DREAM

DEMONSTRATION
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IrRADIARE
Science for Evolution

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SMART CITY STRATEGY

EU Smart Cities Information System

CÂMARA MUNICIPAL DE GUIMARÃES

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DEMONSTRATION | REINVENTION | ENGAGEMENT | ADHESION | MOBILIZATION

HORIZON 2020 - SMART CITIES AND COMMUNITIES – SCC01

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I. INTRODUCTION

European cities play foremost role on accelerating transition towards a low carbon and resource efficient economy and sustainable society.

Quality of life and urban environment, attractiveness (talent, resources, ideas, innovation, jobs, entrepreneurship), openness to innovation, fostering of creativeness, business friendliness, quality of public services, security and safety of public realm, intra-community dialog are key-stones of success for European cities on the global arena of urban competitiveness. Thus, cities are not only drivers of adequate responses to global challenges, but also main vectors of Europe's global competitiveness and influence. European cities are under accelerated transformation. New pressures and challenges make urban policies to adapt, innovate and respond at accelerated pace to contextual changes and transformation. Urban environment is throughout Europe a transforming environment under which innovative cooperation routes between industry and governance – namely under industry 4.0 paradigm - may be developed to reinforce European industrial global leadership.

Under transformation – at micro scale, every time a city function is transformed or upgraded – value is generated and innovation opportunities are fostered. Generating value from transformation makes cities to be an active (and not passive as in past) generator of economic added-value. Relying on innovation to achieve those urban functions transformations, cities are also providing industry, services and business with new opportunities of offering communities solutions that add even more value. This double added value generates economic growth acceleration and simultaneously consolidates the sustainability of rising quality of life standards – for all citizens and needs.

SMART CITY

Smart City defines the development of a city that assigns priority to, and interlinks, the issues of energy, mobility, buildings and infrastructure. High and socially balanced quality of living is the goal every smart city puts as its priority.

A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social and environmental aspects. Smart city vision is the key to build the vibrant communities with enhanced quality of life, fostering economic growth and face global challenges. Smart cities should be innovative. The decisions for the future are taken in the cities.

A smart city can achieve growth while reducing resource consumption. Moreover, Smart City aims for a high degree of social cohesion and quality of living, which is to be chiefly attained through innovations in all areas of urban life. The city wants to be a worldwide forerunner smart city. This is not merely a fantasy of resource and climate protection based on new technologies. Rather, for smart city, this goal will embody successful social participation and services of general interest tailored to human needs. Smart transport, housing construction, urban development, environmental protection, supply and waste disposal services as well as social services for the population are fields having big impact on people and their better quality of living and by implementing innovative solutions adopted under the strategy, it will function even better in the future.

Smart economy (Industry), smart people (Education), smart governance (e-democracy), smart mobility (Logistics & infrastructures), smart environment (Efficiency & sustainability), smart living (Security and quality of life) are the six main components of a Smart City.

SMART CITY STRATEGY

A Smart City Strategy focuses on innovations in technology, management and policy that is aimed at making cities an even better place for the citizens. Smart City Strategy aims at responding to key urban, social and global challenges under a Smart and Sustainable City vision.

Thus, it is organized and planned to demonstrate and validate the reliability of solutions to significantly increase cities' overall energy and resource efficiency.

Smart City Strategy wants to demonstrate best sustainable solutions that may be implemented in the city. Those can integrate smart-homes and buildings, smart-grids for electricity, district heating, telecom, water, energy storage, smart-mobility including electric vehicles and smart charging infrastructures as well as latest generation ICT platforms based on open specifications. The goal is to facilitate a successful transformation towards intelligent, user-driven and demand-oriented city infrastructures and services after scaling-up smart-district level solutions. This document presents a Smart City Strategy Framework. It provides background on the current state, the goals, challenges, objectives and a simple road-map for future action plans. It is not intended to be prescriptive or provide a detailed roadmap.

Under the Smart City Strategy, the city becomes: Powered only by renewable energy; A place where the jobs and businesses are varied and economically strong; Houses and offices are clean, comfortable and more efficient environments; A place where the transportation system is plentiful, green and efficient; A city that supports a thriving economy while improving affordability and provides citizens the opportunity to be healthy and mobile.

The strategy has been developed complying with the scope of Horizon 2020, the largest EU Research and Innovation program, offering opportunities to public administrations, for both small/medium enterprises and large companies, for the improvement of their industry and technological advancement level, assuring its overall objective; contributing to meet EU 2030 CO_2 targets in 2020. Also, more specifically, is a response to the SSC-1 call; Smart Cities and Communities lighthouse projects, which focuses on demonstrating sustainable, cost effective and replicable district-scale solutions, facilitating integration of innovative technologies into the existing practices by designing and deploying revolutionary solutions shareable globally. Meeting the requirements of this topic, it intersects major concerned areas like mobility and energy, through an innovation network, connecting this chain of goals, enhancing the city's autonomy and efficiency, for society's welfare.

The specific challenge of the call it's to demonstrate solutions at district-scale, through a time-scale agenda, coordinating small and large intervention actions, integrating smart cohesive and efficient solutions, in a process since sensibilization, over passive measures, till extensive changing projects. Smart is the keyword; not just only innovative technological responses but

open strategic ideas that should help to manage a successful transformation towards intelligent, user-driven and demand-oriented city infrastructures and services.

The proposed strategy will not only lead to growth perspectives in each city realm, but increase European excellence within key enabling technologies fostering pertinent city's agendas, with consequential and factual increase in economy growth. It will, furthermore, provide a framework for partnership cooperation to internationalize and unlock novel business opportunities on global markets beyond Europe. By the end of the transformation period, the SmartCity paradigm will be established as a full-blown Research Driven partnership based on the following elements:

- A strategic research agenda for the involved institutions, including both selected research challenges as well as the selected potential application areas. In the beginning of the transformation lifetime, the Smart Cities complex will serve as the joint focus area.
- A strategy for knowledge transfer between the triple helix elements on multiple levels including both the business management level and the technical level; assuring a coherent strategy.
- A strategy for both public and private funding which includes pre-competitive innovation and which is coordinated with the strategic research agenda.
- A strategy for innovation activities involving relevant partners and based on a smart specialization strategy.
- A dissemination strategy for attracting companies and public administration which is using a variety of media and which is based on selected showroom demonstrators illustrating research and innovation results.
- A strategy for internationalization, to boost competitiveness in a worldwide environment.

STRATEGY TIME-SCALE

To coordinate and manage the process of transformation into a Smart City, in order to obtain results in a faster and more successful way, it should be implemented a strategy through a time-scale concept where it would be coordinated all types of actions, correlating them, forming significant Lighthouse Projects.

Since the small ones, repeatedly along short periods of time, more related with interventions close to the community, resulting in consciousness measures, creating awareness to the city's program and intervention, promoting participation and, with that, a sense of inclusion in the population through all types of events, like workshops, conferences and small intervention programs, enhancing advertising and marketing to importance of the plan.

Going through medium scale interventions, mediating the two adjacent actions, connecting them, resulting in passive and efficient concrete operations, cost efficient and with fast implementation, inside the context of smart ideas, that would not only facilitate the enforcement of longest time projects but also include people, in form of pooling, community organizations or small investments, allowing them, as well, to see faster results due their explained nature; assuring aside the development of the strategy and resulting transformation its management efficiency, in an association between communication, information and data technologies and the calendarization and planning of the process throughout time.

And, lastly, the long scale measures, the ones that insert themselves in the core of communities and cities problems and act through the main areas of intervention regarding Smart City approach or paradigm; that would require the cooperation of public and private large companies, with other types of investment, allowing the creation, development and execution of lighthouse projects.

By pursuing this **Strategy**, the city wants to become the smartest among the world's smart cities.

URBAN VALUE & TRANSFORMATIVE PROJECTS

The DREAM Smart City methodological structure is based on 12 transformative projects that simultaneously address common challenges and are able to be synergistically synchronized with

on-going (planned or recently concluded) transformations of urban functions (functionalities or urban elements in cities).

Each Transformative Project relates to a specific common urban challenge, a set of city development strategies and a specific business model related to the identified sources of urban value: DATA (ICT); MOBILITY; ENERGY; WATER; WASTE; WORK; LIGHT; SPACE (public realm); CLIMATE (modulation and adaptation of urban climate); HOUSING; KNOWLEDGE (education and dissemination of intellectual capital); PEOPLE (community support, dialog and empowerment).

Those transformations are sources of value generation. By enabling it, the DREAM Smart City project demonstrated solutions are enabling generating value. Thus, DREAM's transformative projects enable transforming global challenges into sources of renewed (added) urban value. By generating urban value, return of smart city investment may be expected. So, the basis of attractive business model is established.

Urban value combines:

- Economic revenue of implemented measures;
- Economic impact from associated revaluation of urban assets (actually, the major source of urban value);
- The economic impact of more efficient process, infrastructures and utilities (as a source of value related to saving costs);
- The optimization effects of integration and intelligent planning, management and exploitation;
- Diversified combined exploitation of multiple uses and features of urban public or private assets;
- Open opportunities for new urban services, business and platforms;
- Revaluation of economic role of existing urban business and commerce;
- Positive externalities as such due to better air quality, urban environment, attractiveness and cohesion.

IMPACTS

Orientation for impact is a strong methodological principle, since a high priority of the proposed strategy is to have a direct and positive impact on improving quality of life and services to citizens. Therefore, it is indispensable to develop a strategy to sustainably impact daily life and efficiency of the City environment within the various areas of urban intervention. Furthermore, a set of indicators for measuring direct impacts of the smart city initiative need to be defined. Orientation for impact is organized into eight thematic areas: time-saving machine; community wealth of energy; adaptive mobility; optimized infrastructures and networks; home city (near-zero energy buildings); economy, growth and shared financial mechanisms; research development, education and knowledge management and inclusion and cohesion. Throughout these categories, a collection of smart expected impacts is collected, in an attempt to clarify the approach for this essential methodological principle.

Besides ICT, Mobility and Energy, consistent implementation of urban transformation by the Strategy is going to have an impact on sectors, such as:

WATER – Sustainable and resilient water supply and value-chain long added value;

WASTE – Circular management and economic revaluation of urban waste;

WORK – New industry 4.0 and new economy oriented urban entrepreneurship, business, creativity, work and production models, reducing commuting and ensuring better integration of economic and productive fabric into urban environment, benefiting air quality and interchanging ambience;

LIGTH – Change of light landscapes of cities using illumination (instead of mere lighting) to ambiance the transformation of city functions under energy sustainable conversion and efficient intelligent management (utterly extendable to integrated sound landscapes);

SPACE – Advanced and enhanced management, care, control, security and safety of public realm allowing citizens and urban communities full enjoyment of their common living space, namely by children, families, elderly, artists, performers, businesses and local commerce, deepening the sense of permanent discovery ("urban safari" view) of future urban life style;

CLIMATE – Modulation (in articulation with other distinct renaturing and climate adaptation measures) of urban micro climate to make city centers (urban districts as under the scope of this project) making it more comfortable and attractive for walking, cycling, resting, performing, playing, as well as for enjoying local commerce, by using of shadowing, greening and watering measures;

HOUSING – Integration of energy saving, efficiency, renewables and management, as well as cooperating and sharing, measures into new and traditional forms of urban housing relating to structural and ownership solutions, namely oriented to modern needs of permanent and temporary sustainable housing and living in cities, as well as articulating it with air-quality benefiting strategies and technologies;

KNOWLEDGE – Fully exploiting the positive impacts and externalities of education, training and community empowering structures, campus and facilities in city centers, reducing commuting and inducing better and more sustainable living styles and practices in cities;

PEOPLE – Fully exploiting the potential impacts on community's cohesion, sustainable living, healthy styles, better environment, community dialog and diversity integration and community's empowerment of all other transformative projects as well as exploiting routes of developing more open, lively, sustainability oriented cultures, uplifting the joyfulness of the urban living adventure.

OPEN DATA

Open data is data that anyone can access, use and share. Whether it is data on local housing from government, real-time train times from rail companies, organizing family events, or finding supermarket locations from retailers, open data can help us all better understand, and interact with, the City. Keeping infrastructure and markets open is the only scalable way to ensure equitable and secure growth in the City.

But it's not the amount of data that's important. It is what organizations do with the data that matters. Big data can be analyzed for insights that lead to better decisions and strategic business moves.

This document is divided into 3 main parts. Firstly, we explain why does this strategy is important to cities and what are the benefits. Secondly, a list of 12 transformative projects generators of urban value are presented. The final part consists of a chapter about the Digital Agenda and some Urban Sustainability Actions and project ideas to be developed and implemented in the cities.

II. OPEN SCIENCE

Science is knowledge. And knowledge is the driver for development. For that reason, has become clearer the importance of making research results more accessible for all, contributing to better and more efficient science, and to innovation in the public and private sectors. Open Science aims at transforming science through ICT tools, networks and media, to make research more open, global, collaborative, creative and closer to society, which means more reproducibility, more transparency and more impact. Open Science represents a new approach to the scientific process based on cooperative work and new ways of diffusing knowledge by using digital technologies and new collaborative tools.

Horizon 2020 was designed to drive economic growth and create jobs by coupling research and innovation (R&I), with an emphasis on excellent science, industrial leadership and tackling societal challenges. Investing in R&I is crucial for shaping the future. And is also important to mobilize and involve citizens. Whenever possible, citizen science should be encouraged, where citizens become providers and users of data. This will reinforce and give new meaning to the policy of open access to publications and data; this openness should enable citizens and citizen groups to participate in evidence-based policy and decision-making.

The overall arguments for supporting Open Science can be summarized in the following factors:

Efficiency: greater access to scientific inputs and outputs, can improve the effectiveness and productivity of the research system, by reducing duplication and the costs of creating, transferring and reusing data; allowing more research from the same data; multiplying opportunities for domestic and global participation in the research process. Also, the user of open search tools can help increasing the efficiency of research and of its diffusion.

Quality and integrity: open access to scientific outputs, data and other assets that support the research process offer the opportunity of a wider evaluation and scrutiny by the scientific community, thus allowing a greater and more accurate replication and validation of research results. This openness also facilitates an early identification of any malpractice at science, such as fraud or errors, and therefore being easier to denounce and drop-out these practices in the

benefit of scientific integrity. In this sense, openness to data contributes to maintain science's self-correction principle.

Economic benefits: increased access to research results can foster spill overs not only to scientific systems but also innovation systems more broadly, as well as increase awareness and conscious choices among consumers. Science plays a key role in today's knowledge economies, and the higher efficiency associated to Open Science would not only benefit advanced economies but also developing countries.

Innovation and knowledge transfer: Open Science can reduce delays in the re-use of the results of scientific research including articles and data sets by firms and individuals, and promote a swifter path from research to innovation to produce new products and services.

Public disclosure and engagement: science should be open for the whole society, so it may promote awareness among citizens. It evidences the outcomes of public funded research, and would help to build trust and support for public policies and investments. Moreover, it promotes citizen's engagement and even active participation in scientific experiments and data collection.

Global benefits: Open Science is inevitably international, and it must take advantage of it. It can promote collaborative efforts and faster knowledge transfer for a better understanding of challenges that require coordinated international actions such as climate change or the ageing population, and could help identify solutions more effectively.

Some strategies and actions are needed in order to achieve the transformation of research, and they have to be global (extended to any scientific domain and discipline), international (within and across countries, languages and cultures), vertical (from researchers and citizens to governments, funders and policy makers) and horizontal (at any stage and for any role involved at the research process).

At the European level, the European Commission Digital Agenda defines five lines of potential policy actions[1]:

[1] Source: European Commission

- Fostering and creating incentives for Open Science, by fostering Open Science in education programs, promoting best practices and increasing the input of knowledge producers into a more Open Science environment (citizen science). This area is also concerned with guaranteeing the quality, impact and research integrity of (Open) Science;
- Removing barriers to Open Science: this implies, among other issues, a review of researchers' careers so as to create incentives and rewards for engaging in Open Science;
- Mainstreaming and further promoting open access policies with regard to both research data and research publications;
- Developing research infrastructures for Open Science, to improve data hosting, access and governance, with the development of a common framework for research data and creation of a European Open Science Cloud, a major initiative to build the necessary Open Science infrastructure in Europe; and,
- Embedding Open Science in society as a socio-economic driver, whereby Open Science becomes instrumental in making science more responsive to societal and economic expectations, by addressing major challenges faced by society.

