interactive maps about all aspects of the city. It enables users to gain detailed, up to date intelligence about the city that aids everyday decision making and fosters evidence-informed analysis.<br><br>**-Digital Maturity Model Conceptual Work.** Dublin City Council, Intel Labs Europe, the Innovation Value Institute (IVI) and NUI Maynooth have collaborated to produce a Digital Maturity Scorecard for Dublin. The scorecard is an analytical tool to measure Dublin's level of digital maturity and to identify ways in which to continue to move digital efforts in the right direction. The Scorecard is based on evidence of digital activity and the perception of city stakeholders. http://digitaldublin.ie/two-innovative-toolsets/ |
| 1.5 | **The scope of the Integrated Action Plan to be produced**<br><br>The integrated action plan will be informed by the following:<br><br>- Focus of developing 1 -2 smart city districts in Dublin<br>- Best practice case studies of existing smart city districts and successful deployments of smart solutions.<br>- End result will be the development of a toolkit to support the commercialisation of smart city districts so other areas in the city can adopt as required.<br><br>**The commercialisation of smart city districts toolkit will address the following areas:**<br><br>**Stakeholder engagement. S**uggest models of best practice. |

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| | **Business Case Development:** Lack of proven business cases - A core outcome should be to develop a better understanding of the current market place innovation in deployment of smart city solutions. Use of case studies to demonstrate new models of service delivery etc.<br><br>**Evaluation and Monitoring Framework of smart city solutions**. Validation is the key to making the case to deploy or scale up smart city solutions.<br><br>**Procurement Risk** - need to change the approach and procure by challenge through the use of challenge using competitive dialog rather than specifying solutions<br><br>**Finance Models:** In many cases the city council have the finance to deploy new solutions however just don't understand the potential and new business model associated with the solution.In other cases there is limited awareness of financial supports and instruments to scale up proves smart city solutions.<br><br>**Cultural / HR risk** - In many cased the blockages are down to change management and staff HR/Union issues.<br><br>**Technology risk / interoperability.** The technology becomes quickly redundant. Who takes the risk on this and how do you price it into the contract?<br><br>**Reputation risk** - unease at the technology and how it is used - big brother surveillance issues. trust etc |
| 1.6 | **The key stakeholders to be involved at local level**<br><br>The City Council is in the process of establishing a smart city advisory group to support the smart city ambitions of Dublin City Council. This will include representatives from industry, academia and the public sector. The Docklands business forum and the Dublin Chamber of Commerce have already expressed an interest in partnering on the 'smart districts' initiative.<br><br>We are also in the process of identifying a number of targeted smart city districts which will concentrate 'smart city 'solutions and showcase Dublin's smart city programme. One of these areas is likely to be the areas know as the 'silicon docks' which is Dublin's technology cluster where many of the leading tech and financial companies are located. |
| 1.7 | **Expected results beyond the production of the Integrated Action Plan (in terms of learning, capacity building, etc)**<br><br>We are currently in the process of establishing 'smart city districts' so will leverage learning from other members to build internal capacity in how they have developed similar districts.<br><br>Participation in this project will help us build out wider engagement and visibility on the benefits of rolling out smart city districts. We believe that this approach will help us to engage local business, universities, citizens and workers to help develop innovative solutions and also to learn more about the wider benefits of smart city deployments. |

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# URBACT III: Smart Cities Districts – Partner Profile

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| **City** | City of Eindhoven |
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| 1 | Profile of partner in relation with policy challenge to be addressed: |
| 1.1 | Local challenges in relation to the policy issue identified<br>Eindhoven faces 3 transformations in a time of reduced state funding. These are:<br>a. The City of Eindhoven has a strong urge to embrace the information age and develop and implement modern ICT solutions to achieve a better quality of life and support new jobs and new ways to deliver its services. This transformation needs to go hand in hand with its CO2 energy reduction strategy to live up to the goal to be energy neutral in 2045. Concentration lies on the mobility and housing sector.<br>b. In the Coalition Program 2014 – 2018 of the city of Eindhoven, one of the prioritized ambitions mentioned is to ensure a future proof City Center transformed together with stakeholders to stimulate investment in its future and fitting our eco-system of Brainport Eindhoven. This as an important location factor, a 'business card' for the center of Brainport Region and a pleasant environment for the meeting of residents and visitors to Eindhoven. An inclusive social society with special attention to make it attractive for international knowledge workers.<br>c. Transformation of a smart city inner-city (the city center) should be developed with in mind our Brainport approach of co-design / co-creation and co-ownership. The infrastructural quality of the city center. This contains not only its spatial but also its digital |

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| | quality. The latter meaning the hardware of backbone connections (optic fiber, wifi, sensor possibilities, as well as the open data availability and access quality), as well as the elements of experiential value by citizens, visitors and enterprise, and finally the programming and fine-tuning of inner-city functions. |
| 1.2 | Strategies and actions already implemented to tackle the policy challenge<br><br>*Several documents guide these transformations.*<br><br>• Gemeente Eindhoven (PvdA, D66, SP en GroenLinks), Coalitieakkoord 2014-2018: Expeditie Eindhoven, iedereen mee, mei 2014.<br>• Roadmaps Energy, Smart Lighting, Smart Education;<br>• Sustainable Urban Mobility Plan (SUMP); Eindhoven op Weg: duurzaam verbinden van mensen en locaties in Eindhoven veelzijdige stad, september 2013.<br>• Methodology of the Natural Step;<br>• Roadmaps Smart Mobility and 1 other under construction<br><br>*Specific documents for the transformation of the City Center:*<br><br>• Berenschot i.o.v. gemeente Eindhoven, Citymarketingstrategie Eindhoven: wie kiest, wordt gekozen, 20 augustus 2010.<br>• Gemeente Eindhoven, Manifest nieuwe woonvisie Eindhoven, 31 oktober 2014.<br>• Gemeente Eindhoven (afdeling Economische Zaken en Arbeidsmarkt), Ondernemen 040, 2 september 2013.<br>• Gemeente Eindhoven, Bewegen tussen duurzaamheid en trends, kwaliteitskader openbare ruimte centrum, 30 augustus 2011.<br>• Gemeente Eindhoven, Horecabeleidsplan: kennis maken met een gastvrije stad, maart 2014.<br>• Gemeente Eindhoven, Evenementenbeleid in Eindhoven, 'Gastvrij en veilig', februari 2014.<br>• Stuurgroep Brainport Avenue 2020-2040, MIRT-onderzoek Brainport Avenue 2020-2040, gebiedsvisie Brainport City, november 2014.<br>• BRO i.o.v. Samenwerkingsverband Regio Eindhoven (SRE), Eindhoven, regionaal koopstromenonderzoek, 23 september 2009.<br>• BRO i.o.v. gemeente Eindhoven, Herijking detailhandelsbeleid Eindhoven, definitief concept, 7 april 2014 |
| 1.3 | The experience of the partner in terms of working through transnational exchange in relation to the selected topic rests on several European projects of which are the most explicit:<br>• TRIANGULUM, The Three point project, Demonstrate, Disseminate, Replicate (running 01-02-2015 – 01-02-2020) |

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| | • Roadmaps4Energy (running until 01-01-2018)<br>• ENIGMA, aims to implement a joint transnational pre-commercial procurement procedure in the field of lighting (running)<br>• SPEA, focuses on improving energy efficiency in municipal buildings in order to incorporate energy saving and renewable energy to these buildings and to develop sustainable management procedures in the cities of the European Community (running)<br><br>The city of Eindhoven has a proven track record of working in the European context |
| 1.4 | The potential contribution to the network activities of exchange<br><br>**What we can bring:**<br>1. Roadmap Smart Lighting Eindhoven. Eindhoven intends to further develop the public lighting systems, in the period leading up to 2030, into an integrated smart lighting grid, connected to both existing products and services and those still to be developed and operated. A market participant should realize the smart lighting grid by means of what is known as a revenue model: marketing new and existing products and services. In addition, open and continuous innovation, as opposed to placing a system or supplying a specific service and leaving it at that, is a central theme. Another important starting point is that businesses, knowledge institutions, government and citizens collaborate in an interactive way based on a 'testing ground approach' (living lab). Lastly the implementation of the roadmap contribute to the city council's objective of a sustainable and sociable city. Instruments which will be used are: survey through a digital panel, a competitive dialogue tender procedure.<br>2. Co-production and co-design processes between stakeholders, like knowledge institutions, citizens, city and enterprises, for instance in the rehabilitation process, where we make use of the digital tool WoonConnect in one of the Triangulum lighthouse districts. Co-production processes - beyond the rehab of houses -, might also contain aspects to meet demands concerning public space, safety, mobility, health issues.<br>3. More than 5 year experience in working with CityMart and its predecessor Living Labs Global.<br><br>**What we would need:**<br>Effective 'vehicles' that create partnerships between financial institutions, enterprises/business (product and service providers), consumer/user groups and local authorities open enough to stimulate innovation and with enough guarantees for democratic control, protection of public interest, like data ownership, open standardization and prevention against 'product lock in-situations'.<br>Methodologies to organize such platforms, co-ordinate them and bring them in position for implementation agreed solutions. |