III. URBAN VALUE

Transforming a city into a Smart City, through transformative projects, aims to increase the urban value of the city. Urban value is not exclusively economic. Improvements in the quality of life, making the small everyday-things of life simpler, is creation of urban value. In this context, 12 transformative projects were defined, based on cities' challenges. Each transformative project has a business model behind. These projects seek to increase the urban value of cities and this increase is the positive feedback / payback of the actions.

By generating urban value, return of smart city investment may be expected. So, the basis of attractive business model is established.

IV. URBAN CHALLENGES

All cities face challenges. Providing innovative responses to some of these challenges is one of the objectives of the project. In this way, 12 challenge areas were considered: Data (ICT); Mobility; Energy; Water; Waste; Work; Light; Space; Climate; Housing; Knowledge & People, and a transformative project linked to each one was defined, having associated a business model.

CHALLENGES MATCHING TRANSFORMATIVE PROJECTS

1. DATA (ICT)

Governing principle; keyword: Interacting

1.1. Demonstration components (product to be installed, or pilot to be deployed)

1.1.1. Government Urban Platform

Governance, stakeholders and citizens' coordination decision making

The purpose of this section is to improve the methods by which Government information, including information on the Internet, is organized, preserved, and made accessible to the public. Regarding laws and directives that need to be simplified and exposed online for a quick and easy access by the citizen.

Cities are becoming smart not only in terms of the way we can automate routine functions serving individual persons, buildings, traffic systems but in ways that enable us to monitor, understand, analyse and plan the city to improve the efficiency, equity and quality of life for its citizens in real time. Indeed, it aims at increasing citizen's quality of life, and improving the efficiency and quality of the services provided by governing entities and businesses.

Our activities include:

- E-platforms, which involve the residents in the decision-making process of the city's affairs. The law aims to establish basic e-government norms which will be able to help overcome the major obstacles created by the formal requirements of administrative law. It thus opens up the possibility of carrying out all business processes entirely electronically and offering these processes to the public and business in an easier, simpler and more cost-effective way.

- By using a special network, we want to facilitate the everyday life of our citizens. By using this tool, they will be able to, inter-alia, provide information about the difficulties to several institutions or services at the same time. For example, if a child is sick and therefore will not be able to leave the house, the parents through a single information will be able to inform about his absence school, dance teacher or cancel the reserved swimming lesson. The objective is to simplify the communication between the citizens and the services they use.

- We would like to appreciate citizens who are an example of good practices, and thus will serve as an example and motivation for others. So we want to create a platform, where citizens can document their actions and share them with the rest of the population. Then users will choose those who particularly deserve the praise, sharing and awarding those deeds. The prize can be free public transport card or tickets to events. The object is to

promote the right citizenship and reward those, who work for social well-being. We believe that it will inspire others to take action for the common benefits.

- Breaking physical boundaries of schools, students can do activities outside, they can participate in different things, like theatre, sports, etc. Also, to promote knowledge beyond the school's space, integrating it throughout the city, articulating educational programs with exhibitions, events, initiatives, etc. Platforms can also have an important role in this concept, allowing sharing and participation from home, work places, etc.

1.1.2. Urban services' Interface

Articulation of public services, companies and citizens.

The core idea of this project is to create an urban platform which serves as a core building block by which cities better manage the current explosion in volumes of city data and more easily share this data between city services in order to improve outcomes for society.

Through this urban interface we want to:

- Implements a logical architecture/content/design that brings together (integrates) data flows within and across city systems and exploits modern technologies (sensors, cloud services, mobile devices, analytic, social media etc.);

- Provides the building blocks that enable cities to rapidly shift from fragmented operations to include predictive effective operations, and novel ways of engaging and serving city stakeholders;

- Transforms, in a way that is tangible and measurable, outcomes at local level (e.g. increase energy efficiency, reduce traffic congestion and emissions, create (digital) innovation ecosystems, efficient city operations for administrations and services).

- The project aims to create a platform through which the company will be able to make contact and make cooperation. We want to bring to the active communication between companies, start-ups, incubators and technology parks. Joint actions conducive to finding new solutions, through co-work, investment and innovative technologies. Business development is for the city of great opportunity for economic growth and to increase employment.

- An interfaced platform that is deeply related with the city needs in terms of economy, not only internally but externally as well. Providing a fast and accurate way of filling employment gaps and necessities. Since permanent jobs till temporary ones, creating a dynamic interconnected offer and demand of human resources throughout the city; from public services, to companies and even individuals or privates.

1.1.3. Urban Virtualization Structure

Knowledge, information and modelling; tariffing, public payment, voting, faring, participating and cooperating open system.

Using government platform, we can allow audience to vote online which reduces the overpopulated voting areas and mitigates the abstention of participation, permitting time coordination for the citizen and overcoming physical and mobility issues, assuring an individual right in democracy.

E-platforms that help citizens access government services, submit service requests, make payments and track the status of their services/requests. All services and payments can be tracked from a single interface using a single user name/password, irrespective of which government department or agency handles them. These services include: Licenses and permits, registrations, service requests, fines and ticket payment, billing and collection of taxes and other bills; all made in an ecological way.

Digital identity is a very important in the world of digital. It used to be that everyone had different identities with different companies and different organizations. Recently the number of sign-on's and digital identities has declined a lot. People have their own e-mail address rather than telephone number. Now there are five to seven platforms with global scale that provide login services for a lot of consumer-content, connectivity, and other services. ICT broadens our views and creates a new, more customized, direct and limitless relationship to the world around us. We are no longer limited by physical presence, but instead, each and every one of us has access, on a personal level, to social relationships, goods and services, resources and knowledge as well as innovations from a digital world without borders. People have access to completely new resources for value creation.

1.1.4. Artificial Intelligence Layer

Distributed, open and interactive urban functional control center.

One of the greatest challenges facing the modern society is the management of the tremendous amount of information which is produced by each sector as well as how to turn that information into useful knowledge for organizations and people. The information from each single source does not communicate with the area adjacent, thereby leading to the reduction of system's efficiency and to lower efficiency offer to the city and citizens. Another major challenge facing

cities is interoperability of information/knowledge systems. ICT systems within each city sector cannot be isolated, but they need to fully interact amongst themselves. Accordingly, a robust ICT system needs to be created so that the city could respond in the most efficient manner possible to the needs of information storage, transformation of information into knowledge, information and knowledge sharing. This is the basis for the creation of an Urban Platform, Urban Hub, which will lead to the transition from isolated and sectorial systems to the needed robust ICT system, the Data and Information Centre. The CID - Communication, Information and Data Urban Control Center - unifies those systems, which are normally excluded and without information sharing with other sectors, into a common and shared system, linking, through innovation, technology, and information, all of the domains and every single project inserted on them.

City infrastructures and services are changing with new interconnected systems for monitoring, control and automation. These may include water and sanitation to emergency responders and disaster recovery. These benefits must be considered against the potential harm that may come from this massively interconnected world. Technical, administrative and financial factors must be weighted with the legal, political and social environment of the city. To give city components and citizens devices, at varying levels of features that, at a minimum, respond to a sensor network. These are interconnected to pass information into a network. Therefore, public and private information should be sheltered through integrated systems, that will assure security and privacy.

Open data is data that anyone can access, use and share. Whether it is data on local housing from government, real-time train times from rail companies, organizing family events, or finding supermarket locations from retailers, open data can help us all better understand, and interact with, our cities. Keeping infrastructure and markets open is the only scalable way to ensure

equitable and secure growth in our cities. A term that describes the large volume of data – both structured and unstructured – that inundates a business on a day-to-day basis. But it's not the amount of data that's important, it's what organizations do with the data that matters. Big data can be analyzed for insights that lead to better decisions and strategic business moves.

1.1.5. Socio-urban Platform

ICT for urban health, safety, environment, sustainability, security, protection and care.

Improve access to health, safety, environment, sustainability, security, protection and care services to at-risk populations is another topic of this project. Health is a precondition for economic prosperity.

Some of the activities we want carry out are as follows:

- Have a possibility to share all the information about people health between sectors. To make people life easier and help them to avoid time lost in appointments throughout the city, queues in exams, or just deciding to which doctor or service to go. Make a connection between all health sectors will transform the communication, not only between patient and service, but between services themselves, public and private ones, with a general patient file, with conditions explained and medical history noted.

- Support new technologies which can help people to live easier life. For example, support heart beat monitoring in phones helps the people to manage their heart level according to their health purpose. If they are older would know they are about to go higher heart rate than they should be, it could help them to avoid any heart attacks or other medical conditions.

- Have a platform for people who want to have a visit to the doctor. Have a possibility to order some medicine from pharmacy and get a deliver to your home in few hours. Maintaining records of the medical prescriptions, not only medicine names or descriptions, but values and dosages. Also allowing the direct contact for chronicle conditions, for instance, avoiding going to medical services.

- Have a platform where young people can communicate to each other and share their issues and problems. In order to promote initiative and driving force to start new projects and ideas to the city. Enhancing the community way of living, since small problems that need to be fixed to innovative ideas that can materialize into real city projects.

1.1.6. Cultural capital dissemination

Fostering digital environment for creativeness, wisdom and culture

We have also developed the idea of the release of museums from their physical barriers. Closed within its walls and indirectly connected with the public realm, does not encourage its livability as something more. We want to open museums for the largest possible number of people, integrating them, closing the gap between its interior and urban space. To achieve this, the museums organize exhibitions and events in the streets and squares in different parts of the city. In this way, we want to convince the people who miss the museums, consider them boring and inaccessible that it is worth to follow the exhibition and see and learn about a specific theme. We also want people who cannot go to the museum because of their age, health problems, or mobility obstacles can benefit from its resources. For this purpose, we developed a plan for an Internet platform where information is available about the inventories of museums communicated in an attractive way. Enhancing the space of museums and other institutions

over interfaces that can inform, communicate and be interactive with citizens. Also, children will benefit from this solution through research to schools and self interest in certain matters.

Our aim is also to help individual artists, researchers and developers in dealing with major cultural institutions. This way they can organize exhibitions and demonstrations of their work and share their creations with others. We want to promote young talented people where their ground-breaking ideas is shared with others. It will be beneficial also for the institutions that will be able to introduce new, diverse forms of individual expression, for the welfare of the community. This way of presentation has the city as a scenario, since public spaces till vacant spaces throughout the city, even buildings or lots that are abandoned and need to be reinserted into the urban life.

When visitors arrive into a foreign city they usually do not know where they can find information about the most interesting events, which are taking place during their stay. That is why we want to share this information in public places, throughout an interactive platform. This information will include not only individual events, but the collective agenda that will allow everyone to choose the event that best suits its interests, articulating them in a embracing city experience. We want to rely on the cooperation with cultural institutions and local entrepreneurs to choose the events, which will be interesting, diverse and specific to the region. This measure is supported by the idea of the breaking of physical barriers of museums, galleries, laboratories or investigation centers. The plan includes the creation of an information platform for the city. Using the platform, visitors will be able to know the most attractive places in the city. We want to include in it as much objects and landmarks as possible. This will be a practical guideline for all those who want to explore city by their own. We do not want tourists to miss important tourist points of the city, because it is very needed to promote the greatest advantages of the region, thus supporting the local economy.

We realize that citizens are very important part of positive emotions during the trip around the city. If the citizens of the town are positive and welcoming, tourists will be happy to visit them again. We want to enable local community in sharing the most important parts of the city for tourists and thus promote the city. Citizens who know their city the best will be able to show tourists the most interesting places, while meeting new people from other cities and countries, citizens will have also an opportunity to open up to and draw inspiration for themselves, throughout this city experience.

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Tourists outside the suitcase bring with them the baggage of experiences and preferences. Often, their needs are much different. Some people prefer to spend time in luxury hotels, in need of comfort and tranquillity, while others want to fully experience the entire accompanying noise and bustle of life in the city. Therefore, we want to create personalized tours tailored to the specific needs of tourists. Such a solution will require more work, but it may prove to be a successful investment for the city and will provide an unforgettable experience for tourists who will be able to enjoy the activities that best suit their will and interest.

To ensure the safety and comfort of tourists, we want to control and manage their flow. This is very important during the summer, the season the most adequate for tourists, the summer weekends cause a large volume of tourists. We want to see which sites are most frequently visited and when this occurs. It's very important for us to know the specific numbers and days,

hours, so that we can carry out a thorough analysis and make additional facilities. They will prevent too much flow queues and number of people at the same time in the same place. Also to promote different activities during the year will allow a more equal flow distribution through the season.

We want to take advantage of the potential that lies in the local heritage and landmarks. Interpreting it not only as historic buildings or attractions but as dynamic elements present in the city, that transform it every day. This search of own identity throughout the city, by introducing innovation and technology in its realm, demarks it when comparing with other cities, creating its singular character. Our goal is to allow people to know not only about the culture and history of the city through the customs of the inhabitants, as a reflection of the past, but also how the dynamics of the present have a direct reflection in the liveability of the urban space. We want to preserve the achievements of the city for future generations of citizens and visitors.

Creating a platform that can facilitate the independent learning of language and that can interconnect foreign citizens to the urban experience, when in need of services, information and others type of necessities. In this way, we can give autonomy and a sense of self-learning to the people that arrive, facilitating integration through communication.

1.2. Products to install as part of demonstration components (marketable post-project)

1. Government Urban Platform
2. Urban Services Interface
3. E-Identity
4. CID (Communication, Information and Data Control Center)

5. Socio-Urban Platform
6. Interactive Cultural Platform

1.3. Business model

REVENUES SOURCE

The revenues of Urban Platform are both specifically originated and due to integration with vertical services in each one of following vertical projects:

ENERGY – Data transiting from interconnection of urban embedded power and heat generation units interconnect with urban platform with sensors under IoT paradigm; Revenue sharing orginated on savings of administrative and interconnection costs due to the provision of an open common platform; emission of electronic invoices and control of performance in order to make feasible functional project financing (private or cooperative) models; support to dynamic assessment of performance establishing direct communication with investors users and energy system – storage and demand; automated micro-dispatching for better balance between embedded supply, notably cooperative and interconnected demand.

SPACE – Revenue share from support to dynamic demand driven location modulated tariffing of parking and public space use to park vehicles by providing interconnection between sensors, dashboards, street displays and users mobile and on-board interfaces; Data transiting from interconnection of virtualized public realm environment with location and monitoring of parking spaces for allowing dynamic tariffing on-basis of traffic regulation needs, occupation rates, competing uses of public realm, specific right of users, compatibility with temporary concession of additional public space for private community oriented events and initiatives; revenue share

from savings on parking management costs; revenues from access to virtualized public realm knowledge-base;

CLIMATE – Revenues from data transiting to support control, interconnection and supervision of climate modulation for city walkable areas; flat share of new taxation systems related to rebalancing public and private benefits sharing of urban climate modulation; revenues from access to virtualized public realm knowledge-base;

WATER – Revenues from data transit of systems and units' interconnection, control and supervision from equipment for operate and make available additional uses of water integrated into water cycle; revenues from access to virtualized public realm knowledge-base;

LIGHT – Revenues of from data transit of systems and units' interconnection, control and supervision of lighting and illumination units and systems and related interconnection to dash-borders and other technical and public interfaces; Revenues from data transit of information flows related to interconnection of lighting and illumination systems with other public realm management operation support and supervision systems and to internal interfacing with dedicated event management platforms, security and safety services and private commerce, community and services platforms and systems. Flat share of savings due to energy consumption reduction for the provision of basic street light conventional service by use of more advanced conversion (lighting) and management technologies in cases depending on interconnection availability; Compensation related to availability of control and interfaces enabling combining street light and illumination provision with urban design initiatives; Revenue from access and data flow for private use of lighting and illumination services by local commerce or public realm services providers which may use and benefit from dynamic regulation of lighting intensity and illumination features (colour and temperature) as pay-back for availability of open street lighting management systems and potential use and integration with private systems or demand; data

flows for control and metering of additional automated urban services to be provided by lamp posts; interconnection rate and data flow originated revenues related to integration with local energy supply and storage systems. Revenue from data flow related to intelligent operation of lighting and illumination systems to achieve optimized post level control (light as a service oriented), adaptive regulation of lighting intensity and colour, dynamic response to programmed needs and non-programmed events; Revenues from access and exploitation of access to virtualized knowledge-based describing urban public realm.

KNOWLEDGE – Data flow originated to two ways a) interconnection between urban platform data layers and modelling developers; b) data flows generated by use of modelling results and interconnection with artificial intelligence systems to support intelligent control of street lighting, traffic, parking, public realm, mobility, energy, wastes and dynamic tariffing and taxation transversally to several areas and support to simulation for investment, regulation, planning and urban sustainable management decision making; Data flows transit related to share of knowledge, modelling, tools and data generated along the project development and by project results; Flat availability rate related to estimated cost savings by using better model/based decision support systems and administrative process simplification as well as availability of participation of other stakeholders on urban governance process.

MOBILITY – Revenues from data flows originated by new mobility services interconnection to urban platform; revenues originated on data flows from increased use of public transportation and its integration to city scale tariffing and electronic invoicing services; Flat rate covering system availability to enable saving due to better integration between diverse and complementing transport modes, namely shared and self-modes; revenue from data flows related to ticketing and administrative and operational new features and functions relying on

use of electronic platforms integrated to the Urban Platform; revenue based on data flows generated form increased use of interlinked city trip planners;

WORK – Flat rate for availability cover of free use of urban platform on the new working spaces in city; data flows induced by combined use of networking services in spaces and for services that may benefit from free access to the Urban Platform namely when resulting or relating to diversified new uses of urban structures, assets and infrastructures which may be enabled by the public space virtualization.

HOUSING – Revenue from data flow related to metering of domestic, commerce and services consumption of embedded power and heat generation and by consumption management savings under an environment of demand optimization; revenue from data flows related to dynamic tariffing associated to storage aimed at performing better balance between supply and demand on both ways: a) access to artificial intelligence support and modelling and b) supplying consumers, promoters and financers with dedicated reporting and invoicing.

PEOPLE – Indirect revenue as extended public adhesion and use of new urban services, namely on energy and mobility sectors, will induce direct revenue sources on the points above;

ASSETS REVALUATION

Revaluation of unmaterial urban assets, public realm, historic heritage and cultural legacy due to virtualization, projection and potential interconnection; revaluation of public realm will induce economic growth and investment attractiveness causing increase of interconnections and data flow in urban platform; anticipation of climate challenges and better preparation of

the city, namely under the urban climate, generate long term competitiveness differentiation which generates stronger investment attraction and increased interest on using city assets as such as the urban platform and all the interconnection facilities. Such attractiveness leads to new business and services, namely considering new collaborative working spaces to be open in the city, opportunities to invest on energy, mobility, temporary housing, light water and wastes sustainability cycles and innovation chains as well as on developing new capabilities with the city's inhabitants. All those areas are supported by the project strategy and the Urban Platform openness and availability.

1.4. Beneficiary

- Open governance bodies
- Public services
- Entrepreneurs and businesses
- Employment seekers
- Investors
- Associations
- Public real managers
- Buildings managers
- Housing suppliers
- Social care entities
- Art and museums curators
- Tourists and visitors
- Immigrants and expatriates
- Students and pupils

- Health services users
- Elders
- City walkers
- Bicyclers
- Public transportation users
- Private transportation users
- Parking users
- Environment managers
- Recycling operators
- Street light managers
- Energy investors and prosumers

1.5. Promoters

- Incubator, start-up centres, co-work spaces, FabLabs and entrepreneurship parks business association
- Regional authority
- Academic institution
- Innovation cluster (ict, energy or mobility)
- Significant technology partner, vendor or technology supplier company
- Neighbouring municipalities
- Associations (sectorial trade, chamber of commerce, consumers)
- Energy agencies, esco and dso
- Housing cooperatives and associations
- Security, safety and civil protection authorities

- Urban developers, housing suppliers and promoters
- Mobility and transportation infrastructure managers or partnership
- Ngo's and citizenship associations in areas of art, culture, environment, science and education
- Energy utilities and energy distribution cooperatives
- Social care cooperatives, social enterprises, charities
- Significant suppliers of technology, equipment, solutions and services relevant to the areas of ict, mobility, urban equipment, buildings, transports, waste, financial services, energy and other utilities, telecommunications, informatics and related (gis etc.), civil engineering and construction, architecture, urban management (gardens, public realm, etc.)

1.6. Solution readiness

- Glass embed Photovoltaic – TR7
- Integrated Transmission and Distribution Batteries – TR8
- Urban Turbine – TR9
- Integrated Grid Control – TR7
- Photovoltaic panel heating pump – TR9

1.7. Challenge

Governance and services efficiency; direct and informal participation; urban real-time management platform.

2. ENERGY

Governing principle, keyword: Open

2.1. Demonstration components (product to be installed, or pilot to be deployed)

2.1.1. Embedded Solar-power Generation

Solar power as renewable source of energy

Renewable resources are the ones that are replenished by the environment over relatively short periods of time. This type of resource is much desirable to use because often a resource renews so fast that it will have regenerated by the time you've used it up. It is also a green energy, allowing its production throughout the city, without harming the environment.

The renewable energy includes: solar, wind, hydro water (drop of water, tides, temperature difference of water), geothermal, biomass energy and biofuel. Energy from renewable energy sources can result in electricity, through heat or cold. It is very important for us to develop renewable sources of energy for cities. This will allow to product energy without harming the environment. Renewable resources plan is a chance for effective use of the resources that surround us. Finding renewable energy sources is an essential part of our plan for the development of cities and making them smart and modern.

Through the DREAM project, cities can become the developing centres to promote the application of solar energy on a large and sustainable scale. Indeed, the sun plays a large role within the renewable energy sources used in DREAM projects.

Solar energy applications, such as photovoltaic panel, rooftop solar, energy converts and electric vehicle charging stations can contribute to improve a clean and green and living style to the cities and to promote the usage of renewable forms of energy, helping the country to fight pollution and climate change.

Photovoltaic power panels can be integrated in slopped and flat buildings roofs also in windows and free space next to the buildings. Also, solar power cooling technology makes use of solar-desiccant-evaporator air conditioning, which reduces outside air humidity and passes it through an ultra-efficient evaporative cooling system. This cooling process, which uses an indirect evaporative process, minimizes the air humidity, and this makes the use of this technology quite effective in coastal and humid areas. Adapt this technology to producible ordinary construction elements is also a solution, like glass, walls, or others.

Energy from solar power generation technology can be used immediately or may be stored for use at a later date. The solar energy is converted to electrical energy by a large photo-voltaic array. This system allows the use of solar energy, which is the proper selection of places to locate the panel can be an endless source of power. We would like to maximize the use of renewable energy resources, install solar panels on public buildings, lighting, as well as promote the use of solar energy in households.

Two types of solar power generating systems can be implemented: grid-connected systems, which are connected to the commercial power infrastructure; and stand-alone systems, which feed electricity to a facility for immediate use or to a battery for storage.

The package includes the installation of solar photovoltaic and thermal panels that feed directly into the school and sport facilities' electricity and heating systems. In addition to the photovoltaic and thermal panel installations, technical energy audits will be conduct and

recommendations will be presented to the schools, detailing opportunities for installing energy-saving measures and implementing behavioural change initiatives.

2.1.2. Optimized Open-energy system

Energy storage - transferring or selling it -, telemetry systems with optimized integration

In this project, we want to implement solutions whereby modern buildings that use renewable energy sources such as solar panels will be able to share the unused energy with other users, so devoid its modernization. Sharing the excess energy gained from solar panels will save conventional energy sources also by the users who do not have access to modern solutions. Thus, they gain both companies share the energy and users who collect it, and also the environment.

For example, grid-connected systems are usually used for homes, public facilities such as schools and hospitals, and commercial facilities such as offices and shopping centres. Electricity generated during the daytime can be used right away, and in some cases surplus electricity can be sold to the utility power company. Power production levels and surplus selling can be monitored in real time through several platforms, promoting also energy efficiency measures on a municipal level.

2.1.3. Urban-wind Renewable Power-generation

Clean energy production; interactive and dynamic urban space

Wind energy is one of the most important and effective source of renewable energy and is an attractive alternative to fossil fuels. It is plentiful, renewable, widely distributed, clean and

produces no greenhouse gas emissions. Onshore wind energy is a mature technology that is nevertheless undergoing continuous improvements.

However, with limited available installation space, renewable energy generation within urban areas poses particular challenges. Indeed, wind energy is not the energy source that immediately springs to mind when we think about renewable energy in cities and urban areas. Public resistance, especially for aesthetic reason, is the one of the large barrier to the development of wind power generation, usually situated outside the communities.

The challenge that DREAM project want to face is to bring small wind turbines wind energy to an urban scale. In addition to the classic wind farm, with this project we want to support and to spread this energy sources promoting small wind turbines on suitable locations in the urban environment or even on buildings that can generate energy from low-speed wind. Nowadays, in fact, several small wind power generation systems exist.

Different business realities are experimenting with new solutions on how to capture the power of the wind in the cities and turn it into energy. For example, the Savonius wind turbine, which is a vertical axis turbine. This machine has a low noise level, the ability to operate with low wind speed and regardless of the direction in which it puffs, together with a simplicity of manufacture and maintenance; or the new innovative wind power production system, called Arbre à vent, which has the shape of a stylized tree, comprising a trunk, the branches and the leaves. The energy is generated by means of the rotation of the set of leaves that act as mini turbines. From the generators, the energy produced is transferred to the network via an inverter.

2.1.4. Integrated Urban-Grid System

Urban utility community oriented system

With this sub-project, we propose the idea based on the determination of the exact energy consumption in specific units, compare this consumption, as well as determine where the flow of energy is the most effective. This will fit the plan consumption and adapt solutions to the introduction of renewable energy sources in places where it is most needed and efficient.

We want to help local businesses and start-ups and thus encourage them to participate actively in the market and increased development. This point is especially relevant to companies involved in aspects related to the environment and the overall health of the city. We want these companies to promote their eco-friendly activities and products. The implementation of solutions such as the simplification of bureaucracy and tax incentives to encourage them to spread at the local market.

The objective of smart cities is to support people who are looking for modern solutions. We want to devote a lot of attention to citizens, who will have innovative ideas related to environmental protection and the use of renewable energy sources. We believe that the citizens who base on their own observations and experience can make a lot of positive changes. This part of the project is addressed mainly to people introducing ideas in their homes and owners of small, local companies.

We propose the idea based on the determination of the exact energy consumption in specific units, compare this consumption, as well as determine where the flow of energy is the most effective. This will fit the plan consumption and adapt solutions to the introduction of renewable energy sources in places where it is most needed and efficient.

2.1.5. Responsive Energy Transfer

Cross vector utility energy transfer

Heat pump with solar power source, with a system of water circulation heating up the interior space, taking advantage of articulation of different systems of infrastructures. Storage water circulation can function as well as cooler of the house, working, therefore, with water for different climate solutions.

2.2. Products to install as part of demonstration components (marketable post-project)

- Glass embed Photovoltaic
- Integrated Transmission and Distribution
- Urban Turbine
- Integrated Grid Control
- Photovoltaic panel heating

2.3. Business model

REVENUES SOURCE

Revenues of embedded power and heat generation; Savings of energy demand reduction;

NEW BUSINESS OPPORTUNITIES

Facilitated interconnection of energy supply, storage and demand management systems;

2.4. Beneficiary

- Entrepreneurs and businesses
- Employment seekers
- Investors
- Associations
- Buildings managers
- Housing suppliers
- Street light managers
- Energy investors and prosumers

2.5. Promoters

- Incubator, start-up centres, co-work spaces, FabLabs and entrepreneurship parks business association
- Innovation cluster (ict, energy or mobility)
- Significant technology partner, vendor or technology supplier company
- Neighbouring municipalities
- Associations (sectorial trade, chamber of commerce, consumers)
- Energy agencies, esco and dso
- Housing cooperatives and associations

  Urban developers, housing suppliers and promoters

  Energy utilities and energy distribution cooperatives

- Urban developers and promoters

- Significant suppliers of technology, equipment, solutions and services relevant to the areas of ICT, financial services, energy, telecommunications, informatics and related (GIS etc.), civil engineering and construction, architecture

2.6. Solution readiness

- Glass embed Photovoltaic – TR7
- Integrated Transmission and Distribution Batteries – TR8
- Urban Turbine – TR9
- Integrated Grid Control – TR7
- Photovoltaic panel heating pump – TR9

2.7. Challenge

100% renewable supply on long term; with renewable resources, natural and artificialized; elements that can produce what they spend, directly or indirectly.

3. MOBILITY

Governing principle, keyword: Access

3.1. Demonstration components (product to be installed, or pilot to be deployed)

3.1.1. Energy positive cycling-ways

Urban mobility backbone

Mobility and transport are essential for a city to function properly. A city needs to take measures for the increasing pressure on the city's infrastructure by reducing congestion, pollution and improving safety and improving efficient use of public spaces.

Indeed a humanistic, people-friendly city is first and foremost an accessible city, where mobility is possible for all. Sadly, big metropolises are often a living mayhem, with throngs of people, congested roads and a polluted atmosphere. Traffic congestion represents a major economic problem because of the many working hours lost each day from sitting in traffic jams and soaring petrol costs. A growing number of cities around the world are eager to become bicycle cities, as part of a wider strategy to raise their green profile. When leveraged to improved financial performance, this may lead to economic benefits for the city in terms of employment and paid taxes. Also bicycling is a indirect way of promoting sports and a healthy way of living, creating a more civic and direct connection between citizens.

- Sharing concepts, traffic management systems, smart parking apps, e-mobility initiatives, new mobility service and eco-friendly technologies bring many benefits to a city. With this project we want to promote new initiatives, service and technologies that can embrace smart and intelligent mobility options.

- For instance, we want to promote piezoelectric technology. Piezoelectricity adapted to a continuous floor, a route just for bicycles, produces a valuable energy source for public elements nearby. Its utilization can revert in tax returns or other type of incentives. This type of adaptation should consider a higher degree of resistance and comfortable

accommodation for falls. In this way all the public infrastructures that support a certain area of bicycling can be powered by the people themselves, producing energy as they pass.

- Piezoelectricity is electrical energy harvested from mechanical pressure such as walking motion. When pressure is applied on an object, a negative charge is created on the expanded side and a positive charge is created on the compressed side. As this pressure is relieved, electric current flows across the substance. Piezoelectric flooring is ideal for places that receive heavy foot traffic. It can be installed at tourist attractions, town halls, schools, stadiums, or dance floors. Piezoelectric flooring can also be installed in other busy places such as subway stations, airports, universities, and malls. In this way people can participate actively in the production of a resource that all expend; energy.

- We want also to promote cyclists and public bike sharing. To increase bicyclist safety we would like to separate roads for cars, trails for bicycles and pedestrians. The most dangerous parts for bicycling are highways and fast roads. The measure involves building a wider two side road with enough space for bicycles with special and colourful ground. Trails for bicycles have to be marked with special signs, especially in more narrow streets where are too close to cars. Build new trails for bicycles and pedestrians through the most attractive and green parts of the city. Furthermore, we consider bike sharing particularly powerful because it **integrates with public transport**, increasingly with combined ticketing and journey planning

- Parking is needed when associating bicycling to consolidated spaces in the city; using streets or other public spaces and buildings or public infrastructures in the city for that necessity. To build more bicycles parking with lockers which would be easy to find and safe to leave bicycle. Parking should be near shopping malls, offices, touristic places, parks, schools, hospitals, bus stops, stations, etc. Some of the parking have lockers which can be used for charging electric ones, for instance. Parking have to take as small area as it is possible,

rearranging the disposition or articulation of the structures with the spaces where they're applied.

- Electrical bicycles can be a good solution for higher places where are more heels. Electrical bicycle has to have charger where people can charge their phones, laptops also people can be able to connect to a special program with their smart phones and see how many kilometres they rode, can see some information about their health.

- To make an escalator for bicyclists in a road where are a big heel which can help people to ride a bike easier in hilly cities. To make escalators bigger, wider and adapt them for bikes for example in the places where escalator is only one possibility to move. To adapt busses and trains for bikes transportation, for example, lower bus entrance or special place to keep a bicycle in/on the bus or train.

- Points have to be in the parking, city parks and other bicyclist's common points. Repairing points are free and there bicyclists can find all the equipment for repairing a bike. Also there should be electricity charging points with solar power to charge phones, electric bicycles, etc. Repairing point has to have a lamp and screen which show time, temperature, and map. People can be able to connect their smart phones with that screen.