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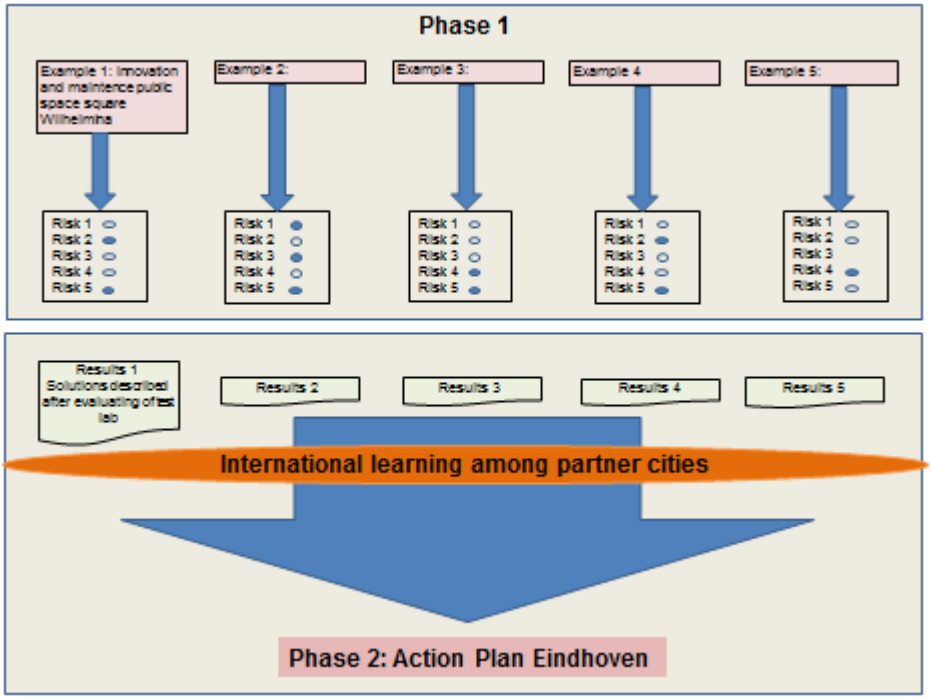
| 1.5 | The scope of the Integrated Action Plan to be produced is explained through the following scheme and text.<br><br>The specific challenge we wish to address in this Action Planning Network as a Project Partner is identifying the risks as described in the project proposal. We have also experienced these in a number of Eindhoven smart city living lab situations of the recent past. Through a process of evaluation, sharing and gathering of possible solutions among stakeholders involved (locally) and in phase 2 also internationally, we will share these. All lessons learned preventing risks as mentioned in the proposal (conditions, methodologies, solutions, roles, skills etc.) will be delivered to a toolbox, that will be used to enrich the skills and knowledge in the co-production process of the development of the Eindhoven Smart City Center Strategy.<br><br>  |
| 1.6 | The key local stakeholders to be involved at local level are selected from projects, test and living labs of the past, the current and future. They include user groups, Public Private Partnerships, larger enterprises and sme's, knowledge institutes, Brainport Eindhoven, Eindhoven 365 (branding&marketing) and others. |
| 1.7 | Expected results beyond the production of the Integrated Action Plan (in terms of learning, capacity building, etc)<br><br>• A boost to the International network Smart City 'first movers', concretely in networking, joined tendering and internal exchange and peer reviewing, during and after the project is over.<br>• An Eindhoven local network of quadruple helix partners willing to invest time and means after the project is over in further smart |

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| | city developments.<br>• Improved functioning of local/regional quadruple helix partnerships on smart city initiatives.<br>• An improvement in the new role and working methodology of city employees required in smart city developments and co-production/design processes with involvement of multiple stakeholders. |
| | As stated, the transformation into a smart city, incorporates intensive long term cooperation between multiple stakeholders in a so called open innovation model with ambitions and projects, which have a long term effect on the area involved.<br>All the stakeholders have their own culture, their own business model, their own ambitions, their own (preferred) partners and technologies, etc.<br>This results in a number of challenges and risks when working together in transformational city projects or living labs in such a multi-stakeholder environment. The risks in those pathways can be grouped in:<br>• Technology risks (1)<br>• Construction risks (2)<br>• Operational risks (3)<br>• Market risks (4)<br>• Policy risks (5)<br>• Human resource risks (6)<br><br>The goal of the project for Eindhoven is to create a very agile research project in which we assimilate and share knowledge (and solutions) during the whole program towards multiple stakeholders and people involved in operational projects & living labs in the beating heart of a city being the inner city<br>This is beneficial in many ways:<br>• Research is incorporated in operational programs.<br>• Identification of risks and measures to minimize or eliminate risks can be used in the running programs.<br>• Knowledge and experience are shared on a day to day basis towards all people involved instead of knowledge sharing towards organizations (not reaching all the people) after the program period.<br>• Measures are tested in practical cases.<br><br>In addition we experience that municipalities have certain challenges as a result of their internal organization and financial system. Due to these it is difficult for them to transform towards integral smart approaches instead of the current and often silo solutions. This is especially the case in a lot of transformational and policy programs related to the public space.<br>By selecting projects/programs/living labs in the center of the city, we can focus on the beating heart areas of the cities, with many interrelated stakeholders, several projects and a lot of potential smart city developments. In case of Eindhoven we are in the process of defining the transformation strategy for our inner city. Thereby this program can |

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| | and will help us to provide means to minimize risks in this and educate people which will be involved in this future process. |

# URBACT III: Smart Cities Districts – Partner Profile

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| **City** | Porto |
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| 1 | Profile of partner in relation with policy challenge to be addressed:<br><br>The city of Porto has more than 2,000-year history and it's the second-largest city in Portugal and one of the major urban areas in Southern Europe. Porto is Portugal's second most important city and with its surrounding metropolitan area of 16 municipalities is the largest urban conurbation in the northwest of the Iberian Peninsula. Porto has more than 250,000 inhabitants and it's the centre of a large metropolitan area with more than 1,8 million inhabitants. One of the oldest European centre, and registered as a World Heritage Site by UNESCO in 1996, Porto was the European Capital of Culture in 2001.<br>Its tourism industry is continuing to develop, the airport has been recently modernised and expanded, and a new cruise liner terminal has been developed in the nearby Leixões seaport. The hotel offer is also rapidly expanding and improving. Porto is now the third most visited tourism destination in Portugal and won the award for Best European Destination in 2012, beating over 19 major European cities to the accolade. Along with holidaymakers, the city is also a popular venue for international events, fairs and exhibitions, seminars and congresses.<br>But Porto is also a forward-looking city, the city has the region's largest seaport, whilst also being an important hub for innovation, mainly influenced by the presence of six universities, several higher education institutes and a series of R&D centres. Specific industry clusters have been formed in the IT and creative sector, biotechnology and health, and mechanical engineering. In addition to the cultural assets of the city, Porto is not only a major centre for research and innovation with a rapid developing sector of creative industries, but also the centre of the main national export region. |
| 1.1 | Local challenges in relation to the policy issue identified<br><br>Although the evolution of the city has been consistent and based in a long term strategy, there are still challenges to address in what concerns the urban ecosystem empowerment and sustainability. The urban strategy includes the interaction between social, economic and environmental areas. In order to |

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| | achieve good results in this fields Porto aims at integrating a larger scale achieving local impacts through a global strategy. The main issues faced in this process are especially in the Smart City related topics and business area is to overcome the vendor lock-in, the lack of solid normalization and standardization frameworks and the funding for scale solutions across borders. The goal is to advance the global competitiveness of Porto economy by introducing innovative infrastructures for cost-effective creation and delivery of services. To overcome the identified issues the projects need to be designed to meet the demands of key city stakeholders across many different sectors by engaging them in the process. |
| 1.2 | Strategies and actions already implemented to tackle the policy challenge<br><br>In February 2010, the Porto Digital association founders, led by the City Council, launched the new strategic plan, which aimed to foster the development of Porto into a knowledge based city and in which the innovation area has an important role. The new strategy leverages the investments done by the Municipality since 2005 on the large scale fibre optic backbone and in an advance ICT platform.<br>By implementing an innovative strategy, focusing on an interdisciplinary approach, where the city well-known strengths are aligned with the excellence of the work developed by the Academia. And with the support of reference industry partners, the strategy developed was able to contribute to the creation of hundreds of qualified jobs, and to transform the city centre into a place where people, especially young entrepreneurs, are inspired by culture and integrated in a new multicultural and international ecosystem. As a clear result of the strategy described the city is now attracting more people for the city centre, creating new jobs, reduce social exclusion, and increase the city security.<br>As an example of the impact of the aforementioned strategies, the University of Porto was awarded with a grant of 1.6M€ from the FP7 Capacities program, and which will allows the development of the Porto Living Lab and to expand the recently created Centre of Competence in Future Cities of the University of Porto. Also as an example of this strategy impact, UPTEC, the Science and Technology Park of UPorto, won the RegioStar 2013 award in Smart Growth.<br>A Local Action Plan was developed in the Urbact network CSI Europe. Amongst the objectives of this Plan, it is important to emphasise the creation of a UDF specialised in sustainable and affordable projects, and the strengthening of technical training and information improvement.<br>The Local Action Plan comprises three main actions: Support Fund for the Renovation of Buildings of the Historic Centre of Porto; Technical Assistance; and Pilot Project.<br>In the constitution of the LAG, a set of criteria was considered, including the need to:<br>• Include different levels of government: national, local and metropolitan;<br>• Include different sectors of activity that were chosen from the diagnosis of the city - the best activities to sustain a process of growth in the future |

(2014-2020);

- Include representatives of the private sector, public sector and of other forms of organisation;
- Include entities directly associated with the management of Urban Development Funds (UDFs) and the Holding Fund;
- Include Educational, R&D and training institutions;
- Include institutions in the Entrepreneurship and SME area;
- Include active institutions in the social area;
- Include institutions in the area of mobility.

The strategy for the city of Porto included, so far the use of different funding's to ensure valorisation of the city ecosystem. The JESSICA Holding Fund Portugal (JHFP) was created in July 2009 with a total amount of 130 million Euros. Its Investment Committee comprises the Managing Authorities of the five Operational Programmes as well as the Operational Programme for Territorial Enhancement (OPTE) and the Directorate General of Treasury and Finance. The tender process that took place between 2010 and 2011 resulted in the creation of three UDFs run by three separate entities (Caixa Geral de Depósitos, Banco Português de Investimento and Turismo de Portugal) in five regions of continental Portugal. In Porto, there are two operational UDFs, one managed by Banco Português de Investimento and the other by Caixa Geral de Depósitos. 54% of the 20 projects identified until today in the city are related to tourism. In the city, the multiplier effect of JESSICA is of 5, i.e. 1 Euro of JESSICA investment yielded 5 Euros of private investment.

It is important for the Porto ecosystem to pay special attention to the scale-up of businesses, the identification of businesses that are ready to enter that phase and create jobs and growth and to create the framework conditions. The project ScaleUp Porto, in the concept and implementation process, analyses relevant evidence that indicates that Porto does not simple needs but may be successful in developing a scale-up programme.