3.1.2. Powered hop-on hop-off

Back-up transportation and micro-logistic for pedestrian areas

- Crossings for people have to be higher than roads for cars. Higher crossings will decrease cars speed and will increase people safety. Higher crossings have to be at the same level as sidewalks to make walking easier, especially for people who has disabilities. Visible crossings

with wider sidewalks are for people safety increasing. Pedestrian crossings create safe crossing points, mostly at intersections, by giving priority to people crossing the street. As previously described, zebra crossings require motorists to stop whenever a pedestrian wishes to cross. Signalized crossings require motorists to stop when signals turn red. There are also many other places that pedestrians may wish to cross the street where formal crossings are not provided. It would be too expensive and inefficient for the operation of the street to provide crossings in all these locations. Painted median islands have been used to assist people to cross in places where no crossing is provided. Allowing people to cross the street safely where they want to often reduces delay and walking distances. It can also promote business in shopping streets by allowing easier access between shops on different sides of the road.

- On top of taxis, having a section in the busses and trains, on the back for instance, where you can strap your bike, or just inside of the transportation. People can easily travel from one city to another or just inside the own city, avoiding more difficult or time wasting trails. Incentivizing the use of bicycles despite great or difficult distances.

- Bus and other public transports stop with bicycle lockers, chargers that use solar power, screen with temperature, time, real time journey planner platform, electrical bikes charging spot, ticket machine, and Wi-Fi. In case of public transport network it can have associated other tools useful to the population, like first aid kits and repairing tools for bicycles or other similar means of transportation.

- We want also to introduce an articulated grid of transportation that can connect to all points of youth necessities, since school, to sports facilities, to tutors outside school, music lessons, etc. Allowing a sense of autonomy in their routine mobility, in a growing sense of responsibility and independence, assuring safety and time compliance to the parents.

Charging points for electric cars will be near living houses, offices, shops, shopping malls and public spaces, where cars will be charging by generated by the ones passing by, solar power, or other forms of energy production, so people can leave their cars for few hours and in the meantime they can use their time usefully.

- In the project we also want to include the use of public transport and the creation of communication between museums, art institutions and science centers. Special routes between them will lead through interesting and important streets and link cultural institutions. We want to give visitors a means of transport to facilitate their searching of interconnected places and make movement between them easier, more attractive and allow to see more places during one trip.

- We want to be able to reallocate, in a more efficient way, the stop stations for public transportation, creating two stops equidistant from the bigger traffic service flow, allowing buses to not do routes vacant when just going to parking, closing shifts. Adding electrical charging through solar panels system in the stations.

- Our objective is also to make public transport convenient for both the citizens of the city and tourists. That is why we want to implement a system of support for different means of transport, not just those as conventional as buses, but also particularly popular among tourists, which will allow them to reach the most popular parts of the city. We want to promote additional connections to these places, so that people can freely get to work even in the tourist season.

3.1.3. Intelligent mobility services

Faring, accessing and interconnecting

Movement ticket, accessibility to public services

With this project, we want to create a series of mobility service app and platforms. Virtual tickets can be used in trains, metro, busses, plains, taxis. Creating a platform where customers can go and purchase a ticket for all kind of transportation and download into their smart phones and benefit customers to reduce their time wasted in the queue to get those tickets visible printed, which can cause the customers to lose their train or plain, therefore increases the efficiency of the service borrowed by the employers themselves, focusing in the real concern: driving.

Among the other aims of the project we want:

- To improve the ability to access daily needs, including education, employment, and health care, is crucial to maintain quality of life. Have a specialized form of par transit service where a driver meets customers at their door and walks with them to the vehicle and then to the door of their destination. Assist to specific program services, such as medical, commerce, community service, education and employment or associations spaces.

- Having a platform with map where citizens can fin electrical cars charging points is also fundamental. Informing the users of its availability, if it's in use and which is the expectable time of usage, understanding if a certain spot is going to be free soon, and others that are closest and vacant.

- Create a platform where are city map and real time journey planner. Navigation system is giving an ability to plan A to B, travel in real time as well as to plan future operations. Use as a mechanism to influence traveller behaviour and distribute travellers across models. Use data to plan future infrastructure and service provision based on demand.

- Having a platform where people will be able to communicate and show where and when they can rent their private cars for a certain amount of time, since hours to weeks, and also allowing the possibility to share their every day routes where others would be able to apply for that journey. For example, one person who is going from the same place to work from Monday to Friday, at the same time, can share his car with others who have the same or similar route to their work. So an application will be helpful for people who want to share their car seats, save money for fuel and decrease traffic congestions.

3.1.4. Intelligent, active and interactive planner

Real time journey planner, alarm and adviser

With this project we want to create a platform that combines maps and the actual alarm that would be automatically created after selecting when you would like to arrive at your destination, associating different types of transportation as well as singular way of movement, with bicycles and walking, giving schedules and last time changes in a specific route, allowing to trace the mean of transportation through a GPS signal. Real time journey planner and alarm also will allow to plan in the moment and in advance different routes, and to alert the citizens of changes in routes and schedules.

The public transportation system is the lifeline of a smart city. It fills the city with life through a continuous and controlled flow of people and products and carries everybody to his or her destination. In an intelligent city, the development of the public transportation system is promoted because it provides the general public with basic services. If it is expanded city-wide and its efficiency is improved, public transportation make a significant contribution to the reduction of traffic congestion and emissions. The individual can contribute to a more efficient and safer transport system with the help of intelligent traffic routing. Today, there are some

platforms in the market that provide drivers with traffic information in real time and other platforms use the communication between vehicles and traffic infrastructure or that mediate ad-hoc shared-ride services that contribute to more efficiency and safety on the road. The areas of traffic routing and driver assistance offer even more development opportunities for individual traffic in the areas of information and communication technologies.

Sensors will allow to drivers to use equal friendly journeys which will help not just the city to be pollution free but allow the drivers to remain healthy by not breathing polluted air.

Interpreting it as a turning necessity, it still needs to be addressed. Having your own private vehicle can offer you the ease of being able to travel at any time to any place. It can also give you peace of mind that if there should ever be an emergency where you need to reach the hospital or simply return home, you would be able to do so immediately. Your own vehicle could also accommodate the individual and is family exact needs. It's our intention to coordinate and reorganize the relationship between singular transportation and the city.

3.1.5. Integrated collaborative services

Car, bike, bicycle and parking sharing

A core element of the mobility project is the sharing principle. Shared mobility has grown tremendously in recent years as a renewed interest in urbanism, furthermore, growing environmental, energy and economic concerns have intensified the need for sustainable alternatives. In addition, advances in electronic and wireless technologies have made sharing assets easier and more efficient than before.

What we want to offer is a set of new services representing innovative responses and opportunity to provide new mobility choices, to reduce traffic congestion, reduce pressures on natural and urban environment and to reduce transportation costs and fossil fuel consumption.

Some of the services we want to offer there are:

- Platform of mobility interconnection, founding of a neighbourhood community in a safe and trusting proximity allowing the sharing of their assets with one another. Sharing a private car, or the parking spot next to their home, in a meaning of city where the urban space relates housing and work.

- Bike sharing points on the main city streets which will be available for city citizens and tourists. To rent a bicycle user has to have a special card or download an application and register. Also can be created an platform where people can share and rent their own bicycles.

- Parking made underground which are located outside of the cities. It will free the city centre from excessive traffic, reducing traffic jams, accidents and air and noise pollution, increasing the walking and bicycling space, enhancing the city center liveability.

- An application which shows every parking's free and occupied place in a map, and in which they will be able to reserve one place for a certain period. Places will be supported with sensors which will be connected to the platform, to drivers save their time by searching for free parking place.

- A platform where customers can go and pay for their car parking, after they registered there with their car number and phone number or bank account, allowing some time save trough the simplification of process.

- Sensors installed in every parking, every place for a car, helping to save people's time, marking that spot as unavailable, analyzing as well information regarding its use throughout the day.

- A platform where individuals can share their own parking spot, usually associated with houses and housing streets, that can interconnect spaces of housing and working, changing the appropriation of these parking spots during the day. Allowing an informal business per money exchange or just trading opportunities.

- Electric car charging points: transport and power are become increasingly interconnected, electric vehicles are often charged at home, or take power from the grid through charging stations. With the increasing penetration of electric vehicles, have car points with chargers all over the city is crucial. Public electric cars will be using through a platform where customers can find where cars are available so they can share them, see their journey price and free points where they can leave the car. Car key is in the car and customer will be able to unlock by application and security code.

3.1.6. Control and management of traffic

Redirecting, informing and controlling

We want to make cities traffic better and safer for citizens, privileging passive ways of dislocation. We want to have systems for speed control and management of the urban flow,

installing sensors in cities, allowing its quantification and qualification in a certain moment. This systems will also allow us to know what is the current level of pollution, and other types of information related. We want to help people to avoid huge traffic jams, incentivizing them to other forms of transportation, giving conditions in the urban space for that to happen, in a smart way.

- Systems indicating traffic jams, accidents, or events, transferring that immediate information into the city urban organization, alerting the drivers to reduce their speed helping to reduce accidents on the road, and redirecting traffic trough other routes instantly, offering various solutions of mobility inside the city.

- The electronic signs have to be installed in bridges or in the streets where traffic is intense. Each line has a sensor that gives drivers information. The sighs can also tell drivers when to change lines because of a crash or stall and suggest driving speeds based on conditions.

- Connect emergency vehicles with traffic lights through sensors, so traffic lights could change to a yellow light in the directions of emergency vehicles, allowing their passage and controlling the non-emergency ones that are driving in the same direction and, more important, to turn red for opposite directions immediately, permitting the safe passage for both emergency vehicles and the other ones.

- Allow the traffic to flow naturally by giving equal time frame for all the drivers so the most congestion areas it's not enough. It must be put a system that will allow to read various moments in the flow of the urban area; sensors detecting the quantity or even urgency of cars passing by should secure a qualification order of traffic flow.

- We would like to create an intelligent and modern air pollution detection system, including the dangerous substances, for example, sulphur dioxide, nitrogen dioxide, carbon monoxide, benzene, lead, arsenic, cadmium, nickel. Work on the study of air pollution will cover two main areas: transportation and production. The study of air pollution is developing a plan warning citizens and getting control of the most dangerous compounds into the air they breathe. Sensors monitoring the noise level - which also negatively affects the health of residents of the city, causing among other things, hearing problems and persistent headaches, or just liveability - will allow a more proficient urban traffic plan. In addition, we want to investigate the noise associated with the transport and traffic in order to counteract the negative effects of excessive noise and emerge the most vulnerable parts of the city.

3.2. Products to install as part of demonstration components (marketable post-project)

- Piezoelectric Bicycle Lane
- Mobility assist Transportation
- Virtual ticket
- Real Time Planner Platform
- Mobility Club
- Platform of Traffic Management

3.3. Business model

REVENUES SOURCE

Revenues from new mobility services matching hidden / not served demand for transportation and generalised (for all citizens) access to all city services; revenues shifting and saving and additional revenues from the increased use of public transportation made possible by better integration of modes under a generalized door-to-door approach; costs saving due to better integration between diverse and complementing transport modes; savings by fully integrating self-modes (walking and cycling) into the door-to-door transportation chain by making it feasible for everyone in most of the city; ticketing administrative and operational costs reduction due to deeper use of electronic platforms to support it; savings form use of continuously developed, improved and interlinked city planners; cost saving from use of proximity riding and parking sharing services among neighbours and urban community at large.

ASSETS REVALUATION

Use of public realm for enjoyable mobility opening room for new business, activities and initiatives that may benefit from presence of public in public realm – walking and bicycling – instead of driving or commuting; better use of private transportation means once shared; better use of public transportation system once access to it is facilitated by better integration with self-modes, facilitated ticking, proximity and use by additional publics served under the principle of offering mobility to all cities and so keeping all city in motion and accessible.

OPTIMISATION EXTERNALITIES

Benefits on transportation system from improved local micro-climate modulation that makes the city better walkable and cyclable with reduced appeal form private transportation use and better integration with public modes; benefits of more accessible charging posts for e-bicycles

namely as integrated with light posts; benefits from coordination with more open – for interconnection – energy system related devices such as e-mobility consumption demand systems; benefits, simplification and better access due to integration with several layers of urban platform data services as inducing new data driven services and innovation; better integration with more intelligent managed public realm and with urban signalling and orientation system, namely as making public realm – and then its interface with mobility services – better prepared and accessible to disable and less able citizens; making the city friendly to more diverse ways of working and living enjoying the urban core reliance on public transportation and mobility services increases for mutual benefit – for the system sustainability itself and from the city friendly and attractive nature for all; the opening of new spaces of co-work, incubation, production and creation within the city core – as typically relying on public transportation and selfmodes – benefit from additional and innovative urban mobility services and reciprocally contribute to sustain it; the better charging infrastructure once deployed for e-mobility assets may be shared by e-transportation devices for wastes collection and management; the use of water to modulate urban climate turns possible the non-intermittent integration of transportation self-modes (walking and bicycling) into the full cloud of urban mobility services; the new urban spaces open for citizens fruition by interrelating water management allocated spaces with urban functions creates additional demand – very much in line with the main challenge of unlocking hidden demand for access transportation and mobility services contributing mutually to open those news spaces to the city and to sustain, as diversified and increased use is promoted, the mobility services sustainability; the openness of the city for knowledge-based functions, among which the culture at large functions excel – aligns with the use of self-transportation modes, enhanced relation with advanced users platforms, pioneering ticketing systems, better balance use off rush hours and openness to catch up with emerging innovative mobility services; the promotion of facilitated access (through dynamic management and ownership) to housing for the diversified needs both in space, models and

stay duration eases better balancing the use of mobility services by reducing the time unbalances, the daily bouncing commuting, the diversity of needs and the better uniformity of special and temporal modulation of offer and demand; the mobility services considered under demonstration complement and integrate with the conventional public transportation modes and so promote its modernization, notably in the direction of e-transportation and economic sustainability both considering usage of transportation and ticketing assets; the open integrated management of the diversified mobility services – which include the self-modes – facilitates the integration with the conventional transportation modes and the overall management of the keeping the city in motion challenge.

NEW BUSINESS OPPORTUNITIES

New mobility services considering integration opportunities – namely from open ticketing and access platforms and more open regulation – under the triple principle of supplying hidden mobility demand; replacing private transportation when it is used because being only alternative and adapting / benefiting from new demand (in form, quality and quantity) resulting from transformations in city functions;

OTHER POSITIVE EXTERNALITIES

CO2 emissions reduction due to more sustained and effective use of self-modes; cost reductions due to better dilution of fixed capital and operational costs of conventional transportation systems; easier achievement of resilience and climatic goals on basis of better integration throughout the several mobility services and the increase diversity of modes and services along the motion chain; more data for adaptive, flexible, effective regulation

3.4. Beneficiary

- Open governance bodies
- Public services
- Entrepreneurs and businesses
- Employment seekers
- Investors
- Associations
- Public real managers
- Buildings managers
- Housing suppliers
- Social care entities
- Art and museums curators
- Tourists and visitors
- Immigrants and expatriates
- Students and pupils
- Health services users
- Elders
- City walkers
- Bicyclers
- Public transportation users
- Private transportation users
- Parking users
- Environment managers
- Recycling operators
- Street light managers

- Energy investors and prosumers

3.5. Promoters

- Incubator, start-up centres, co-work spaces, FabLabs and entrepreneurship parks business association
- Regional authority
- Academic institution
- Innovation cluster (ICT, energy or mobility)
- Significant technology partner, vendor or technology supplier company
- Neighbouring municipalities
- Associations (sectorial trade, chamber of commerce, consumers)
- Energy agencies, ESCO and dso
- Housing cooperatives and associations
- Security, safety and civil protection authorities
- Urban developers, housing suppliers and promoters
- Mobility and transportation infrastructure managers or partnership
- Ngo's and citizenship associations in areas of art, culture, environment, science and education
- Energy utilities and energy distribution cooperatives
- Social care cooperatives, social enterprises, charities
- Significant suppliers of technology, equipment, solutions and services relevant to the areas of ict, mobility, urban equipment, buildings, transports, waste, financial services, energy and other utilities, telecommunications, informatics and related (GIS etc.), civil

engineering and construction, architecture, urban management (gardens, public realm, etc.)

3.6. Solution readiness

- Glass embed Photovoltaic
- Integrated Transmission and Distribution Batteries
- Urban Turbine
- Integrated Grid Control
- Photovoltaic panel heating pump

3.7. Challenge

Reduce levels of air and noise pollution; motion as a form of energy production; interconnected and articulated mobility

4. WORK

Governing principle, keyword: Emerging

4.1. Demonstration components (product to be installed, or pilot to be deployed)

4.1.1. Open professional urban co-creation platform

In connection with the implementation of the project, we intend to implement a favorable environment for the creation of new businesses in the cities. A good measure is to run incubators. With incubators, entrepreneurs can count on substantial support and favorable conditions for development, such as the use of office space at attractive prices. The use of such solutions also promotes establishing cooperation between the companies that operate within the same incubator. Cooperation can be a key factor in winning position in the market and finding their place on it.

Network communication

To support the economic development of the city we want to remove barriers for entrepreneurs. The authorities should strive to facilitate the establishment and development of enterprises. Contribute to this will be to reduce unnecessary bureaucracy and greater transparency in obtaining the necessary permits and accompanying documentation to the whole business process. In development companies can also see tax incentives. Government support is valuable for entrepreneurs and business friendly environment to attract partners to invest in the region.

International approach to entrepreneurship opens up new opportunities for local entrepreneurs. That is why we want to facilitate their contacts with foreign market spaces as well as companies. We also want to encourage exports and strive for increased economic development, which will allow greater investment, also in human resources, which promotes and finances the city's position in the international realm.

One of the principles of the plan is to play an active role in helping city businesses internationalization through EU programs, captivating skilled workers in the area of innovation and technology. But is also important do integrate all type of qualified workers: like disabled people making a strong correlation between disability, employment and education, to help people with intellectual impairments and mental health conditions face particular difficulties in entering and remaining in the labor market; re-integrating inmates or young people in detention centers, working with education partner, inmate organizations and training providers, to promote stronger links between schools, organizations and the employment market, helping the city, through this cooperation to eliminate preconceptions and integrating all types of people, increasing opportunities while decreasing unemployment; and including migrants, seeing them as an opportunity, giving access and coverage by social security systems and measures by home countries to extend social security coverage to nationals abroad, through jobs opportunities benefiting from their knowledge, culture and formation.

4.1.2. Interconnected city-level embedded co-work fabric

Co-managed Network of spaces, environments and services

The favorable conditions in the economy and financial represents the good condition of the city. One of our goals is to build a stable financial situation and opening new opportunities for entrepreneurs. Thanks to the Smart Cities project, we want to promote innovative solutions and creating an entrepreneurial attitude among citizens. We also want to open the company to new opportunities and markets and establish new collaborations in an international environment.

Industry 4.0 is a new paradigm in industrial production and its logistical processes. The term industry 4.0 refers to a further developmental stage in the organization and management of the entire value chain process involved in manufacturing industry, another term for this process in

the fourth industrial revolution. Of central importance for industry 4.0 is its interface with other smart infrastructures, such as those for smart mobility, the smart grid, smart logistics and smart homes and building. Future products must have computing, networking, wireless and sensor functions. With the recent emergence of the “maker” concept, numerous customer groups and maker spaces have appeared. This movement is likely to promote the creation of innovative products.

Interoperability is the ability of a system or a product to work with other systems or products without special effort on the part of the customer. Create unified standards to improve interoperability between the billions of devices making up smart cities, create a single standard in order to unify products based on different protocols. Outline common specifications for product development that enables connectivity among devices irrespective of the form factor, operating system, manufacturer or service provider. Build open architecture systems to make it easy for smart city planners to integrate devices and applications. It also enables seamless sharing of data between subsystems and reuse of code. Different modules can be switched according to varying requirements, eliminating the need to reinvent the wheel every time a new app is needed.

Local businesses and entrepreneurs are the backbone of the economy and the prosperity of the city. We want to create the best possible conditions for the creation of new businesses and thus new jobs. The economy is growing rapidly thanks to the search for new markets at home and abroad. We want to promote the search for new technologies and cooperation between enterprises, and a closest relationship with the citizens.

The premise of the project is to increase the influence of associations and civil society development. In a community divided into private and public sector it is often difficult for the society. We would like to expand the social structures of the association, which will play the role

of mediators between the local authorities and companies to develop solutions that will benefit for the whole society. These associations would be free of political influence. Setting the interests of the general public will to prevent conflicts and look for compromises.

We continue to be a local government organization that values and includes young people in the city where young people are healthy, valued, resilient and confident young citizens who actively contribute to a better future. Ensuring council programs, services and facilities are inclusive and accessible to all young people negotiating partnerships that initiate new programs to respond to the changing needs of young people. Supporting and resourcing youth-led initiatives, ideas and projects, celebrating the diversity of young people and showcasing their social, cultural and creative contributions, identifying opportunities to involve them in council's decision-making processes. Providing employment opportunities for young people, regarding their areas of interest, formation and experience.

4.1.3. Active support for emerging collaborative initiatives (02C)

They do so by targeting four key domains: boosting demand for employment, and in particular guidance on job creation, labor taxation and wage-setting, enhanced work and skills supply, by addressing structural weaknesses in education and training systems, and by tackling youth and long-term unemployment, better functioning of the labor markets, with a specific focus on reducing its segmentation and improving active market measures and its mobility, fairness, combating poverty and promoting equal opportunities.

The project intends to promote entrepreneurship among citizens. We want to support small businesses and the single manifestations of entrepreneurship. People who want to develop their ideas would be exempt from conducting formalities. Innovative technology researches, as well as vegetables producers or handmade jewelry could gradually develop their business ideas and

with time and development of the company take care of the formalities. Our aim is to facilitate their first steps in business and promote entrepreneurship.

Produce guidance on public procurement of innovation which is relevant for European procurers, the Platform is working to develop changes under the new directives. The extended competence in urban innovation of the members of the Smart Cities platform can offer inputs for the Procurement of Innovation guide. The Smart Cities Secretariat encourages all community members to contribute with their experience of truly innovative public procurement.

The project also provides promoting the innovative solutions in the sphere of economy and business. With this project we want to support companies that rely on innovation. To do this, we want to support innovative enterprises financially to help them find new sources of income and support their actions in the international arena, which will allow them to promote modern technology they use. Some tax incentives to this start-ups are important, allowing them to thrive and grow at their pace, considering the return they'll bring towards the city and its citizens. In this matter is also important to support and finance individual initiatives, like young citizens that investigate and try to scale their idea into a product

4.2. Products to install as part of demonstration components (marketable post-project)

- Broadband Infrastructure;
- Urban scale incubating services;
- Informal Business cooperative mechanisms.

4.3. Business model

REVENUES SOURCE

Use of new spaces in city; use of networking services; diversified new uses of urban structures, assets and infrastructures;

ASSETS REVALUATION

work-spaces locations; more intensive use of urban assets and services supporting those work-spaces;

OPTIMISATION EXTERNALITIES

reduced specific administrative burden; time to market saving and corresponding competitiveness gains due to enhanced collaborative support to creative businesses;

NEW BUSINESS OPPORTUNITIES

combination of local and global opportunities due to symbiotic development approach to host and shelter creative business;

OTHER POSITIVE EXTERNALITIES

CO2 emissions reduction due to reduction of commuting as city gets better prepared to benefit from new and emerging economic paradigm; better preparation to adhere to low green ICT goals; better integration of diverse urban communities; development of a better interrelated social urban tissue.

4.4. Beneficiary

- Open governance bodies
- Public services
- Entrepreneurs and businesses
- Employment seekers
- Investors
- Associations
- Buildings managers
- Housing suppliers
- Art and museums curators
- Tourists and visitors
- Immigrants and expatriates
- Students and pupils
- Elders
- City walkers
- Bicyclers
- Public transportation users
- 24. Street light managers

4.5. Promoters

- Incubator, start-up centres, co-work spaces, FabLabs and entrepreneurship parks business association
- Regional authority

- Academic institution
- Innovation cluster (ict, energy or mobility)
- Neighbouring municipalities
- Associations (sectorial trade, chamber of commerce, consumers)
- Housing cooperatives and associations
- Urban developers, housing suppliers and promoters
- 12. Mobility and transportation infrastructure managers or partnership
- 13. Ngo's and citizenship associations in areas of art, culture, environment, science and education
- 15. Social care cooperatives, social enterprises, charities
- Significant suppliers of technology, equipment, solutions and services relevant to the areas of ict, mobility, financial services, informatics and related (gis etc.), civil engineering and construction, urban management (gardens, public realm, etc.)

4.6. Solution readiness

- Glass embed Photovoltaic – TR7
- Integrated Transmission and Distribution Batteries – TR8
- Urban Turbine – TR9
- Integrated Grid Control – TR7
- Photovoltaic panel heating pump – TR9

4.7. Challenge

incentives and scale-up of small ideas; coordination and articulation of different ideas and products; articulation of work spaces with city dynamics.

5. SPACE

Governing principle, keyword: Friendly

5.1. Demonstration components (product to be installed, or pilot to be deployed)

5.1.1. Interactive street interfaces

Information, signalling, orientation and communication between the city and its citizens

The main objective of this project is to shape the urban space for better quality of life, combining a set of urban policies with a large use of ICT.

New signals of information, more attractive and legible for citizens. Communicating platforms and interfaces throughout the public space, prepared to respond to different weather conditions, that adapt by themselves to the necessities of the urban space, being interconnected with the urban control center.

In dense cities centers it is difficult to find qualified open spaces for the people usage, lacking the proportionality between the demographics and the space available to receive population flow, or even regarding the quality of the ones that exist. Therefore is important to reconsider

other type of approach regarding the built spaces and the private space that they enclose; through public and private uses, concerning the ground floor of constructed fronts of quarters, can be designed paths that go from the street, or other type of public spaces, to those private boundaries sometimes unused, transforming them in new public voids, in the interstices of the city centre. Increasing not only the quantity of public spaces, but also different qualities, with different ambiances, associating them with other uses and with housing, as well as mobility throughout the city.

Reallocation of car lanes from roads for new and different functions such as vegetation, cycling or walking paths may help achieving systemic improvements and balance the use of the street environment. Street space dedicated to cars in the periphery, expanding mobility to other modes in the city center, while also preserving traffic flows and improving safety.

It's important to enhance ground trails around the city because it is the contact that we make with the public realm. As main way and level of movement it has to be provided conditions to facilitate this paths through the city like ramps for people with disabilities, electrics streets and stairs to make people's walking easier, as public elevators to facilitate access to higher grounds and also wider sidewalks with better ground pavements.

It's important to enhance ground trails around the city because it is the contact that we make with the public realm. As main way and level of movement it has to be provided conditions to facilitate this paths through the city like ramps for people with disabilities, electrics streets and stairs to make people's walking easier, as public elevators to facilitate access to higher grounds and also wider sidewalks with better ground pavements.

Safe crosswalks and intersections; implementing audio or visual aids to crossings and intersections can reduce the boundaries posed by roads on pedestrian mobility. They are able

to increase the safety and ease of travel for those on foot, while also raising the awareness of drivers. They also make it possible for people with mobility issues or impairments to maneuver junctions independently. Auto-on pedestrian phase signals; at crowded intersections, or intersections through which many pedestrians move, the pedestrian phase should be automatically activated rather than pedestrians being required to press buttons to activate crossings. These signals are called auto-on pedestrian phase traffic signals; they automatically activate the pedestrian signal when traffic lights turn green without needing someone to press a button. They reduce wait times for pedestrians as pedestrians do not miss an opportunity to cross if they reach the intersection after the time a walk phase could start. They give pedestrians a similar level of service to motorists, public transport vehicles and cyclists who do not need to manually activate lights.

As much as technology and development are key for the smart city initiative, a proper smart city education program is the foundation. Smart cities need a skilled workforce with training and experience that is in demand to succeed and continue positive growth. A refined, smart city-focused education system aids the urban development scene and combats unemployment simultaneously. Students are frequently ill-prepared for the science-centric paths they choose, there should be innovative and technological paths that associate themselves to the necessities of the future, in terms of problems solving. It's also important to consider the school as a space of expression, that can't limit itself to a physical realm. Education should be transversal to the urban space, in a connection between the community.

Associations operate for a public benefit and may function interdependent of public services and administration. It is a voluntary, self-governing, stable and non-profit organization. Association alone determine its objectives, action programs and organizational structures and adopt internal acts concerning its activities. In other words, the association is a group of people

who decided to work together for the community. Organizations can take various statutes, their goals can be completely different. We believe that they are a very important element in shaping civil society. That is why we want to encourage our citizens to undertake various initiatives and implement them, through a form of participative proximity.

To adjust the effective use of public space, we would like to involve the local associations in its share. We plan to create a special platform that will allow to plan various events and facilitate the entire process of obtaining the necessary permits. We want to encourage citizens to use public space, so the city will be open to the many initiatives and cultural and social life will be much more interesting and active. Allowing individual expression, since the single act of permanence till bigger forms of communication, like concerts, installations, gatherings, etc.

5.1.2. Dynamic management of public realm spaces and parking lots

Drivers need parking spaces, high amount of off -street parking, a legacy of past policies to support increased commuting by car. Parking in offices and commercial parking stations attracts driving into the heart of the city where it contributes to peak hour congestion and compromises the operation of the tram and bus services. To avoid the costs of basement car parking there has also been a recent developer trend to provide this off -street parking in multi-level above ground. This is resulting in developments where up to the first 10 levels of the building are car parking, presenting a 'dead' frontage to the street and fostering a lifeless streetscape.

One of the main ideas is to introduce dynamic fees. Many existing and new city residents do not own a car. Much of the city has good to excellent public transport services and many dwellings can access shopping and full their other needs easily by walking or cycling. However, there is evidence suggesting that off -street parking in many residential areas is over-supplied, with vacancy rates in residential body corporate garages of up to 30 per cent. Parking with dynamic

fees depending on air pollution, demand, events, season, etc. allows a discouraging in the use of the private car through compensating necessities of the urban space. With sensors allowing to see the parking spot availability.

5.1.3. Urban comfort

Public well-being oriented urban service points, rest spaces, interconnection hubs, pre-installation spots and street furniture

Open space is the public owned land that's common to everyone; for recreation, nature conservation, passive outdoor enjoyment and public gatherings. This idea of public realm it's formalized through streets, public parks, gardens, reserves, waterways, publicly owned forecourts and squares; its urgent the need to potentiate those spaces as a primarily form of identity and necessity to urban life. That's the interpretation needed in the formation of a community in the city space, giving autonomy to each citizen in the public realm. A city's public spaces have been seen as symbols of collective well-being and possibility, expressions of achievement and aspiration by urban leaders and visionaries, sites of public encounter and formation of civic culture, and significant spaces of political deliberation and agonistic struggle. While urban commentators and practitioners have varied in their views on the precise detail of collective achievement across time and space, they have generally not questioned the assumption that a strong relationship exists between urban public space, civic culture, and political formation, as the quote that opens this paper clearly shows.

The city it's for everyone, therefore it should be adapted to the deft and blind, as well to other people with disabilities. Crossing the streets or knowing which way to go to reach a certain place can be an issue in big cities which are not often accessible for everyone. Help people moving around the streets independently and safely. Connecting with the application user can interact

with infrastructures choosing between several actions. A visual impaired person for example could choose to have lights brighten when he pass by streetlamps or receive audio information from digital boards. Furniture will respond according to users choice, synchronizing with his Smartphone when they pass nearby. These urban design aims to be adaptable to every user's need, modifying the ambient around him. It can help visual impaired people but also deaf people, aged people or those one who has difficulty walking, for example giving them a little extra time on green while crossing the streets and extra seats to rest. Also vibrating strips near to roads crossing, alerting deaf people for the passing sign. Or simple measures as removing poles from sidewalks, or just increasing them, attaching them to buildings, liberating the walkable floor also for people in wheelchairs.

To increase green areas in the cities through sidewalks, parks and other significant public spaces, providing shadow and better conditions for living those spaces. It's important to choose deciduous trees, for guarantee, in summer, protection of public space from direct insulation and, in winter, to take advantage of the falling leafs, letting pass the sun light. If isn't possible to grow trees on a certain space maybe it can be other type of plants; if still not it's possible to intervene in those spaces with other artificial means for shadows, like artistic interventions, in some streets which are not possible due to space or even soil.