The identification of startups that in short periods created significant growth and jobs as well as the large numbers of startups created in the Porto innovation ecosystem are good indicators, especially when Porto still holds significant industrial assets and now becomes a touristic hub, has Universities amongst the better in the world and is able to fix youngsters with high skills. The strategic decision of the Local Authorities to privilege innovation as the engine for sustainable growth of the city in articulation with the North Region of Portugal is a key enabler of the proposed programme. In Porto, there is a perception that there are good conditions for individuals with ideas and the right abilities to create entrepreneurial ventures (stand up phase). The existence of Universities in the region (e.g. University of Porto) and the gathering of the right resources, like access to capital, and the reduced bureaucracy to start new businesses, create the right conditions to start new ones. This is why new start-ups are being founded at a fast pace in the region.

A scale-up mindset is the most important attitude of successful scale-up entrepreneurs. In a functioning and dynamic ecosystem, successful entrepreneurs do not just scale-up their businesses, they will reinvest their

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| | success as inspiring role models, their knowledge as mentors, experts or teachers, and financial gain, as investors in the next generation of entrepreneurs. This consolidates a virtuous circle that consolidates the ecosystem itself. In this "new" Smart Cities economy, an as an example of Porto's ecosystem, Porto has recently successful companies with a global market such as Veniam (capture funding in the order of 4,9 MDollars), Farfetch (capture funding in the order of 194,5 MDollars) and its leaders are role models and may invest and/or help to grow new businesses. |
| 1.3 | The experience of the partner in terms of working through transnational exchange in relation to the selected topic<br><br>Porto has participated in several projects, in different fields, in international environments. The experience built within these projects corresponds not only to an know-how exchange but also the acquirement of international experience. The main projects developed in this field were: Enter.Hub - European Network exploiting Territorial Effects of Railway Hubs and their Urban Benefits; Europ Direct; VEC_Vinofood Education and Creation; CIVITAS – ELAN – Mobilising Citizens for vital cities; GrowSmarter; Future Cities: Porto Living Lab.<br>One of the most relevant experiences in this field is the participation of Porto in "CSI Europe: City Sustainable Investment in Europe " within the Urbact II programme. Porto Vivo, SRU participated in the project which aims at analysing the role of financial instruments in the planning of sustainable urban development. The goal was to build on the different experiences of the partners in relation to financial instruments and urban investment, by working together seeking to: Identify common issues that affect financial instruments and work together to identify solutions; Work at a local level to translate our experience to the delivery of projects and; Act as a voice for cities in the development of future investment models at both a local and EU level. The key themes to explore were related to Governance, State Aid, Technical Assistance and Regulation, to identify new models for investment. |
| 1.4 | The potential contribution to the network activities of exchange<br><br>Porto has developed substantive experience of both smart city collaboration and work on financial instruments. It will bring this experience and learning to the partnership. Examples of projects and areas of work include:<br><br>• The development of the Porto Living Lab, a collaborative piece of work aimed at identifying 'prototype' smart city solutions and technologies for scaling up and commercialisation. The Living Lab also builds on work undertaken by the Porto Digital Association, led by the City Council. This initiative provided the basis to leverage the investments made to the establishment of a large scale fibre network as the precursor to an advanced ICT platform.<br>• The JESSICA Holding Fund has resulted in the creation of two operational Urban Development Funds to support investment in Porto, managed by Banco Português de Investimento and Caixa Geral de Depósitos. The process of establishing these and the investments made provide for a strong knowledge base and experience which can be shared across the Network.<br><br>Finally, and as mentioned in other sections, Porto was a partner in participation of Porto in "CSI Europe: City Sustainable Investment in Europe " within the |

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| | URBACT II programme. It is therefore well placed, along with Manchester to bring this experience to the network.<br><br>(added by ST on 16.6.15) |
| 1.5 | The scope of the Integrated Action Plan to be produced<br>The expected results of the implementation of the Integrated Action Plan are essentially related to the main goals identified below:<br>• Cooperate, share and learn from examples of good practice that may be identified in the project;<br>• Learning to identify accurately the role and importance of each stakeholder in the "Lightouse" and models of commercial development of "smart city districts."<br>• Learning to identify, analyze and develop pragmatic solutions to the set of risks associated with the development of "smart cities"<br>• Find, develop and adapt alternative forms of public funding, promoting the participation of public-private financing.<br><br>By developing and implementing the Integrated Action Plan, includidng the fields identified previously, the aim is to create a set of instruments which will reduce the risks of public investment and attract more private investment. |
| 1.6 | The key stakeholders to be involved at local level<br><br>-UPTEC, University of Porto technology and science park<br>-University of Porto<br>-Polytechnic school of Porto<br>-Porto Design Factory<br>-Portuguese Cluster for ICT<br>-Portuguese Cluster for Mobility<br>-Portuguese Cluster for Energy and habitat<br>-Public Agency for Innovation<br>-Portuguese Foundation for Science and Research<br>-Agency for Innovation<br>-CCDRN – Agency for managing structural funds<br>-Centre of Competences for Smart Cities<br>-Centre of Competences for Energy<br>-SCTP and METRO (Public Transportation)<br>-PSP (Police) |
| 1.7 | Expected results beyond the production of the Integrated Action Plan (in terms of learning, capacity building, etc)<br><br>As presented above the main expected results are related with the |

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| | development of tools and methodologies for local partner's engagement in order to be able to overcome the vendor lock-in, the lack of solid normalization and standardization frameworks and the funding for scale Smart Cities solutions across borders.<br>The goal is to advance the global competitiveness of Porto economy by introducing innovative infrastructures for cost-effective creation and delivery of services. To overcome the identified issues the projects need to be designed to meet the demands of key city stakeholders across many different sectors by engaging them in the process. |
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# URBACT III: Smart Cities Districts – Partner Profile

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| **City** | City of Stockholm |
| **Contact Officer** | Lisa Enarsson |
| **Contact Details** | E-mail: Lisa.enarsson@stockholm.se<br>Telephone +467612982 |
| **Profile of Contact Officer** | Lisa Enarsson (f), Senior Project Manager, holds a B.A. on Environment and Health from the University of Umeå, 1996.<br>Former officer of environmental planning, responsible for the Environmental programme for new buildings, adaptation measures and a representative in the working group for climate and vulnerability in Stockholm. Former Agenda 21 co-ordinator working with projects like Mobility management, Green and living backyards and Environmental centre for small companies.<br>Experience: Project manager of Sustainable Järva - a project on energy efficient refurbishment of buildings from the 1960-70:ies. Participating in the development of the Stockholm Royal Seaport - a sustainable urban development district.<br>Assistant Coordinator of the GrowSmarter project |

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| 1 | Profile of partner in relation with policy challenge to be addressed:<br>City of Stockholm<br>The Environment and Health Administration, MF, is the authority for citizens' health and all environment issues in the City of Stockholm and comprises approximately 200 employees. MF is also responsible for the climate action planning of the City. The climate action group coordinates the work and monitors the implementation and the result of all climate actions undertaken in the city. Two special task-forces are the Energy center, which offers advice on how to make the city's buildings more energy efficient and climate smart Stockholmers that runs information campaigns addressing citizens. |
| 1.1 | Local challenges in relation to the policy issue identified:<br>The current objective is to reduce CO2eq to 3.0 tonnes/citizen by 2015, and to be total fossil-free by 2050. Current emissions are 3.4 tonnes/citizen, which is a 37 % reduction from the 5.4 tonnes/citizen in 1990.. While energy production played an important role in the preceding plans, the current plan focus on energy use in buildings and transport. Some objectives in the plan: |

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| | • all public housing and commercial building companies (approximately 20 % of the city's residential building stock) shall reduce energy usage with 10 % to 2015<br>• all refurbishment in these buildings must lead to minimum 50 % reduction of energy usage<br>• New residential buildings should use maximum 80 kWh/m2,y heat, electricity and hot water, commercial buildings 70 kWh/m2,y<br>• After 2015 this will be reduced to 55 kWh/m2,y |
| 1.2 | Strategies and actions already implemented to tackle the policy challenge:<br>Stockholm has adopted the long-term target "Fossil Fuel Free City 2050" and work since the 1990'ies with successive Environment Programs and Climate Action Plans to reach this goal. The current Climate & Energy plan is the 4th generation and covers the period 2010-2020. A new Climate Action Plan covering 2016-2020 is now elaborated. The work with<br>the earlier plans has been very successful and has resulted in 35 % CO2-reduction. |
| 1.3 | The experience of the partner in terms of working through transnational exchange in relation to the selected topic:<br>Stockholm's work is internationally recognized and has been awarded and shortlisted for several international prizes, e.g. Civitas Award, Osmosis Award, European Green Fleet award, Global Energy award etc. In 2009 Stockholm was awarded European Green Capital 2010.<br>MF has long experience in EU-projects: as coordinator of BEST, Trendsetter and Zeus and as participant in BiogasMAx, Catalist, Cute, Moses, Plume, Niches, Elcidis and E-tour projects. MF is also an active member in several European and global networks, e.g. Covenant of Mayors, Clinton Initiative C40, Eurocities, Citelec, ICLEI, Cities for Climate Protection and European Sustainable Cities and Towns Campaign.<br>Stockholm is now the coordinator of the GrowSmarter project and one of the Smart cities and communities lighthouse cities. Stockholm is also a partner of NeZer – a project where action plans for Nearly Zero Energy Refurbishments in the city is developed. |
| 1.4 | The potential contribution to the network activities of exchange:<br><br>The City of Stockholm can contribute with the experiences from the GrowSmarter project, all clean vehicles projects, as well as Nezer and a nationally granted project Sustainable Järva, where several smart solutions linked to Energy efficient Refurbishments, sustainable transportation and integrated infrastructure will be useful and worth spreading. The City of Stockholm can also contribute with the experiences from Hammarby Sjöstad and the Royal Seaport – two new built areas with sustainability targets and several smart solutions. One specific project in this area is C/O city where ecosystem services are the scope. |