This project is about making the city better for walking. We want to make walking the first and best way to get around the city, with more people of all ages choosing to walk more often and to more places. Achieving this bold vision means walking in the city must be convenient and accessible, safe and enjoyable. Road user hierarchy places the needs of pedestrians first, followed by bicycles, public transport users and finally, motor vehicles. It's about making our streets people places, not spaces for cars. Our walking plan lists priorities for action to improve walking paths and bike lanes and to develop incentives for non-car transport by providing car-

free streets, reducing speed limits, improving infrastructure and spaces for bikes and pedestrians as well as providing community bus services and shuttles and improving safety and enforcement. Motion is more than just mobility, it's about a general wellbeing and articulation between the citizens and the urban space.

5.2. Products to install as part of demonstration components (marketable post-project)

- Signs interfaces
- Smart Parking system
- Multifunctional urban structures

5.3. Business model

REVENUES SOURCE

Dynamic demand driven location modulated tariffing of parking and public space use to park vehicles; Revenues of temporary concession of additional public space for private community oriented initiatives; savings on parking management costs.

ASSETS REVALUATION

integration of private parking spaces public ones into a common collaborative parking management system; revaluation of local commerce and revitalization of shopping, leisure, fruition and service areas in city centre; generic revaluation of urban assets due to attractiveness generated by a more comfortable and friendly city and a communication and advertising city;

OPTIMISATION EXTERNALITIES

intelligent integration with traffic management; previous information to drivers and road infrastructure users about parking space availability; combination with public transportation system management and public (electric and conventional) bicycles availability; better identification of vehicles using public space with additional benefits for security and safety; capability of directly contacting the vehicle owner for removal, fining or other purposes. Savings in time for parking and urban services users; better accessibility to commerce and local commerce and services; Simplification of interaction between governance participants and public under a multipolar approach; increased use of public space to walk reducing the use of other means or positively competing with use of car for leisure commuting; facilitated location of new business – services and makers – in city centre by eliminating access barriers and unfair parking tariffing.

NEW BUSINESS OPPORTUNITIES

facilitated interconnection with urban services namely through dynamic tariffing related to scheduling of initiatives; services to the parked vehicles based on identification and location; use of parking spaces for car sharing services dismissing the need of dedicated spaces; Capability to interconnect to advanced mobility services; possibility of integrating new urban voids and spaces for parking uses; contents generation; new urban services that may depend on facilitated communication between city services and public; new services for walkers and bikers; children, elderly and other special assistance demanding groups dedicated services provided in better equipped public real.

OTHER POSITIVE EXTERNALITIES

CO2 emissions reduction from optimized traffic management; easier achievement of 2030 climatic goals when related to sustainable mobility and reduction of number and use of private vehicles; saving time from public and urban service providers both on communication and administrative processing; better economic efficiency due to easier interaction between city – services and business - and public; reduced used of more expansive communication means; saving walkers and drivers time as city organisation and urban orientation is improved; better safety and security as permanent and dynamic communication between city and citizens is possible.

5.4. Beneficiary

- Open governance bodies
- Public services
- Entrepreneurs and businesses
- Employment seekers
- Associations
- Public real managers
- Housing suppliers
- Social care entities
- Tourists and visitors
- Immigrants and expatriates
- Students and pupils
- Health services users
- Elders
- City walkers

- Bicyclers
- Public transportation users
- Private transportation users
- Parking users
- Environment managers
- Recycling operators
- Street light managers

5.5. Promoters

- Incubator, start-up centres, co-work spaces, FabLabs and entrepreneurship parks business association
- Innovation cluster (ict, energy or mobility)
- Significant technology partner, vendor or technology supplier company
- Neighbouring municipalities
- Associations (sectorial trade, chamber of commerce, consumers)
- Housing cooperatives and associations
- Security, safety and civil protection authorities
- Urban developers, housing suppliers and promoters
- Mobility and transportation infrastructure managers or partnership
- Ngo's and citizenship associations in areas of art, culture, environment, science and education
- Social care cooperatives, social enterprises, charities
- Significant suppliers of technology, equipment, solutions and services relevant to the areas of ict, mobility, urban equipment, buildings, transports, waste, financial services,

energy and other utilities, telecommunications, informatics and related (gis etc.), civil engineering and construction, architecture, urban management (gardens, public realm, etc.)

5.6. Solution readiness

- Signs interfaces – TR7
- Smart Parking system – TR9
- Multifunctional urban structures – TR8

5.7. Challenge

Make the use of public realm an exciting part of the modern and future urban adventure and managing it as the actual community "living room" and the common yard to be used, shared, fruited and discovered by all in a permanent urban safari-like experience.

6. CLIMATE

Governing principle, keyword: Modulating

6.1. Demonstration components (product to be installed, or pilot to be deployed)

6.1.1. Urban micro climate modulation at street scale

As concentrated hubs of people and economic activity, cities are particularly vulnerable to the impacts of climate change. But cities also have assets that can help to monitor, manage and adapt to those impacts. In that respect, ICT are playing an increasing role in the provision of novel, more sustainable and effective responses to climate change in cities. ICT can help map and reduce risk, monitor change, coordinate disaster response efforts, build capacity, involve communities, and improve the city's resilience to climatic impacts. For example, geographic information systems can be used in local hazard mapping and analysis to help identify evacuation routes and locate vulnerable housing or automated sensors that respond to weather conditions could be installed in a certain area of the public realm.

Radio, satellites, radar and Earth-observation systems are among the ICT tools available to improve urban readiness. Aerial photography, satellite imagery, grid technology and use of global positioning systems now make it possible to track gradual, long-term weather movements.

The involvement of the communities is also important. ICT can strengthen multi-stakeholder communication in any city's process of adapting to climate change. Online platform, training or blogging can contribute to the spread of knowledge. Social media can help build public awareness on key issues, support education campaigns, and foster more inclusive stakeholder discussion. People living in vulnerable areas can use smartphone to participate in collective exercises, and help identify local priorities for action or can provide ongoing feedback on risk-reduction initiatives.

Another idea is to provide livable conditions to streets or squares, acclimatizing them, through water sprinklers in the summer, for instance, or movable and removable systems to give shadow

or isolating space from rain. That ambiances can also be changed manually in case of an event, activity or other sort of specific necessity.

This measure implies a naturalization of the urban tissue, regenerating impermeable surfaces into permeable ones. The objective is to reinsert water into its natural cycle, absorbing it through the soil or green natural elements, on the ground floor or facades, for instance. It prevents the negative impact on the environment of impenetrable soils, as tar and cement. We also want to use natural and local elements and methods to replace those more aggressive to the environment and general livability of the urban space.

As part of the Smart Cities project, we also want to introduce modern irrigation system. It aims to minimize the wasting of water in public space. An example of this is the impressive use of sprinklers to water parks and other green areas irrigated. In this case must be analyzed hour run and sprinklers so that water under high does not evaporate too quickly.

We plan to develop untapped areas of the city, such as the areas between blocks or quarters. If the city will provide the area concerned citizens, they will be able to productively use their free time and serve the appearance of the area. This solution is particularly favorable for those staying retired. They planted vegetables and free access to these sites to take care of the appearance of the city. Green areas could also be made available to non-governmental organizations and neighbourhood groups.

The project is intended also to protect the purity of the soil through repeated cycles of water. The activities are expected to include methods for softening the soil in order to reintegrate a nature cycle associated with it. Such cycles will assist in purification and insertion of elements in the soil.

6.1.2. Passive urban-micro climate control

With street shadowing, snow/rain protection and warming

Modern, smart city should be aware of climate change and prepared for the risks associated with its consequences. Even now, when rising the average temperature of less than one Celsius degree, we observe a series of unprecedented phenomena: the record heat, shifting climate zones, melting glaciers, the disintegration of the ice cap of the Arctic and the ice of Antarctica, raising sea levels, thawing permafrost, storms and hurricanes, desertification, droughts, fires and floods. These changes are caused primarily by human activities. In our project, we take into account both the prevention of drastic changes and the protection of citizens against the dangers related to the adverse effects of climate change, as well an efficient adaptation to them.

In the case of flood risk, we want to increase the security of citizens and the transformation of infrastructures. For this reason, we develop a plan to reallocate people from vulnerable places, such as buildings closest to the river and unprepared to support a change of ambient. Guaranteeing the security and stability of citizens, it should be provided alternative solutions regarding the occupation of buildings that will be partial submerse, vacating the ground floor, modifying it, and re-organizing them towards a new way of using them starting from the first floor, transforming it into the street and, in this way, the public level.

Export supporting enhances economic growth, which is why we want to convince local businesses to seek new markets outside the country. We intend to show to the entrepreneurs a variety of tools, such as internet platforms, which allow them to promote their products abroad. Gaining local markets in different countries will allow the development of companies and it will promote the city itself.

We would like to convince entrepreneurs to seek unconventional marketing methods. They can look for customers and grow their business in many different ways. We want to go beyond their shops and offices and conducted activities outside of them. Businesses can conduct public workshops and demonstrations of their products and services to the people. They could also organize joint events, which not only show their position in the market, but also integrate with other entrepreneurs. Approaching the public space not only in a way of publicity and sales but also as an integrating space of shops or offices, appropriating it as a part of interior spaces.

Protection and pollution prevention is a prerequisite for proper environmental policy. Without protection, the effects of the negative impact on the environment may be irreversible or deleting them will be costly. Environmental protection is also very important part of protecting human and animal health. It also increases the attractiveness of the city and makes it become a convenient place to live and leisure. The project involves the creation of a number of solutions that will allow the detection of threats, study the causes and prevention of negative effects. In addition, it engages residents in protecting the place where they live. We want to promote aware and well informed citizenship and a sense of environmental responsibility. Active participation of citizens, including the socially excluded, unemployed, will allow for the creation of a modern civil society. Solutions for modern city also engage local entrepreneurs and show them the perks associated with the introduction of environmental protection in their companies. The project also envisages the protection of vulnerable areas, such as forests. We believe that a sustainable environment is the goal of this indispensable factor smart city.

6.2. Products to install as part of demonstration components (marketable post-project)

- Sprinklers with sensors

- Adapting interconnected structures

6.3. Business model

REVENUES SOURCE

Economically healthier higher added-value commercial and services activities in climate modulated city walkable parts with corresponding increased revenues; new taxation systems related to rebalancing public and private benefits sharing of urban climate modulation;

ASSETS REVALUATION

Local commerce due to the modulation of local micro-climate in city walkable areas; housing and accommodation assets revaluation due to the attractiveness improvement of a better climate adapted city;

OPTIMISATION EXTERNALITIES

reduction of climate chance related burden both related to citizen's health and wellness and to the use of inefficient uncoordinated compensation measures; Additional uses for climate related studies and knowledge realm available; Savings from better balanced use of public realm throughout the day and the year; better integration of other dimensions of public real control and supervision (see SPACE transformative project];

NEW BUSINESS OPPORTUNITIES

new resilient supply opportunities to replace fossil based and not adapted supply sources, namely exploiting urban embedded sources; new bicycling sharing services as city becomes

more comfortable to walk and bike due to local climate modulation and better climate adaptation.

OTHER POSITIVE EXTERNALITIES

CO2 emissions reduction due to reduced commuting, namely leisure originated as walkable parts of the city are better climate modulated and better climate change adapted;

6.4. Beneficiary

- Open governance bodies
- Entrepreneurs and businesses
- Employment seekers
- Investors
- Associations
- Public real managers
- Housing suppliers
- Social care entities
- Art and museums curators
- Tourists and visitors
- Students and pupils
- Health services users
- Elders
- City walkers
- Bicyclers
- Environment managers

- Energy investors and prosumers

6.5. Promoters

- Incubator, start-up centres, co-work spaces, FabLabs and entrepreneurship parks business association
- Regional authority
- Academic institution
- Innovation cluster (ict, energy or mobility)
- Significant technology partner, vendor or technology supplier company
- Associations (sectorial trade, chamber of commerce, consumers)
- Energy agencies, esco and dso
- Housing cooperatives and associations
- Urban developers, housing suppliers and promoters
- Ngo's and citizenship associations in areas of art, culture, environment, science and education
- Energy utilities and energy distribution cooperatives
- Social care cooperatives, social enterprises, charities
- Significant suppliers of technology, equipment, solutions and services relevant to the areas of ict, mobility, urban equipment, energy and other utilities, informatics and related (gis etc.), civil engineering and construction, architecture, urban management (gardens, public realm, etc.)

6.6. Solution readiness

- Sprinklers with sensors – TR9
- Adapting interconnected structures – TR7

6.7. Challenge

Resilient adaptation to climate changes; climate change as a solution; modulation of the urban environment.

7. WATER

Governing principle, keyword: Valuing

PROPOSAL 1. Installation of Advanced Meter Infrastructure - AMI, and Meter Data Management – MDM: Development of an automated water consumption metering system and of a remote water supply control.

At around 100 houses of Thessaloniki citizens -clients of EYATH SA, advanced metering equipment of high accuracy, will be installed (at every water meter unit). All the data collected will be sent at real time through telecommunication network, at a Collection Center for further analysis and management. The target is the 24h surveillance of the water consumption in real time, as a means of better water supply management but also of the direct informing and involvement of the citizens.

A Metering Data Management Center will be deployed. The data will be stored and transmitted to EYATH and the consumers. The Center will as well support all the desired services (Billing, Front Desk, etc) for EYATH, the service team and the citizens-clients. There will be availability of easy data interpretation and easy schematic representation for evaluation of results, peak consumption needs estimation or even irregular water consumptions and water loses. There will be technology for instant consumer's briefing (SMS & e-mail Alert for irregular water consumptions) and a Data Interface for the consumers (through Web – App).

An Internet website will be developed for the remote management of the metering data collected, for authorized users. On the same time a website will be constructed and available for the citizens-clients to have easy access to metering data on real time.

There will also be an option for water consumption profiles analysis. The possibility of developing Billing Procedures according to the consumption profiles will be studied. The employment of these different billing procedures can be evaluated by the citizens-consumers.

The citizens-clients will be thoroughly informed before the installment of the AMI and about all the project details, in order to achieve their consensus and collaboration. Special questionnaires will be delivered or will be available on-line. These will help detailed information collection and also awareness of the public about reasonable water usage and water saving.

Finally, the water saving achievements will be quantified in environmental (CO2/energy used to produced clean water) and economical terms for EYATH SA, the clients and the city.

PROPOSAL 2. EYATH Pipe network and infrastructure for Smart Services in the city.

EYATH SA can contribute with its infrastructure (pipe network) to provide a means of smart metering services network, not only for water supply and wastewater collection but furthermore for other utilities and companies (e.g. optic fibers and telecommunications etc). By this collaboration an integrated grid /system of smart ICT services can be provided to the citizens.

PROPOSAL 3. "Air conditioning" of a cultural building or entertainment kiosks at the bay of Thessaloniki.

This proposal is based on the potential to exploit the thermal content of the sewerage for the energy upgrading (cooling and heating) of public spaces and especially cultural buildings or entertainment and leisure spots. Since EYATH SA pump stations and sewerage pipes exist at the area of the White tower and through the central bay, the though is to study and design heating exchange units to be installed in specific areas in order to provide air conditioning (heating-cooling) at a cultural building (e.g. a Salle of the Royal Theater of Thessaloniki or the Reception-Entrance of the White Tower). Alternatively (or in parallel) small glass kiosks at

entertainment/youth parks or playgrounds at the bay of Thessaloniki might be air-conditioned the same way.

The results of this project will be quantified and evaluated by the energy savings through the reduction of CO2 emitted but also with a cost benefit analysis for the evaluation of the feasibility/ replicability at other regions in the city or other cities as well. These results will be available on an internet website for the information of the public, for the benefits of alternative energy resources in the city, as well as the potential applications of sewerage under the Climate Change spectrum. The results of the different services' and companies' co-operation as well as the citizens' involvement/motivation will be pointed out.

PROPOSAL 4. Renewable sources of energy through the infrastructure of EYATH SA, for exploitation at public space.

This proposal can as well be combined with the previous one or can stand alone.

Specific areas of EYATH's infrastructure (eg an aqueduct, water tank, pump stations) can be studied to install sun panels or/and small wind generators units. The energy produced can be used for the lightening of a public installation close to the premises of EYATH, eg a playground or a park. This project can improve the energy efficiency/quality of urban infrastructure and of public spaces. The results can be evaluated as described in the PROPOSAL 3.