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| 1.5 | The scope of the Integrated Action Plan to be produced:<br>How to implement smart solutions in existing areas to reach a sustainable development in the whole city, even when new buildings are not an issue. |
| 1.6 | The key stakeholders to be involved at local level:<br>City administrations (environment, planning, development, trafik, real estate)<br>City owned housing companies<br>Housing company association<br>Public transportation organisation<br>Industrial partners |
| 1.7 | Expected results beyond the production of the Integrated Action Plan (in terms of learning, capacity building, etc):<br><br>Trans sectional exchange of experiences, network strengthening, joint ambitions |
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# URBACT III: Smart Cities Districts – Partner Profile

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| **City** | Smolyan, Bulgaria |
| **Contact Officer** | Nikolay Melemov<br>Mayor of Municipality of Smolyan |
| **Contact Details** | *Phone: 00359 301 67 600*<br>*E-mail: obshtina_smolyan@abv.bg* |

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| 1 | Profile of partner in relation with policy challenge to be addressed: |
| 1.1 | **Local challenges in relation to the policy issue identified**<br><br>Municipality of Smolyan is situated in a mountainous region, with a steady tourist flow towards the winter resorts. For the municipality, it is important to keep good image, clean environment and attract secure investments. As the municipality of Smolyan is preparing its Action Plan for Integrated Urban Development, it is trying to focus on the urban areas it wants to strengthen and develop. For now, the focus is kept on business and environmental innovations. |
| 1.2 | **Strategies and actions already implemented to tackle the policy challenge**<br><br>The municipality of Smolyan has developed and is implementing strategies and action plans regarding the sustainable utilization of RES and energy efficiency, improvement of the urban air quality, environmental protection strategy, investment strategy, educational optimisation, social services and touristic strategy, etc. Still, it is expected that the city Integrated Plan will present joint measures to address the challenges the city meets thus saving administrative efforts and finance. |
| 1.3 | **The experience of the partner in terms of working through transnational exchange in relation to the selected topic**<br><br>The Municipality of Smolyan has a long experience in the Bulgarian OP funding programmes and has participated in EU projects related to environment, social services and tourism. It is a twin city with cities from Greece, Germany, Spain, Turkey, Hungary, Italy, Estonia, and Macedonia. |
| 1.4 | **The potential contribution to the network activities of exchange**<br><br>Knowledge and experience in transnational exchange and capacity building. Municipality of Smolyan has strong expertise in the field of energy, environment and climate policies. |

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| 1.5 | **The scope of the Integrated Action Plan to be produced**<br><br>The Integrated Plan that the municipality of Smolyan will develop will focus on urban innovation in the field of attracting investments for environment, social services, and tourism. The city is considering introducing of smart infrastructure for monitoring of energy and environment – so, this will also be included as a focus in the plan. |
| 1.6 | **The key stakeholders to be involved at local level**<br><br>• City representatives from environment and energy departments, investment departments, tourism and social services departments<br>• Local and regional businesses, NGOs, etc |
| 1.7 | **Expected results beyond the production of the Integrated Action Plan (in terms of learning, capacity building, etc)**<br><br>Preparation of Integrated Plan covering essential aspects of the Smolyan urban development priorities; capacity transfer and building; knowledge and expertise transfer |

# URBACT III: Smart Cities Districts – Partner Profile

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| **City** | Guadalajara |
| **Contact Officer** | Ignacio Lirón Muñoz<br>System Engineer / Technical Manager |
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| 1 | Profile of partner in relation with policy challenge to be addressed: |
| 1.1 | Local challenges in relation to the policy issue identified<br><br>- Smart management of urban services and public administration.<br>- Sustainable urban mobility and accessibility.<br>- Energetic efficiency at urban scale.<br>- Recovery of the old town.<br>- Care of the city environment.<br>- Economic development and regeneration of the social framework. |
| 1.2 | Strategies and actions already implemented to tackle the policy challenge |

| Challenge | Actions |
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| Smart management of urban services and public administration. | e-Administration.<br>Technological platform for urban services. |
| Sustainable urban mobility and accessibility. | Sustainable urban mobility plan.<br>Road safety plan.<br>Accessibility regulation. |
| Energetic efficiency at urban scale. | Energetic auditory of municipal buildings. |
| Recovery of the old town. | Special plan for the old town. |
| Care of the city environment. | Local Agenda 21. |
| Economic development and regeneration of the social framework. | Social plan to face with the social exclusion.<br>Municipal plan to support maternity.<br>Citizen participation regulation. |

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| 1.3 | The experience of the partner in terms of working through transnational exchange in relation to the selected topic<br><br>Not until this URBACT III Call in which Guadalajara city has been involved in 3 networks as initial partner that did not go on 1st phase, and now, its |

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| | participation as city partner in SmartImpact. |
| 1.4 | The potential contribution to the network activities of exchange<br><br>We have successfully implemented policies/ actions related to this policy challenge but we know we can improve:<br><br>- Technological platform for the management of the urban services.<br>- eGovernment and eAdministration.<br>- Integration of both previous approaches. |
| 1.5 | The scope of the Integrated Action Plan to be produced<br><br>Guadalajara, after contributing in the production of the Integrated Action Plan, hopes to gather the governance structures, processes and business models that set the foundations and bases to carry out the objectives indicated in the Integrated Strategy for the Sustainable Urban Development, with acronym EDUSI from the Spanish translation. |
| 1.6 | The key stakeholders to be involved at local level<br><br>At first sight, taking into account that the final composition of the URBACT Local Group in Guadalajara can slightly vary, components of this group are:<br><br>- Local Area of Sustainable Urban Development and Smart City.<br>- Local Area of Electronic Administration.<br>- Centre for Innovation in Intelligent Infrastructures (CI3).<br>- Agents: Professional Associations of architects, surveyors, engineers, etc.<br>- Private sector: Business associations like CEOE CEPYME, APETI, etc. |
| 1.7 | Expected results beyond the production of the Integrated Action Plan (in terms of learning, capacity building, etc)<br><br>Guadalajara city is totally open to exchange its know-how and to learn how other cities work concerning the developing of smart districts and their integration to create smart cities. Moreover, the production of an integrated action-plan is practically impossible to be undertaken individually without considering policies and processes from other cities and regions, which will permit to make robust and flexible decisions in SmartImpact network. |
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# URBACT III: Smart Cities Districts – Partner Profile

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| **City** | Suceava |
| **Contact Officer** | Dan Dura |
| **Contact Details** | dandura@primariasv.ro , 0040734991065 |
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| 1 | Profile of partner in relation with policy challenge to be addressed:<br><br>The north-east Romanian city of Suceava (population about 107.000), one of Romania's oldest settlements, has been the capital of Suceava County since 1388. Suceava lies 450 km from Romania's capital Bucharest, on a main European highway. The government is making efforts to improve the region's transport network as part of a broader urban regeneration using EU Cohesion Policy grants. Figuring on UNESCO's World Heritage List, Suceava is home to orthodox monasteries and churches, and to a 14th century castle. The local industry is based on glass and wood manufactories, textiles and construction materials.<br>Suceava faces the combined challenges of increased motorised traffic and stringent European environmental and energy targets. The municipality has already taken part in initiatives to encourage sustainable urban development including the CIVITAS II (2005-2009) Smile Project, MIDAS (2006-2009), part of the Intelligent Energy for Europe's STEER Programme, **Sustainable Urban Markets"** and " **Electric Vehicles in Urban Europe" EVUE** co financed by the European Union through the European Regional Development Fund, under the Interregional Cooperation Programme URBACT II.<br>Also the " **Grow smarter"** project will be implemented between January 2015 and January 2019 financed by European Union under the programme Horizon 2020.<br>Currently Suceava Municipality is implementing two projects financed by the Government of Switzerland through the Swiss-Romanian Cooperation Programme. The main activities included in these two projects are rehabilitation of public lighting system - replacement of the all lamps with LED ones for the entire city in order to reduce the energy consumption and implementation of the " electro mobility " concept into the city by purchasing of 15 EV's , 10 electric bikes and installation of 28 charging points .<br><br>Actions already undertaken :<br><br>- new city power plant, in function from 2013, using only biomass, provided both heating for the entire city and " green energy "<br>- rehabilitation of 55 % of the city heating transport system (isolation, pipe lines, transfer points) – 102 km and 28 PT - in order to reduce the lost energy into the system |

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| | - rehabilitation of 380 apartments (structure, heating system) in order to reduce the waste of energy<br>- rehabilitation of the public lightning system - 24 km of network , replace the old lamps with new and energy saving ones and implementation of a tele management system in order to reduce the energy consumption and increase the efficiency<br>- implementation of a new waste management system (on county level) with transfer stations , new landfill ( with biogas production plant ), separate recycling facilities<br>- rehabilitation of 26 km of city streets and construction of 22,4 km of cycling lanes in order to reduce the traffic congestion and increase the number of PT passengers<br>- construction of a 164 underground parking facility in the city center together with the rehabilitation of the main city center pedestrian area in order to create facilities for reduce traffic congestion , traffic emissions and encourage walking instead of driving |
| 1.1 | Local challenges in relation to the policy issue identified<br><br>Suceava faces the combined challenges of increased motorised traffic, stringent European environmental and energy targets mainly in the context of reduction the traffic emissions , waste recycling , economic growth , increase the energy efficiency , secure funding for implementation of local infrastructure projects and implementation of the sustainable development local plans , increase the quality of life into the city . In the past 5 years a number of studies and strategies were approved at local level: Urban Integrated Development Plan – 2010, Urban Sustainable Mobility Plan – 2014, Sustainable Energy Action Plan – 2012, Local Action Plan (electro mobility) – 2012 in order to implement a sustainable development of the city, reduce traffic congestion, air pollution and increase the energy efficiency of the public and private sector.<br><br>In the same time in the past 15 years there were some important changes made at local level and one of the most important and the development of the commercial area located in the middle of the city area which is connected with the main boulevard that crossing the city from south to north has the biggest impact for the city life, development and mobility. Also due to the fact that services, constructions and goods delivery sectors had a significant increase in the past 10 years the number of vehicles increased (especially the ones connected with goods delivery), traffic congestion and level of air pollution became a major challenge for local authorities.<br>In this situation as the Municipality has the goal of sustaining the local development but in a sustainable and smart way there is an important demand of local actions, measures and regulation for sustainable local development.<br>The economic welfare will lead to a change of mentality and to a different view of what a qualitative life means.<br>Transfer of the best practice example in different domains of activity from the most advanced European cities represents a key element for s successful implementation of the local development strategy.<br>Also Municipality of Suceava has as one of the major local objectives actions to demonstrate the catalytic effect that urban markets have in the major thematic areas that generate sustainable growth, regeneration of the historic city centre, the development of economic activities with low CO2 emissions, the promotion of local entrepreneurship.<br>By directly targeting the major sources of air and noise pollution in our cities we would like to improve the lives of all citizens and ensure that urban areas |

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| | mitigate their negative environmental impacts as efficiently as possible . |
| 1.2 | Strategies and actions already implemented to tackle the policy challenge<br><br>Sustainable Energy Action Plan, Sustainable Urban Mobility Plan , Local Development Strategy, Local Action Plans – URBACT Projects |
| 1.3 | The experience of the partner in terms of working through transnational exchange in relation to the selected topic<br><br>Suceava Municipality was partner in few European projects with the main topic – sustainable mobility and local development, as:<br>SMILE “towards sustainable mobility for peoples in urban areas “ – CIVITAS Programme , CATCH - " clean accessible transport for European cities " - LIFE Programme ,“Sustainable Urban Markets”,” EVUE Pilot Delivery Network “and “Electric Vehicles in Urban Europe” EVUE - URBACT II .<br>Also the “ Grow smarter” project will be implemented between January 2015 and January 2019 financed by European Union under the programme Horizon 2020 with the main objective : to implement “smart measures “ in the City Centre District in order to increase energy efficiency , improve the quality of the life into the city and transfer the best practice solution from most advanced cities in Europe. |
| 1.4 | The potential contribution to the network activities of exchange<br><br>Development of case studies demonstrating successful initiative for securing investments from private sector and public private partnership , production of “ state of the art” documents in order to provide support for future similar implementation of “smart concept “ projects in cities around Romania , create the premises for future cooperation between city partners for implementation of infrastructure projects and continuation of the cooperation in the field of transfer of best practice example and knowhow. |
| 1.5 | The scope of the Integrated Action Plan to be produced<br><br>According to the Sustainable Energy Action Plan, Sustainable Urban Mobility Plan and Local Development Strategy in the next 20 years the municipality will have to focuses on the following fields (no prioritization):<br>Buildings and facilities (municipal, residential and tertiary buildings, public lighting);<br>Transport (municipal fleet, public, private and commercial transport);<br>Centralized heating system – using renewable resources ;<br>Local energy production (solar heating installation and solar photovoltaic modules, high-efficiency cogeneration, biomass fuel heating installations);<br>Urban planning (strategic urban planning, sustainable mobility urban planning, development of local regulations to support sustainable constructions);<br>Procurement (local energy-efficiency regulations, local regulations on the utilization of renewable energy sources);<br>Electric vehicles ( private and public ) and electric busses for public transport<br>Communication (technical assistance and consulting services, financial support and subsidies, information and awareness campaigns, training sessions); |

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| | Waste management (selective collecting, recycling).<br>We do expect to identify more ideas and actions during the implementation phase of the project and all these should be included in the Integrated Action Plan .<br>It is expected that the implementation of the actions included in the LAP will conduct to :<br>Correlating the local energy framework with the national and European ones;<br>Better life quality;<br>General contribution to town's attractiveness;<br>Increased attractiveness for trade and industry;<br>Local economic growth;<br>Attracting investments;<br>Compliance with the European and National Policies on Climate Changes |
| 1.6 | The key stakeholders to be involved at local level<br>Public institutions (with activities in Environment Protection, county administration, local traffic police , energy and public services )<br>Local media (newspapers, local radio)<br>Private sector – consultancy , energy sector , transportation , industry , retailers<br>Companies that have activities related to freight and goods distribution<br>Non-governmental Organizations (researchers, environment protection activists, human resources development)<br>Education centres (high-schools, university of electric engineering and public administration , organization of students)<br>Local decision makers (Suceava Local Council, leading staff of Suceava Town Hall)<br>Retails and shopping centre<br>Public transport ( public operators and associations of operators)<br>Association of citizens |
| 1.7 | Expected results beyond the production of the Integrated Action Plan (in terms of learning, capacity building, etc)<br><br>Suceava Municipality would like to benefit from the transfer of knowledge and best practice experience of the city partners in SMART IMPACT project in order to increase the chances of a successful implementation process for the sustainable development projects planned for Suceava city .<br>It is expected that this new project should allow us to gain more experience, to allow access to funding resources together with the rest of the city partners, to continue the work with USLG, to achieve sustainable changes in people's behaviour regarding energy efficiency and sustainable development, improve local team skills and to promote the local experience at regional and national level .<br>It is expected that after a successful implementation of the proposed projects Suceava City should become an example of integrated sustainable mobility management for the rest of the cities in Romania.<br><br>Expected results could be summarize as follow :<br><br>Correlating the local energy framework with the national and European ones;<br>Better life quality;<br>General contribution to town's attractiveness; |

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| | Increased attractiveness for trade and industry;<br>Supporting economic growth;<br>Attracting investments;<br>Compliance with the European and National Policies on Climate Changes<br>Reduce the energy consumption and increase energy efficiency ( public buildings – schools , high schools but also private ones )<br>Reduce traffic emissions and impact against environment and peoples ( sustainable traffic development and management )<br>Increase the usage of alternative energies ( solar , biomass , geothermal ) in order to reduce the dependency for the classic energy sources ( coal, petrol )<br>Implement the electro mobility concept (electric vehicles , charging points , electric busses and bikes)<br>Implement the sustainable urban transportation and traffic ( car sharing , park and ride ) |
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# URBACT III: Smart Cities Districts – Partner Profile

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| **City** | City of Zagreb |
| **Contact Officer** | Mirjana Zubak |
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| 1 | *Profile of partner in relation with policy challenge to be addressed*:<br><br>According to the latest census (2011.) Zagreb, capital city and the cultural, scientific, economic and governmental center of the Republic of Croatia, has appr 790,017 inhabitants within the city boundaries (approx. 641 $km^2$). 1,086,528 people live in the Zagreb metropolitan area, which includes smaller cities of Samobor, Velika Gorica and Zaprešić.<br><br>Zagreb has the highest GDP per capita in Croatia of 18,503 EUR in 2011. In 2014. the average unemployment rate in Zagreb was around 11%, almost half of the national average. Zagreb, being a relatively large city situated on the fastest route that connects Central with Southeastern Europe, has great potential for investment and development.<br><br>Quality land, favourable transit location and developed municipal infrastructure, qualified labour force, various institutions, tradition in industrial production and performing services represent essential potentials in Zagreb developing strategy. Zagreb is an important international trade and business center, and transports crossroad of Central and East Europe.<br><br>Zagreb not only represents a transit point towards the Adriatic coast, but is also a travel destination itself, for it disposes with delightful patrimony – numerous cultural monuments and a plenty of public green space, all surrounded by 3 large parks of nature (Medvednica, Žumberak-Samoborsko gorje and Lonjsko polje).<br><br>Since the end of the war, it has attracted rapidly increasing number of guests (approx 911,000 visitors in 2014 with more than 1.600,000 overnight stays).<br><br>Zagreb is focused on the development of higher value-added sectors and business activities. This is justified in strong expansion of these sectors in last five years. Even during the period of severe economic crisis, these industries were resistant to the overall contraction. |

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| | One example of such a growing sector is computer programming. In the last decade, the aggregate number of companies, number of employees, net profit and export of the sector have recorded high and sustainable growth rates. Similar developments characterize most of the other technologically advanced sectors in the City of Zagreb as well.<br><br>In addition the city has a significant number of start-up and innovation businesses, mostly in digital industries located in business incubators such as Zagreb Entrepreneurship Incubator and Development Agency Zagreb.<br><br>Also in 2012. the City of Zagreb started to implement project "Development of system for business process management". The goal of establishing a system to prepare the city fast adaptation to changes and allow the construction of high-quality , cost- friendly and sustainable service. Effective business process management contributes to the simplification and modernization of administrative procedures of the City , ensures fast and reliable support for citizens and businesses , facilitates the preparation and implementation of projects and increases transparency and competitiveness of the City of Zagreb , which will enable a higher quality enterprise development , attract investment and boost overall social and economic development.<br><br>In 2013. Development agency Zagreb introduced "Zagreb forum".<br>The main objective of the conference is the transfer of knowledge and technology on a global level and linking Zagreb with innovative partners in the European Union. Conference especially focus on the new management models , concepts of smart cities and financial instruments needed for the development of creative cities of the future that will allow further development of the European Union and the region of Southeast Europe<br><br>In 2014. the City of Zagreb introduced international startup conference "Zagreb Connect". The conference aims to connect startup companies and their business ideas to potential investors, investment institutions and business angels.<br><br>In 2015. the Development agency Zagreb introduced Plavi Ured, first entrepreneurial center where all of the cities entrepreneurs and those who want to become can come for advice, exchange of ideas or to further educate themselves.<br><br>City of Zagreb's key policy challenge to be addressed by this action network is provide smarter services for citizens and entrepreneurs and developing range of measures for shifting towards smarter business. |
| 1.1 | *Local challenges in relation to the policy issue identified*<br><br>The City of Zagreb - ZAGREBPLAN Strategic Development Directions for the Period Ending in 2015. sets out some key drivers – with the aim to develop |

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| | sustainable growth.<br><br>The vision of the City of Zagreb as an Urban Incubator is achieved by relocating the boundaries in all significant areas of work and action, as deemed important for the City, by applying an entrepreneurial approach – an approach that is not satisfied with the existing state, which in the creative process seeks new ideas and endeavors in creating new values. The vision is also created through synergic action for the purpose of creating six designated strategic development goals:<br><br>1. A competitive economy<br><br>2. Development of human resources<br><br>3. Environmental protection and sustainable management of natural resources and energy<br><br>4. Improving urban quality and functions of the City<br><br>5. Improving the quality of living<br><br>6. Improving the system for managing development<br><br>The local challenges:<br><br>- To create new opportunities to address work lessens and improve skills particularly amongst young people and long term unemployed<br><br>- Enabling creative industries and innovation businesses to develop and grow (e.g. entrepreneurial clusters, creative industries)<br><br>- Better access to public services through channel shift to digital services and improving business processes of the city of Zagreb |
| 1.2 | Strategies and actions already implemented to tackle the policy challenge<br><br>**The City of Zagreb** is the leading city in Croatia in terms of recognizing the importance of sustainable energy development. As one of the first European capitals the City of Zagreb has joined the Covenant of Mayors initiative, showing the will and commitment to go beyond the EU energy targets. The City of Zagreb is now Covenant of Mayors Supporting Structure, aiding other cities in the region with development of their energy strategies. The City Office for Energy, Environment and Sustainable Development was established in |