PROPOSAL 5. Holistic urban management of rainwater and flooding prevention.

A combination of some of the following pilot scale projects can take place in co-operation with the Municipality and the University:

- Use of the thermally dried sewage sludge of Thessaloniki's WWTP for:

1) enhancing the natural growth and newly planted trees at specific areas of the peri-urban forest of Seih Souh.

2) natural interventions to upgrade the urban landscape and the micro-climate: by the creation of “natural zones” in the area of existing urban drainage ditches, at critical zones for drainage management for EYATH (where the sewerage network is combined also for rainwater).

- Co-operation with AUTH for rainwater harvesting: Collection, treatment (filtration) and reuse of rainwater from roofs and other open areas within the university campus.

- Informational campaign for the citizens to understand the impact of rainwater flooding phenomena in urban sewerage systems. Motivation for “door to door“ detachment of building drainage from the sewers.

Some of the results of this project can be estimated by the quantification /deduction of the flooding phenomena at sewers network and private properties. Also, the cooperation between different stakeholders in the city will be highlighted (EYATH, University, Municipality, citizens etc) in the framework of creating a resilient and sustainable city and towards the mitigation of the Climate Change impacts.

7.1. Demonstration components (product to be installed, or pilot to be deployed)

7.1.1. Sustainable, optimized and integrated water cycle and value chain management

Water is one of the most important topic of the DREAM project. We assume raising public awareness, through the implementation of sustainable water management, we want to promote reduced water consumption in private flats. For this purpose, we want to hold a series of educational campaigns for the public. Public places are to serve as an example of saving water. We would among other things introduce special filters that reduce the flow of water and reduce wastage.

We want to develop flood control infrastructure in the cities located in the vicinity of rivers, adaptation them to its condition. Introducing appropriate evolving solutions that can progressively adjust the specific reality that they face. Expanding infrastructures to river, and adapting the ones still in land in order to face the water level rise. This will allow a new view in the urban dynamics, as an opportunity to make a coexistence between a nature response and the daily life of the population in a new behaviour of the city near this apparent undertakings.

The premise of our project is the modernization of water treatment processes, both for municipal and industrial. Proper water treatment, which citizens use every day is necessary for their health and safety. It also provides the basis for many of the production and is very important for medicine and pharmacy. Water treatment process is carried out using various technologies, such as iron removing, filtration, disinfection and aeration. We want to introduce solutions for enhanced scrutiny of the composition of the water and effectively adapt it to the use of citizens and its reintroduction in the environment.

At this point we want to implement some solutions for impelling system for the use of water power and steam. With this solution, we use energy generated by water as a renewable energy source, we want to do this by a modern infrastructure and development system.

7.1.2. Diversified and balanced new sustainable uses of differentiated water systems (27C)

With this point, we want to make improving changes in the water draining system and create a system of underneath wells, to regulate the water level and prevent the ground level impacts. Thanks to an efficient discharge, torrential rain and a high-level water rising preventing damage and flooding in low-lying parts of the city, avoiding the degradation of infrastructures and, more important, allowing everyday routine in the urban life. With this system of reception and

direction of water it is intended to not only prevent floods or to re-establish the natural cycle but also to re-use water and to create ways of transform the ambiance of the public space in its appropriation.

Water treatment; the premise of our project is the modernization of water treatment processes, both for municipal and industrial. Proper water treatment, which citizens use every day is necessary for their health and safety. It also provides the basis for many of the production and is very important for medicine and pharmacy. Water treatment process is carried out using various technologies, such as iron removing, filtration, disinfection and aeration. We want to introduce solutions for enhanced scrutiny of the composition of the water and effectively adapt it to the use of citizens and its reintroduction in the environment.

7.1.3. To receive and redirect water, adaptation to climate change, dynamic integration on urban space

To receive and redirect water; At this point we want to make improving changes in the water draining system and create a system of underneath wells, to regulate the water level and prevent the ground level impacts. Thanks to an efficient discharge, torrential rain and a high-level water rising preventing damage and flooding in low-lying parts of the city, avoiding the degradation of infrastructures and, more important, allowing everyday routine in the urban life. With this system of reception and direction of water it is intended to not only prevent floods or to re-establish the natural cycle but also to re-use water and to create ways of transform the ambiance of the public space in its appropriation.

This measure implies a naturalization of the urban tissue, regenerating impermeable surfaces into permeable ones. The objective is to reinsert water into its natural cycle, absorbing it through the soil or green natural elements, on the ground floor or facades, for instance. It prevents the

negative impact on the environment of impenetrable soils, as tar and cement. We also want to use natural and autochthonous elements and methods to replace those more aggressive to the environment and general livability of the urban space.

7.2. Products to install as part of demonstration components (marketable post-project)

- Irrigation and consuming water system
- Filtration system
- Water cycle management

7.3. Business model

REVENUES SOURCE

Revenues from additional uses of water and value integration into water cycle;

ASSETS REVALUATION

Additional uses of water secondary piping infrastructure generating revenues and dispersing fixed costs; Integration of water and energy storage (and generation) facilities with better and combined return on investment and dispersion of maintenance costs; Better use of water storage and management facilities once better integrated with uses of public realm and openness to community and urban services.

OPTIMISATION EXTERNALITIES

Reduced administrative burden; reduced maintenance and control costs due to remote control and sensing; better integration of innovative initiatives and services;

NEW BUSINESS OPPORTUNITIES

Use of secondary water network for urban micro-climate modulation; use of water storage to be combined with energy storage facilities; use of open spaces for urban services, cultural, sportive, and leisure functions due to better integration with walkable and bicycle-based accessibility;

OTHER POSITIVE EXTERNALITIES

better adaptation to climate changes strongly contributed by new services along the water management chain; easier achievement of 2030 climatic goals; easer development of advanced open urban energy system; better public perception of water values and awareness to water value and need of preservation; revaluation of water utility leading to make profitable additional water saving solutions and technologies.

7.4. Beneficiary

- Open governance bodies
- Public services
- Investors
- Public real managers
- Housing suppliers
- Social care entities

- Art and museums curators
- Tourists and visitors
- Students and pupils
- Health services users
- Elders
- City walkers
- Bicyclers
- Environment managers
- Energy investors and prosumers

7.5. Promoters

- Incubator, start-up centres, co-work spaces, FabLabs and entrepreneurship parks business association
- Regional authority
- Innovation cluster (ict, energy or mobility)
- Significant technology partner, vendor or technology supplier company
- Neighbouring municipalities
- Urban developers, housing suppliers and promoters
- Ngo's and citizenship associations in areas of art, culture, environment, science and education
- Significant suppliers of technology, equipment, solutions and services relevant to the areas of ICT, urban equipment, buildings, financial services, energy and other utilities, telecommunications, informatics and related (GIS etc.), civil engineering and construction, architecture, urban management (gardens, public realm, etc.)

7.6. Solution readiness

- Irrigation and consuming water system – TR9
- Filtration system – TR7
- Water cycle management system – TR8

7.7. Challenge

Resource conservation; Water natural cycle reintegration.

8. KNOWLEDGE

Governing principle, keyword: Innovating

8.1. Demonstration components (product to be installed, or pilot to be deployed)

8.1.1. Open and virtualized urban information

Accessible data and materials

Digital libraries have new societal benefits: one is elimination of the time and space constraints of traditional libraries. Unlike libraries that occupy buildings accessible only to those who walk through their doors, digital libraries reside on inter-networked data storage and computing systems that can be accessed by people located anywhere in the world. When the full potential

of a digital library is realized for a particular community, people shall be able to access all human knowledge hosted in that digital database from any location. Digital libraries that are accessible over the Internet provide opportunities to advance knowledge and to dramatically improve the quality of life. Open access to knowledge is an innovative mode of scholarly communication within the digital environment. It is aimed at achieving universal access to information and knowledge. While open access helps digital inclusion of citizens in developing countries by bringing within easy reach full-text contents of scholarly works, documentary heritage collections and development-related literature, the digital library remains a knowledge repository of such citizens, indigenous people, communities and institutions. To take this knowledge sharing to the public space also allows a communal participation and interaction not only with the city itself but between citizens.

- We want to involve the citizens in the promotion of culture of the region. Those who do not work or are already retired can work together with museums and other institutions, giving a proximity approach, integrating the community. Thanks to this cooperation, they can take visitors beyond the walls of museums and show them the places in the city, which will complement the exhibitions. In this way share with other people the city, its culture and history. Visitors will have an opportunity to know places of particular importance for its citizens, and how innovative technology take part in their culture and life. Such information present in travel information will be a memorable and interesting lesson in the history and customs of the region.

- Integrated association between museums, research centers and universities with the citizens. People can approach this Laboratory in order to solve or propose a solution to a certain urban problem; participating and cooperating directly with the innovative and

technological means, as well as qualified human resources. This idea can generate a certain product, replicable and with a specific economic value.

- We want to combine the various cultural institutions. Thanks to a special platform, they will be able to connect events with similar themes and cooperate. Events will be more interesting for visitors and more varied. Museums and other cultural institutions will also be able in this way to better promote their events and reach more visitors, articulating art and science, combining and complementing offer. We want citizens to be able to experience its impact in everyday life, on the streets, squares and other public places. We want to take care of proper communication between the institutions so they could share resources they have. It is also important to promote such events and exhibitions, we want to use unconventional and diverse methods of contact with citizens.

- Tourism is an important source of income for the city and its residents. We want to develop the technical infrastructure that will facilitate the movement of tourists within the cities and expose the most attractive places. For a technical mean all measures that enable tourism in a place such as accommodation, meals, tour operators, brokers and travel agents, arts and entertainment activities, including the programs in libraries, archives, museums and other cultural manifestations and sports, entertainment and recreation in general. We want the city to encourage active and creative methods of relaxation and let tourists know as much as possible the culture and customs of the city as well as possible, to preserve the best memories and thereby promote the city covered by the project beyond its borders.

8.1.2. Integrated collaborative platform

For urban creative, sustainable and resilient culture

Integrated association between museums, research centers and universities with the citizens. People can approach this Laboratory in order to solve or propose a solution to a certain urban problem; participating and cooperating directly with the innovative and technological means, as well as qualified human resources. This idea can generate a certain product, replicable and with a specific economic value.

- Open platform for participation of museums, research centres, academic, educational and cultural institutions and facilities and cooperative, co-creative and associative citizens' initiatives.

- We would like to increase the participation of people in the museum experience, exploring their feelings and emotions, as well as their interest and innovation capability. Increased means of expression may be, for example 3D technology. Imagine the picture presented in 3D technology and people who may find themselves inside to experience every detail in a completely different dimension. We want to make culture more attractive in order to attract people and inspire them. We want to intensify their relation with what they see making it even more attractive and inspiring. People would not be just passive observers, but they could find themselves emerged in their curiosity.

- To connect the museums and make them able to combine thematic paths through the city, observing the reflection of what they've seen within an urban experience. We want to create effective collaboration, through which visitors will gain new opportunities of learning, seeing an effective integration of investigation and innovation in a concrete product and application. In this way it could be crossed historical and artistic routes, viewing the city as a museum, with technological and science innovation throughout the urban space getting to understand and live the "present history" and its influence in the society.

- We also want to develop curiosity of children by organizing special meetings in schools. Representatives of the museums will be preparing a special program for children, in which they will present history in an interesting way for the little ones. It will not be boring lecture, but a meeting in which children will be able to participate actively. By doing so we want to encourage children to visit museums and learning. Such meetings may take place in relation to the lessons which students are studying in that specific period of time, relating school programs with their cities trough museums and other spaces of learning. In this way not only we'd be breaking the physical barriers of the museums but as well of schools.

- A very important point of our project is the protection of cultural heritage. We want to protect not only the most famous objects in the city, but also those less known, which so far are not covered by adequate protection. History is made not only from the constructed landmarks but also from the urban tissue that was established during the years. This may be a small part of the culture and history of the region. Also the non-material elements have a great social impact on the city, things related with knowledge and innovation. We believe that even such cultural artifacts form the identity of the local community.

- The project involves increasing the influence of culture on society. That is why we want to promote art beyond art galleries and other cultural institutions. We want citizens to be able to experience its impact in everyday life, on the streets, squares and other public places. We want to take care of proper communication between the institutions so they could share resources they have. It is also important to promote such events and exhibitions, we want to use unconventional and diverse methods of contact with citizens. Giving, in this way, support to artists or researchers to express themselves and share their knowledge, know-how and vision through the city space.

- Museums are an integral part of society, its history and identity; that is why we want to support the institutions encouraging citizens to participate in the cultural life of the city, where the heritage value also defines the identity and affection that the population share with their home, their street and, therefore, their own city. By supporting this ways of interpretation and communication, through art and science, we want to integrate society and give them the opening to use their leisure time as an opportunity of self-expression, in the idea of participation and inclusion, forming a cohesive community. The challenge it's the articulation between the conception of the urban realm and the integration of the space of the Museum in it, maintaining its purpose related with the contemporary experience of the present, in a modern individual expression, and with the intense reality of the past, assembling cultural values related with cities and its citizens. It's essential to relate residents with their history and culture, as well as with science and innovation, creating a space for information and learning, not only for citizens but for tourists and visitors as well, relating how they look to the city and how it's a reflection of them and their way of living the public space.

8.1.3. Fostering urban culture

An evolving, shared, open, integrated, community oriented ideology

We want to improve the approach to immigration in a way that best suits the their needs, the established community and the general wellbeing of living and economy. We want to have a workplace which supports employers and their immigrant employees who need to play a meaningful role in our economic growth. We want to improve settlement services access. Integration it's a main concern regarding this subject; its necessary to see immigration as an

opportunity, not only to receive people in need but to potentiate their arrival, in a communal share of culture, strengthening the community established in the city.

Leaving the familiar behind and plunging into the unknown shows a commitment to understanding other people and cultures and a commitment to learning about the world in a way that books, school assignments, and a professional career can never reveal. Increase mutual understanding between the people of one country and the people of other countries by means of educational and cultural exchanges. The purposes of this Program is to provide county's or city's college and university students, recent graduates and young professionals with opportunities to cross knowledge interacting with foreign people with different approaches and experiences from their culture and values, sharing them. During this program people can join volunteering, teaching the local language, seasonal employment or career training and internships.

Adding an intergenerational component to environmental education programs enriches the learning experience for participants of all ages, including foreign people. Multi-generational approaches to environmental education aim to include or accommodate different generations in an approach that seeks to promote dialogue, collaborative learning, and mutual understanding. Across the globe, intergenerational environmental education programs are being implemented in diverse urban settings, including schools, parks, urban gardens, and community and environmental centers. The one most important, in this mater, it's the relation inside families, where younger foreign people can insert the new cultural and knowledge dynamics in the most elderly part of the family, assuring their integration as well.

The growing number of immigrants in the workforce poses challenges in an economy in which high levels of education and technical skills are increasingly in demand. Focus on English-language training; the high-road employers that engage in immigrant integration; the need to

educate employers on the benefits of these practices; the employers' unwillingness to invest in temporary workers; the need for skills and its relationship to employer engagement in immigrant integration; and the employer practices within the diversity and inclusion paradigm. Taking advantage of skilled work force that can contribute towards a more solid and complete demand to the labor market, engaging economy.

Cultural awareness becomes central when we have to interact with people from other cultures. People see, interpret and evaluate things in a different way. What is considered an appropriate behavior in one culture is frequently inappropriate in another one. Misunderstandings arise when I use my meanings to make sense of your reality. Tailored option whereby we design, develop and deliver a training course on culture that is centered on your specific needs. Its needed to develop awareness initiatives and programs to integrate foreign population and to the established community can receive, with more information, the cultural impute of foreign citizens.

For education to have more innovative topics that it teach about, directing programs towards technology, avoiding unemployment generated from the excess of graduates in other areas. Equilibrating the balance towards technological areas, were more workforce is needed.

Enhance opportunities to attract interest in foreign youth to study in the city and establish there, through research and global partnerships to strengthen city's growth as an innovation and production center, moving the economy. Create and bring together the expanding array of international programs and activities for increased synergy and visibility. Providing interactive space for many programs now isolated around the city. Also allowing the allocation of city students in programs abroad, completing their formation, returning and participating actively with new knowledge in the city's future.