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| | 2009 as a department which coordinates City's efforts in energy efficiency, sustainability, conservation of environment, and renewable energy.<br><br>**Sustainable energy action plan of the City of Zagreb (SEAP)** is the key document for the implementation of energy efficiency, renewable energy sources and environmentally friendly fuels projects at the city level and the City of Zagreb City Office for Energy, Environment and Sustainable Development is responsible for its implementation.<br><br>The Sustainable Energy Action Plan of the City of Zagreb was adopted by the city assembly in the year 2010 and complies with the institutional and legislative framework at the EU, national and local levels in all its segments and is adopted for the period until the year 2020. Stakeholder and citizen involvement in development and implementation of the strategy is crucial and City of Zagreb stakeholder network is well set up and very effective.<br><br>The obligations from the Sustainable Energy Action Plan of the City of Zagreb refer to the entire territory of the City of Zagreb, both public and private sector. The plan defines a number of necessary activities in the Buildings, Traffic and Public Lighting Sectors; Implementation of the planned measures will lead to 21% reduction in $CO_2$ emissions on the City territory.<br><br>**ICT System and e-Governance Development Strategy of the City of Zagreb for period 2014-2020**<br><br>The vision behind this strategy is the City of Zagreb as a leading city and a reference model for the development of new concepts and the use of advanced technologies in its functioning but also a provider of high-quality services for citizens.<br><br>The ICT Strategy has six goals.<br><br>1. To provide better services to citizens<br>2. To develop IT resources in an organized and cost-sensitive manner<br>3. To increase the work efficiency<br>4. To focus on green working<br>5. To provide direct access<br>6. To be innovative |

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| 1.3 | *The experience of the partner in terms of working through transnational exchange in relation to the selected topic*<br><br>The City of Zagreb has been active on the international plan through its membership in international and intercity organizations and associations (Eurocities, Energy Cities, The Assembly of the European Regions – AER, Metropolis, Major Cities of Europe IT Users' Group, Impacts, Union of the capital cities of the central and south-eastern Europe etc.) and by participating in numerous international conferences on the development and advancing of local self-administration and in the projects important for the development of the city, especially EU funded projects within different EU programmes (CIP-IEE, CIP-ICT, FP7, South East Europe, Mediterranean Transnational Cooperation Program, etc.)<br><br>Some of the EU projects being implemented in the City of Zagreb in relation to the Smart City development are:<br><br>**NiCE (Networking intelligent Cities for Energy Efficiency)** - promotes and advances implementation of the commitments of the Green Digital Charter (GDC), promoted by EUROCITIES and signed by 23 cities with a view to use ICT as an enabler to significantly reduce energy consumption and $CO_2$ emissions.<br>NiCE is led by EUROCITIES in a consortium with Clicks and Links, the City of Manchester and the Leibniz Institute of Ecological and Regional Development as partners. The project started on 1st September 2011 with a duration of 30 months.<br>The proactive energy policy of the City of Zagreb has set high targets in order to meet the obligations set out in the Covenant of Mayors and the Sustainable energy action plan of the City of Zagreb to reduce $CO_2$ emissions by 21% through the application of energy efficiency measures and the use of renewable energy sources by the year 2020.<br>**Project i-SCOPE -** The latest generation of 3D Urban Information Models |

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| | (UIM) can be used to create smart web services based on geometric, semantic, morphological and structural information at urban scale level, which can be used by local governments to:<br>• Improve decision-making on issues related to urban planning, city management, environmental protection and energy consumption based on urban pattern and its morphology;<br>• Promote inclusion among various users groups (e.g. elder or diversely able citizens) through services which account for barriers at city level;<br>• Involve citizens at wider scale by collecting geo-referenced information based on location based services at urban scale.<br>Based on interoperable 3D UIMs, i-SCOPE delivers an open platform on top of which it develops, within different domains, three 'smart city' services. These will be piloted and validated, within a number of EU cities which will be actively engaged throughout the project lifecycle. The services will address:<br>• Improved inclusion and personal mobility of aging and diversely able citizens through an accurate city-level disable-friendly personal routing service;<br>• Optimization of energy consumption through a service for accurate assessment of solar energy potential at building level;<br>• Environmental monitoring through a real-time environmental noise mapping service leveraging citizen's involvement will who act as distributed sensors city-wide measuring noise levels through their mobile phones.<br><br>**Zagreb Energy Efficient City (ZagEE)** - direct result of the implementation of Sustainable Energy Action Plan of the City of Zagreb and data gathered from Energy Management Information System of the City of Zagreb, the overall objective of the ZagEE project is to implement energy efficiency measures and renewable energy sources in buildings owned by the local public authority (City of Zagreb). Selecting a wide range of energy efficiency and renewable energy investments has allowed for a more comprehensive solution to be made, instead of investing into one particular measure.<br>The ZagEE project can be divided into two specific investments: refurbishment of public buildings and public lighting. The refurbishment of public buildings |

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| | will include standard energy efficiency renovation measures but also the installation of renewable energy sources (solar panels and collectors) on the very same buildings. The modernization of public lighting will be the first project of such size in Croatia which will feature LED lamps with regulation during late night hours. The total foreseen investment is EUR 29.4 million.<br>The project ZagEE – Zagreb Energy Efficient City supports the realization of energy savings through the implementation of economically justified, energy efficient technologies and measures. The purpose of the said objects is various:<br>• 3 city administration buildings;<br>• 15 elementary schools;<br>• 7 secondary schools;<br>• 36 kindergartens;<br>• 6 retirement homes;<br>• 3 health centers;<br>• 17 buildings of local self-government;<br>• modernization of 3000 outdated luminaries in the public lighting system by LED luminaries with time based lighting control system.<br>The project is implemented as part of the IEE program for technical assistance 2012 – Mobilization of local energy investments and includes financing of technical assistance as well as the production of the documentation necessary for energy refurbishment of objects, through the allocation of grants. This allows the beneficiaries to produce projects, feasibility studies and obtain the necessary documentation needed for financing the energy refurbishment of objects from sources other than the city budget, such as banks and EU funds.<br>The value of the ZagEE project amounts to EUR 1.813.438, and total planned investment worth of work on the realization of planned measures for which the technical documentation will be produced amounts to EUR 29.379.114. The return on investment, without using the grants, is approximately 13 years.<br><br>**CIVITAS ELAN** – Duration 9/2008-10/2012; The cities of Ljubljana (Slovenia), Ghent (Belgium), Zagreb (Croatia), Brno (Czech Republic) and Porto (Portugal) joined together in the CIVITAS ELAN project "Mobilising citizens for vital cities". They have agreed on the mission, "to 'mobilise' their |

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| | citizens by developing with their support clean mobility solutions for vital cities, ensuring health and access for all". As part of the EU CIVITAS programme, the ELAN project takes an approach where "Putting the citizen first" was at the core of the work in the five cities. CIVITAS ELAN addressed topics of specific interest to Central and Eastern European cities. These cities face particular challenges such as fast motorisation, capacity problems in public transport, infrastructure renewal and rapidly changing cityscapes. These rapid changes create many opportunities for cities from both old and new Member States to learn from each other. Ljubljana, Brno and Zagreb represent cities from new Member States or accession countries with Ljubljana acting as the project coordinator. They brought with them extensive experience in energy-efficient technologies in public transport. CIVITAS ELAN therefore emphasised a two-way learning process facilitated through technical workshops, training sessions and technical site visits.<br>In Zagreb CIVITAS ELAN acted on three main fields: improve conditions in PT, establish dialogue with citizens, improve and promote walking and cycling that were further elaborated through 14 measures. For the activities with elderly in public transport CIV, as one of the measures within the project Zagreb got European Synaptic Award 2012.<br><br>**Future Policy Modelling Project – FUPOL** – Duration 10/2011-9/2015. The aim of the project is to research and develop advanced ICT tools for modeling policies, predicting the consequences of these policies, the development of new models of governance and co-operation of all stakeholders in addressing complex social problems. Lead partner is Cellent AG (Austria) and partners in the project besides the City of Zagreb are Fraunhofer IGD (Germany), Sociotechnical Systems Engineering Institute (Latvia), Interfusion Services Ltd (Cyprus), PIN S.c.r.l. (Italy), Comune Di Prato (Italy), Romanian - American – University (Romania), Universitat Autonoma de Barcelona (Spain), BIT Betrieb fur Informationstechnologie (Germany), Bransley Metropolitan Borough Council (United Kingdom), Xerox Sas (France) and Municipality of Pegeia (Cyprus). After the termination of the project City plans to use developed tools in communication with citizens in a process of decision and policy making. |

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| | **Some of the City of Zagreb awards in relation to the Smart City Development are:**<br>European Synaptic Award 2012 – first prize in public transport category<br>European Mobility Week 2012 "Moving in the right direction" – first prize<br>Project Management Institute – PMI - Development of system for business process management - Best Project 2014<br>The most successful local EU project 2010-2012 – project CIVITAS ELAN – third prize |
| 1.4 | *The potential contribution to the network activities of exchange*<br><br>- Working with the lead expert to develop the scope<br>- Development of local action plan (inc. stakeholder identification)<br>- Transferring knowledge on URBACT method to other stakeholders in Croatia<br>- Utilising our strong network links in the Croatia and Europe<br>- Developing dissemination plan for City of Zagreb |
| 1.5 | *The scope of the Integrated Action Plan to be produced*<br><br>- Defining the local stakeholders<br>- Identifying possibilities in areas proposed<br>- Proposing specific measures<br>- Implementing proposed measures<br>- Alignment with City of Zagreb Strategic Development Directions till 2020 and other documents related to the topic<br>- Dissemination of results to wider public |
| 1.6 | *The key stakeholders to be involved at local level*<br><br>- Development Agency Zagreb<br>- Zagreb Holding Ltd.<br>- University of Zagreb<br>- NGOs – CRANE, etc.<br>- Business networks – tbd. |
| 1.7 | *Expected results beyond the production of the Integrated Action Plan (in terms of learning, capacity building, etc)*<br><br>- Increasing the number of local stakeholders informed and their enhanced capacity for developing smart city initiatives<br>- Dissemination to Croatian cities via National Association of Croatian Counties |

# URBACT III: Smart Cities Districts – Partner Profile

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| **City** | **Miskolc** |
| **Contact Officer** | Márta Nadabán |
| **Contact Details** | nadaban.marta@miskolcph.hu, Phone: +36-46-512-751 |

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| **1** | **Profile of partner in relation with policy challenge to be addressed:** |
| **1.1** | **Local challenges in relation to the policy issue identified**<br>• **Diverse initiatives** (no holistic approach, interoperability, cost effectiveness, redundant developments)<br>• **Lacking financing opportunities and experiences** apart from EU funding<br>• **Lack of ICT competencies** (lack of professionals in the city leadership)<br>• **Lacking integrated services**<br>• **Lack of commitment of the citizens** (lack of information, communication barriers)<br>• **Low level of energy efficiency** of city buildings<br>• Relative high level of **CO2 emission**<br>• **Low level of RES** in the electricity production<br>• **Low level of integrated traffic solutions** (vehicle-vehicle and vehicle-infrastructure communication)<br>• **Low level of smart solutions** in social and health care services<br>• **Missing link** between the citizen's need and the smart development projects |
| **1.2** | **Strategies and actions already implemented to tackle the policy challenge**<br><br>**Strategic documents**<br>- Adherence to Green City Europe (2011)<br>- Free parking for e-vehicles (2012)<br>- Sustainable Urban Mobility plan (2013)<br>- Integrated Urban Development Strategy (2014)<br>- Integrated Territorial Programme (2015)<br>- Smart City Concept incl. simplified feasibility studies for 13 actions (2015)<br><br>**Strategic actions**<br>- Green Arrow project (2008-2013)<br>- Actions in the field of ITS (2013-2015) – *availability of real-time schedule, apps, on-board wifi, prioritizing late trams in traffic light intersections*<br>- Procurement of CNG-fuelled buses (2015, set to operation in March/2016)<br>- Adherence to Covenant of Mayors (2015), SEAP/SECAP is being developed (foreseen approval by General Assembly of Miskolc and submission to CoM in 2016)<br>- Climate adaptation and mitigation plan (foreseen approval by General |

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| | Assembly of Miskolc in 2016)<br>- 75 procurement of CNG-fuelled buses for local PT purposes<br>- Increased share of RES i.e.<br>  - Landfill gas (2009) – 0,4 MWt + 0,5 MWe<br>  - Biomass (2011) – 3 MW; 41.000 GJ/y<br>  - Geothermal (2013-2014) – 2x30 MW; ~800.000 GJ/y<br>  - Modernization of Sewage Treatment Plant (2015) – current production 5,500 m³/d<br>- Panel house refurbishment program (2001-2010)<br>- Pilot district retrofitting program (2014-2015) |
| **1.3** | **The experience of the partner in terms of working through transnational exchange in relation to the selected topic**<br><br>The Municipality of Miskolc and Miskolc Holding Municipal Asset Management Plc. (MH) has wide experience in implementing international projects. MH is full owned by Municipality of Miskolc. MH has been involved in both national and international projects over the past years, including several ones focused on energy efficiency issues.<br><br>**Ongoing international projects**<br><br>***REMOURBAN -*** http://www.remourban.eu/ (H2020)<br>Energy, transport and information and communication technologies (ICT) are key to achieve economical and societal benefits and improve citizens' quality of life. They also represent most of the interrelations between people and technology.<br>A big challenge to offer new interdisciplinary opportunities to make cities smarter is already open in the common area where energy production, distribution and use, mobility and transport, ICT work together and are intimately linked.<br>REMOURBAN is a large-scale demonstration project that aims to accelerate urban transformation towards the smart city concept taking into account all aspects of sustainability. Several objectives will be achieved in particular the significant development of a holistic and replicable model for sustainable urban regeneration, applying a combined approach of the energy, mobility and ICTs sectors.<br>REMOURBAN will implement large scale interventions and intense dissemination initiatives to demonstrate the potential of the urban regeneration model in the energy, mobility and ICT sectors.<br>The project is fully aligned with the Smart Cities European strategy and involves three lighthouse cities (Valladolid, Nottingham, Tepebasi) and two follower cities (Miskolc, Seraing).<br><br>***PROBIS*** – www.probisproject.eu (Competitiveness and Innovation Framework Programme)<br>The general objective of the project is to promote bidding through innovative solutions aimed at increasing energy efficiency and sustainability of European public buildings.<br>In this way, the project intends to break the following barriers:<br>• Lack of knowledge and expertise in contracting authorities.<br>• Lack of (or wrong) incentives for contracting authorities.<br>• Lack of coordination of the procurement strategies and policy priorities, as the public procurement on numerous occasions is from a legal and administrative point of view, and not linked to objectives and political strategies.<br>• Fragmentation of demand and lack of critical mass.<br>• Difficulties to involve innovative SMEs in the processes of public procurement.<br><br>***STORM CLOUDS*** – www.stormclouds.eu ***(FP7)***<br><br>STORM CLOUDS aims at deeply exploring how the needed shift by Public Authorities to a cloud-based paradigm in service provisioning should be addressed, mainly from |

the point of view of the end-users, and taking full advantage of edge ICT.
The purpose of STORM CLOUDS is to define useful guidelines on how to address the process in order to accelerate it, for Public Authorities and policy makers. These guidelines will be prepared based on direct experimentation in at least 4 European cities incl. Miskolc, creating a set of relevant use cases and best practices.
By doing so, STORM CLOUDS will also deliver a consolidated cloud-based services portfolio validated by citizens and Public Authorities in different cities and, at the same time, general and interoperable enough to be transferred and deployed in other European cities not taking part in our project, as well as scaled up to wider geographical scopes. This portfolio will be mainly created from applications and technologies delivered by other CIP-PSP and FP7 projects, as well as resulting from innovation efforts from SMEs. Project closure is due in February 2017.

**Closed international projects**

***ATTAC*** - www.attac-project.eu (INTERREG SEE)
Project aims at improving the coordination in promoting, planning and operating urban public transport networks, providing better integration of ATTAC cities and regions into SEE transport backbone as effective main and intermediate nodes of transnational accessibility and reducing bottlenecks in European transport corridors.
ATTAC (Attractive Urban Public Transport for Accessible Cities) project brings together cities and regions facing increasing mobility needs, intensified suburbanization, escalating traffic flows and congestion. Under the guidance of the Lead Partner, Miskolc Holding, further eight project partners joined to fight poor accessibility of their regions and externalities, thus negatively affected by congestion due to the growing use of private car.
This calls for reduction of car use and shift to sustainable transport modes. However, public transport is often perceived by its customers as uncomfortable and non – flexible.
ATTAC therefore focuses on collecting, sharing and adopting good and sustainable practices from EUROPE as well as on testing and evaluating innovative urban Public Transport solutions.

From the start of the project (01.01.2011) till the end of the project (31.03.2014) the following main outputs were carried out:
- analyzing the status of the urban public transport challenges (Best Practice Reports, Joint Best Practice Report) from the following 3 thematic areas (Task Force): bridging the mobility gaps by promoting flexible transport solutions, promoting innovative and integrated ticketing and smart card systems, improving passenger information;
- implementing pilots in the field of the 3 thematic areas (3 Transnational Case Studies elaborated based on the partners' case studies and MobiLAB reports).
- collecting the conclusions and comparative analysis of Task Force results to feed the Mobility Toolbox, which contains altogether 32 recommendations. The Mobility Toolbox is available from the following link: http://mobilitytoolbox.mobilnostniforum.si/.
- elaborating 8 Sustainable Urban Mobility Plan with involvement the local stakeholders (Mobility Forums) in national language (English summaries of these SUMPs are also developed).

MH also participates in the following international project as partner:

***KNOWBRIDGE*** - http://www.knowbridge.eu/ (FP7)
The KNOWBRIDGE project (2009-2011) was focused on 2 cross border administrative regions – Košice self-governing region (KSR) in Slovakia and Borsod-Abaúj-Zemplén (BAZ) region in Hungary. These two regions have very strong economic, social and geographical links. They are facing the same challenges in the field of competitiveness and innovation; therefore they search the best ways to accelerate the economic development. The main project objective was to increase the capacity and strengthen the research potential of both cross border and convergence regions by supporting the development of new innovative cross border research-

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| | driven cluster in the area of Renewable Energy Sources (RES) and associating research entities, enterprises and regional authorities.<br>The specific objectives were primarily focused on the following activities and task within the RES sector in both regions in question: analysis, mentoring, integration of research agendas and definition of Joint Action Plan (JAP) for cross border research driven cluster and the development of business plans (BP) for the actions/projects chosen from those elaborated in JAP.<br><br>***ERMIS*** – www.ermisproject.eu (INTERREG IVC)<br>ERMIS (Effective Reproducible Model of Innovation Systems) project (2010-2013) which aims to develop an effective & transferable model of governance for local innovation systems (LIS) dedicated to fostering value innovation within SMEs.<br>The project started with a review of best practices and a comprehensive study of the composition and strengths of innovation systems that leverage performance for SME's in the 9 participating countries. Followed by the elaboration and implementation of an innovation system model based on existing research, a SWOT analysis and a benchmark of partner performance prepared transfers to partner regions. Local stakeholders were involved in the assessment throughout the process that was anticipated to last beyond the project period.<br>The expected results and impact of the project is the strengthened capacity of partner territories to effectively manage their respective local innovation systems and support value innovation is SMEs.<br><br>***Go Pedelec!*** – www.gopedelec.eu (IEE)<br>The slogan „Go Pedelec!“ was the name of a EU-co-financed project, carried out by four municipalities, three non-profit-organizations and three private companies. The common goal was to raise awareness about pedelecs among citizens as well as among municipal decision makers. Pedelecs are more than slightly enhanced bicycles – they can become the new icon of modern mobility including large parts of current cargo transport in cities on the condition that stakeholders and the broad population are aware of the potential of this new technology and obtain according relevant information. To let people know about pedelecs means to enable them to try pedelecs out personally (only telling people about the product is practically useless). Accordingly more than 15 large public road-shows with pedelecs open to citizens were held in six countries. At a European and international level dissemination and information relies on a handbook on pedelecs (gopedelec.eu/handbook) which is the key written project output. The project also trained pedelec experts (foremost bike retailers) in the Go Pedelec! expert trainings because retailers are a key node in the sales chain. Moreover we informed municipal decision makers about issues relevant to cities (foremost pedelec infrastructure) in an especially designed workshop concept. An according document for municipal decision makers was as well created. Moreover, the project did a market survey on the three project target groups (citizens, retailers, municipal decision makers) and a final evaluation report which also included to a large part a second market survey.<br><br>***Access2Mountain*** – www.access2mountain.eu (INTERREG SEE)<br>The project aims to achieve durable, environmentally friendly tourism, as well as to ensure accessibility and connection to, between and in sensitive regions of the Alps and the Carpathians. It should benefit all (potential) users. With the long-term perspective of increasing sustainable tourist mobility, railway and multimodal connections will be improved and attractive offers created via pre-investment measures, pilot activities, and investments.<br>It is central to the project, to transfer experiences made and knowledge gained in the Alps to the Southeastern European region. In this regard, the transnational cooperation in the field of sustainable regional development plays an important role. Touristic infrastructures are to be created or improved in a sustainable manner. This paves the way for achieving international environment aims and yield competitive advantages.<br>Main outputs:<br>- Collection of best practices in railway operations and multi-modal transport in |

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| | tourist regions<br>- Studies on the feasibility of intermodal routes, possible new offers and ticketing services, new integrated transport-tourist packages in model-regions<br>- Development of communication strategies, marketing and awareness raising activities for sustainable tourist & mobility offers<br>- Policy support for the definition of a Protocol on Transport to the Carpathian Convention<br><br>**BLUEGREEN (HU_SK program), 2013-2014**<br>- Climcross Development: Partnership for addressing climate change impacts on development<br><br>**ECO-MOBILITY SHIFT (**http://www.ecomobility-shift.org/en/, **IEE), 2011-2013**<br>- The project aimed to create a total quality management scheme for cities to assess, audit and label their transport performance.<br>- The SHIFT project has completed as of 31.May.2013. The SHIFT project has produced the following tools/results:<br>- Developed a Total Quality Management system for cities to measure the performance of their urban transportation.<br>- A Manual for Cities to perform an Assessment is available for download from<br>- Developed an organisation that will receive request for assessments, audits and award labels.<br>- Trained auditors for performing audits in cities implementing the SHIFT methodology.<br>- Completed pilot audits in 6 European cities namely, Lund (SE), Dundee (UK), Oss (NL), Turnhout (BE), Burgas (BG), and Miskolc (HU).<br>- Awarded labels to the above mentioned pilot cities. |
| **1.4** | **The potential contribution to the network activities of exchange**<br><br>a) <u>Please list any specific policy approach/ project related to the network topic that could be shared with the partners if relevant:</u><br><br>- Green Arrow project (2008-2013)<br>- Actions in the field of ITS (2013-2015) – *availability of real-time schedule, apps, on-board wifi, prioritizing late trams in traffic light intersections*<br>- Procurement of CNG-fuelled buses (2015, set to operation in March/2016)<br>- Adherence to Covenant of Mayors (2015), SEAP/SECAP is being developed (foreseen approval by General Assembly of Miskolc and submission to CoM in 2016)<br>- Climate adaptation and mitigation plan (foreseen approval by General Assembly of Miskolc in 2016)<br>- 75 procurement of CNG-fuelled buses for local PT purposes<br>- Increased share of RES i.e.<br>  - Landfill gas (2009) – 0,4 MWt + 0,5 MWe<br>  - Biomass (2011) – 3 MW; 41.000 GJ/y<br>  - Geothermal (2013-2014) – 2x30 MW; ~800.000 GJ/y<br>  - Modernization of Sewage Treatment Plant (2015) – current production 5,500 m³/d<br>- Panel house refurbishment program (2001-2010)<br>- Pilot district retrofitting program (2014-2015)<br>- Incentives for e-vehicles<br>- Green city principles applied for project development<br><br>b) <u>Please list any specific “good practice(s)” that could be shared at network</u> |

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| | level if relevant:<br><br>Green Arrow project (2008-2013)<br>- Actions in the field of ITS (2013-2015) – availability of real-time schedule, apps, on-board wifi, prioritizing late trams in traffic light intersections<br>- Geothermal (2013-2014) – 2x30 MW; ~800.000 GJ/y (incl heat distribution management system )<br>- Modernization of Sewage Treatment Plant (2015) – current production 5,500 m³/d |
| **1.5** | **The scope of the Integrated Action Plan to be produced**<br><br>Local governance system on smart city policies especially regarding the following policy issues:<br>o traffic<br>o energy and environment<br>o society incl. health |
| **1.6** | **The key stakeholders to be involved at local level**<br><br>**Local business**<br>- Infoklaszter (regional cluster of IT companies)<br>- NOHAC (North Hungary Automotive Cluster)<br>- ÉMÁSZ (regional electricity provider)<br><br>**Local RDI**<br>- Bay Zoltán Non-profit Ltd. Smart Systems Division<br>- University of Miskolc<br>- ÉMI Non-Profit Limited Liability Company for Quality Control and Innovation in Building<br><br>**Civil society**<br>- Regionális Civil Központ (regional civilian center)<br>- Local housing associations<br>- Dialóg Egyesület (local civic association)<br>- Észak-Keleti Átjáró Kulturális és Tudományos Egyesület (Association for Culture and Science)<br><br>**Government**<br>- Municipality of Miskolc<br>- Heads of relevant departments and thematic experts @ Mayor's Office<br>- Miskolc Holding Plc.<br>- Lechner Knowledge Center (national government organization dedicated for smart city issues)<br><br>**Others**<br>- MVK Zrt. (local public transport provider)<br>- MIHŐ Kft. (local district heating service provider)<br>- MIK Zrt. (local real estate management company)<br>- Social and health care service providers |
| **1.7** | **Expected results beyond the production of the Integrated Action Plan (in terms of learning, capacity building, etc)**<br><br>- A well established and sustainable local governance structure will be created to prepare, implement and sustain smart city projects along with a clear process management structure<br>- Clear monitoring system (protocol) will be established supporting the local |

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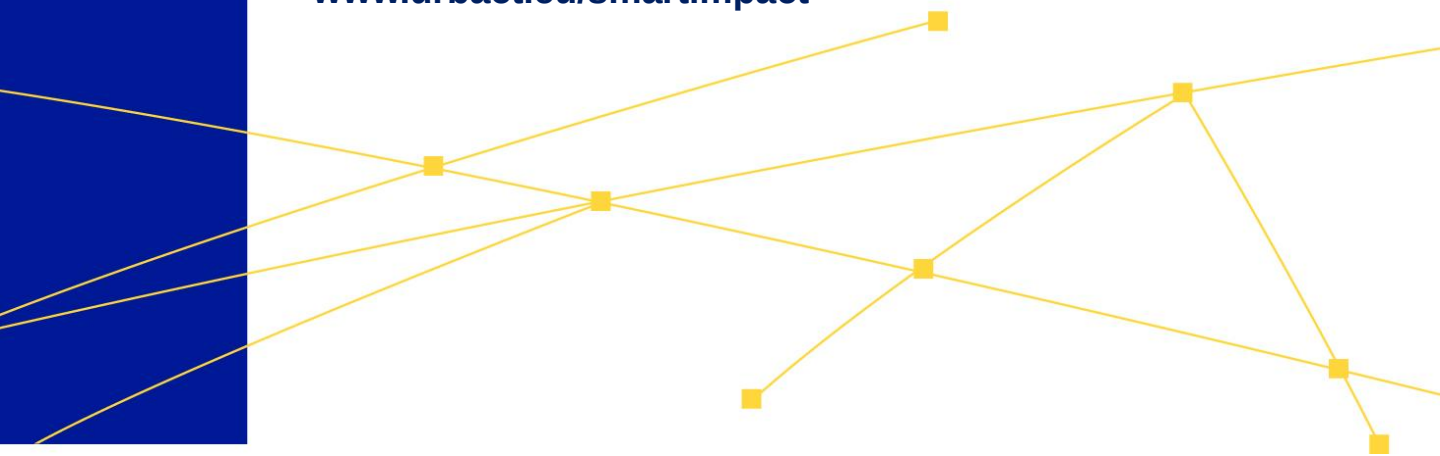
| | smart city policy (e.g. horizontal requirement for city investments)<br>- A well established and sustainable communication system will be created together with the H2020 project REMOURBAN based on their citizen engagement strategy<br>- The citizens of Miskolc will be involved in smart city governance at least online and via smart cafés (to be sustained beyond the project)<br>- Stakeholders and citizens of Miskolc will be involved in smart city governance via the ULG and Smart Café<br>- A close partnership will be created with the IT cluster of North-Hungary and several joint actions will be taken<br>A toolkit (action plan) will be defined for Miskolc on how to support the local smart city policy implementation via non-investment type tools |

URBACT II

URBACT is a European exchange and learning programme promoting sustainable urban development.
It enables cities to work together to develop solutions to major urban challenges, reaffirming the key role they play in facing increasingly complex societal challenges. It helps them to develop pragmatic solutions that are new and sustainable, and that integrate economic, social and environmental dimensions. It enables cities to share good practices and lessons learned with all professionals involved in urban policy throughout Europe. URBACT is 181 cities, 29 countries, and 5,000 active participants . URBACT is co-finances by the ERDF Funds and the Members States

**www.urbact.eu/smartimpact**



European Union
European Regional Development Fund

EUROPEAN PROGRAMME FOR SUSTAINABLE URBAN DEVELOPMENT

URBACT