Community education refers to adult education and learning, generally outside the formal education sector, which aims to enhance learning, empower people and contribute to society. It promotes personalized learning and flexibility within the learning group. Participants are involved as equal partners in identifying needs, designing and implementing programs, and adapting them on an ongoing basis. The goals of the community education sector include not just individual development but also community advancement, especially in marginalized communities. A key feature of community education programs is that they provide the supports necessary for successful access and learning, particularly guidance, mentoring, continuous feedback and childcare.

Engagement is an ambiguous term, poorly defined and difficult to measure. Engagement is not simply about good classroom behaviour or attendance, but a connection with learning. Behavioural engagement refers to students' participation in learning and classroom activities. This includes adhering to behaviour rules, attending lessons as required and arriving at classes on time. Importantly, behavioural engagement refers to the learning behaviours that are important for high student performance, which may include collaboration and communication with peers. It also covers student participation in other aspects of school life, such as extracurricular activities and school social life, extrapolating these initiatives to the urban space, including the community.

Establish regular, meaningful communication between home and school, promote and support parenting skills, encourage active parent participation in student learning, welcome parents as volunteer partners in schools, invite parents to act as full partners in making school decisions that affect children and families, reach out to the community for resources to strengthen schools.

8.2. Products to install as part of demonstration components (marketable post-project)

- Open Urban Library
- Smart Labs
- Cultural Interface

8.3. Business model

REVENUES SOURCE

Professional and business oriented use of unmaterial heritage of the city; Third party use of knowledge, modelling, tools and data generated along the project development; Cost savings by using better model/based decision support systems;

ASSETS REVALUATION

Better use of city cultural, scientific and technological heritage assets; better combinatory innovation and cross-sectoral interchange; better convergence of distinctly owned knowledge-basis once oriented to common goals and urban innovation objectives; better use of data to be sourced out during the project development; more extensive, diversified and value-added use of several interfaces for knowledge sharing and generation.

OPTIMISATION EXTERNALITIES

City management, design, decision, planning, strategic design process optimization and simplification due to better access, distribution and use of knowledge; time and cost reduction of private and public collaborative and cooperative interventions in urban space due to better

information and instruction; effective support to innovation on planning, investment, partnership and strategy decision making from all parties and stakeholders intervening in city governance;

NEW BUSINESS OPPORTUNITIES

All range of knowledge-based business that benefit from easier access to data, modelling and knowledge; scientific research, technologic development, innovation demonstration, new product validation opportunities based on data and knowledge generated and provided, namely on fields of artificial intelligence for optimal integrated management of critical urban systems;

OTHER POSITIVE EXTERNALITIES

Better instructed and adapted regulation; more audacious CO2 emissions reduction targets, namely focused on realizing the 100% renewables supply, zero-wastes economy, full social integration and equal access to intellectual capital; decisive contribution for European industrial global leadership on all city, sustainability and resilience related topics.

8.4. Beneficiary

- Open governance bodies
- Entrepreneurs and businesses
- Employment seekers
- Associations
- Housing suppliers
- Social care entities

- Art and museums curators
- Tourists and visitors
- Immigrants and expatriates
- Students and pupils
- Elders
- City walkers
- Bicyclers
- Public transportation users

8.5. Promoters

- Incubator, start-up centres, co-work spaces, FabLabs and entrepreneurship parks business association
- Regional authority
- Academic institution
- Innovation cluster (ict, energy or mobility)
- Neighbouring municipalities
- Associations (sectorial trade, chamber of commerce, consumers)
- Security, safety and civil protection authorities
- Urban developers, housing suppliers and promoters
- Mobility and transportation infrastructure managers or partnership
- Ngo's and citizenship associations in areas of art, culture, environment, science and education
- Social care cooperatives, social enterprises, charities

8.6. Solution readiness

- Open Urban Library
- Smart Labs
- Cultural Interface

8.7. Challenge

Proximity and participation of citizens in innovative solutions for the city; open and accessible knowledge; dissemination interfaces through public space.

9. PEOPLE

Governing principle, keyword: Enabling

9.1. Demonstration components (product to be installed, or pilot to be deployed)

9.1.1. Cooperative management of the urban community realm

Initiating sustainability activities without listening to community concerns and aspirations is an unsfuccessful decision and it is fundamental to empower residents, especially youth generation, to invest in their community by involving them in the improvement process. Youth are a precious resource, offering a first-hand perspective on the strengths and weaknesses of the community.

Residents can help to analyze the specific needs of the community they take part, and to ensure that sustainability projects are properly designed to meet those specific needs. Therefore, this transformative project considers the involvement of all citizens in democratic processes as a priority.

To build an inclusive and democratic governance and to engage and empower individuals as active citizens, several type of involvement projects could be encouraged and implemented such as the creation of democratic spaces in neighborhoods, schools or other setting, and democratic and innovative spaces online aimed to inform and educate citizens, to build a strong sense of community, to improve the power of the citizens and to ensure a long-term impact on the local economy contributing to the sustainable beneficial development of the community and the urban environment.

Informed community members can be a meaningful part of a project's decision-making process and will be more likely to support a project in which they provided input. Community stakeholders can be involved in several ways, such as comprehensive appraisal processes, crowdsourcing, informal discussions, planning workshops and focus groups.

A sustainable strategy of community inclusion, by promoting these activities, allows citizens to promote ideas about the urban environment and facilitates the community engagement in city planning and land use decisions.

9.1.2. Adaptive city to match the demand of all's needs

A key challenge that cities have to face is to anticipate and to provide necessary services or infrastructure to meet the increasing and continuously evolving needs of citizens. Therefore, an adaptive city should be an infrastructure able to connect and to support all aspects of urban life.

To this end, it is crucial to support and maintain an open dialog on people and community's needs.

Preparing the city to cope with all diverse and specific demands is another priorities of the project, especially for those more in need of support and protection: disable, less enabled, sensorial unpaired citizens, recent mothers, children, elders, and others is the objective of this implementation component.

Social care allows overcoming difficult situations to those who are unable to overcome their own, using their own powers, resources and capabilities. Social care support them in their efforts to meet the needs and enables them to live in appropriate conditions. The task of social assistance is the prevention of difficult life situations by taking measures aimed at empowerment of individuals and families, and their integration with the city environment. By many programs we would like to support citizens and make their chances of equal development. We want to reach people excluded by society to work on the integration and mutual understanding. This also includes a global consideration of what is society and all community problems associated with the public realm.

We want to take steps to help citizens who are faced with different problems. As a result of this we want to support people in difficult circumstances, families and the elderly. Financial and mental support of public institutions is to bring them a sense of stability and security and at the same time encourage them to take action to improve their situation. To achieve this, we want to offer citizens a platform through which they can inform others about their problems and needs. For example, older people who need help will be able in this way to ask for the support of young people. We want to give the public a tool that helps them to contacts and common search for effective solutions.

We want to use the Internet platform as a tool by which we will know the needs and problems of society. The platform will allow us to express concerns with many aspects of life in society. Our aim is to bring associations to public, organizing and articulating them, to maximize the response to the city needs. We need tools that will show us the best extent the expectations of citizens and areas that are the most important to them. Within the platform, we will enable the inhabitants of mutual assistance in everyday life.

An adaptive city use technology to connect people and services and can make city life easier for resident, shifting resources according to demand. The ITC have a core role, a reliable connection to the internet to empower and to transform every public service to an online service. Such infrastructure will promote and improve connected solution for people's needs.

We want to promote the development of smart city pilot projects in cooperation among cities and R&D institutions to improve citizens' quality of life, such as E-learning and E-health platforms, culture informations centres and services etc.

By implementing the Smart Cities project, we also would like to integrate the society, educate people and fight with stereotypes. That is why we want to work with people socially excluded, young people from difficult families, immigrants. Our aim is to bring them to the rest of society. Promoting proximity programs we achieve to integrate and strengthen the cohesion of the community. We aspire to a common understanding and consistent coexistence. We want to involve citizens from all walks of life and build a consensus between them. To achieve this we would like to organize events to promote good practices, integrating society, increasing the curiosity and sensitivity to other people's characteristics, interests and needs and problems.

The project involves the development of pro-social attitudes and responding to unwanted and dangerous situations. We want to promote social awareness and sensitivity to the citizens not

passed indifferent to such phenomena as violence in families. For this purpose, we want to carry out promotional and educational events. Citizens, who are aware of the dangers that surround them will be able to react to them in a proper way and take care of their safety.

The Elders will use their independence, collective experience and influence to work for peace, poverty eradication, a sustainable planet, justice and human rights; becoming a force of balance in the stability of communities. Working both publicly and through private diplomacy, they will engage with leaders and civil society at all levels to resolve conflict and address its root causes, to challenge injustice, and to promote ethical leadership and good governance. We want also to introduce online services and platforms for emotional care and social inclusion connecting older people with family, friends and healthcare services.

9.1.3. Dynamic Urban Space Appropriation

Better, dynamic, adapted participated regulation, information and enforcement

People and community have a pivotal role in smart city strategy, not only because they are the main addressees of smart initiatives, but also because their involvement and participation is required for a success of a smart city initiatives and projects. However, some challenges need to be faced such as the less attention to the role of governance and the less interest in the active role of citizens in smart city programs, both from people and government perspectives.

To this end, it is important to identify citizen participation typologies and initiatives. Following the bottom-up principle, the government should encourage, implement and enforce the role of citizens, promoting their involvement and participation in smart city planning.

The aim of our project is to evolve the citizens' role in smart city governance from a passive role in which people are involved in the governance process only by receiving informations to an inclusive and participating governance model in which citizens' involvement is based on technology platforms, learning, knowledge, sharing and inclusion principles.

The ICT platform is one the best tool to bridge the current gap between the government and citizens. E-platforms will involve the residents in the decision-making process of the city's affairs. The law aims to establish basic e-government norms which will be able to help overcome the major obstacles created by the formal requirements of administrative law. It thus opens up the possibility of carrying out all business processes entirely electronically and offering these processes to the public and business in an easier, simpler and more cost-effective way.

Also, the project will improve the methods by which Government information, including information on the Internet, is organized, preserved, and made accessible to the public. Regarding laws and directives that need to be simplified and exposed online for a quick and easy access by the citizen.

Using government platform, we can allowed audience to vote online which reduces the overpopulated voting areas and mitigates the abstention of participation, permitting time coordination for the citizen and overcoming physical and mobility issues, assuring an individual right in democracy.

9.1.4. Intercommunity dialog sharing

Sharing, expressing, fruiting, presenting and awarding population deeds, ideas and creations

The role of the human capital in smart city development is another key element. Citizens' inputs are a critical resource for policy-making, and a good decision-making process requires the knowledge, experiences, views and values of the people.

A smart city, in fact, requires smart citizens and that means well informed and engaged people which are seen as a important resources. Participation in projects supporting activities is therefore fundamental.

Developing smart city labs, initiatives and workshop which serve as a interaction points between local government and the community, asking citizens to became active resources by providing their own ideas to improve community's quality of life, generating creativity, innovation and diversity and being inclusive, innovative and sustainable.

People will be engaged through several platforms and could be able to participate actively to the development of the city. E-platform, tools and apps can be created to allow citizens to contribute proactively to the city by sharing their ideas, spreading project proposals for a city improvement or starting petitions on conservation and transformation of their neighborhood, unused urban areas or parks.

One of the premises of our project is also to increase the influence of associations and other public benefit organizations. We would like to have greater responsibility and be able to introduce their own initiatives to the public. Through population organizations or associations, in fact, it can be created an informal system of participation regarding the interests of the public spaces; like repairs and improvements etc. It also can provide indications to the assist of the population, not only medical but also domestic attendance. It can be supported by a platform where everyone can participate, contributing in changing our society, culture, and urban space.

Society participation and co-creation of public services is crucial in smart city decision-making process and face-to-face interaction and transfer of information through digital networks are fundamental to spread the process of innovation.

9.2. Products to install as part of demonstration components (marketable post-project)

- Urban Services Platform
- Motion sensors, floor strips and electronic warning for disabled
- Interconnectivity Urban Interface
- Deeds Network

9.3. Business model sustainability

REVENUES SOURCE

Extended public sources, fees of new uses of public realm;

ASSETS REVALUATION

Generic value of city assets due to increased attractiveness; revaluation of privately owned urban voids due to benefits of integrated management once adhered;

OPTIMISATION EXTERNALITIES

Savings from integration and automation of public realm management; Scale-up effects of more extended, diversified and qualified use of public realm; better safety, security and related protection and recovery costs reduction;

NEW BUSINESS OPPORTUNITIES

Community and visitors oriented activities in public realm; new creative, artistic, leisure and share activities using inner urban spaces;

OTHER POSITIVE EXTERNALITIES

CO2 emissions reduction due to reduction of leisure commuting; energy consumption reduction due to extended use of remote management; continued development of city image, identity and culture with corresponding projection related benefits.

9.4. Beneficiaries

- Open governance bodies
- Public services
- Entrepreneurs and businesses
- Employment seekers
- Associations
- Public real managers
- Housing suppliers
- Social care entities
- Art and museums curators

- Tourists and visitors
- Immigrants and expatriates
- Students and pupils
- Health services users
- Elders
- City walkers
- Bicyclers
- Public transportation users
- 24. Street light managers

9.5. Promoters

- Incubator, start-up centres, co-work spaces, FabLabs and entrepreneurship parks business association
- Academic institution
- Innovation cluster (ict, energy or mobility)
- Significant technology partner, vendor or technology supplier company
- Associations (sectorial trade, chamber of commerce, consumers)
- Urban developers, housing suppliers and promoters
- 13. Ngo's and citizenship associations in areas of art, culture, environment, science and education
- Social care cooperatives, social enterprises, charities
- Significant suppliers of technology, equipment, solutions and services relevant to the areas of ict, mobility, urban equipment, transports, telecommunications, informatics

and related (gis etc.), civil engineering and construction, architecture, urban management (gardens, public realm, etc.)

9.6. Challenge

Participation promoting inclusion; urban space for all, equality.

10. HOUSING

Governing principle, keyword: Diversity

10.1. Demonstration components (product to be installed, or pilot to be deployed)

10.1.1. Efficient block level integrated community shared supply

Storage and demand side integrated management of lighting, power, cold and heat

Energy-efficient lighting design focuses on methods and materials that improve both quality and efficiency of lighting. Keep in mind that more light is not necessarily better. Human visual performance depends on light quality as well as quantity. Match the amount and quality of light to the performed function. Install task lights where needed and reduce ambient light elsewhere.

Use energy-efficient lighting components, controls, and systems. Maximizing the use of day lighting.

Housing for everyone; that's the first principle regarding this measure. We must change housing paradigm, allowing different forms of renting and adaptive ownership models. Allowing different forms of housing offer and demand, that don't rely in the established market; providing different solutions for everyone. Making housing work more efficiently is one important solution part for existing cities, especially with the use of smart infrastructures and innovative systems. There is still a compelling business case to be made for smart rebuilding, or regeneration, of existing cityscapes, using smart technology and sustainable building materials and constructing denser housing nodes, which can give a kick start to the housing construction industry and revivify economic activity in deprived areas of towns and cities.

More and more people move to urban areas, cities face ever more economic and environmental challenges, including resource constraints, economic restructuring, aging populations, and pressures on public finances. In their efforts to accommodate growing urban populations and the accompanying challenges, governments can use modern information and communication technologies to create and adapt smart buildings, improving the quality and interactivity of urban services while reducing costs and ensuring sustainability.

Evaluating the condition of structure is area subset of professional engineering practice within the field of structural engineering. We want to optimize buildings energy efficiency and indoor environmental quality. A methodology to optimize the insulation thickness of the external walls and roof on building performance considering the following objectives: the minimization of the annual heating load; the minimization of the discomfort in the rooms due to overheating; and the minimization of the cycle cost of retrofitting external walls and roof.

10.1.2. Rebalanced housing and accommodation offer and demand

Establish a network of service providers working in rooming houses to share information and improve service access and delivery. Share knowledge of trends with community organizations, businesses, traders, churches and philanthropic groups to develop new initiatives. Develop a database of corporate and community groups that have an interest in addressing homelessness to ensure they have an opportunity to share their knowledge and resources to develop projects and initiatives which create pathways out of homelessness. Work with city partners to develop an education campaign and online information to assist the general public to make informed choices about how they can volunteer, donate or assist those who are homeless. Work with our recreation facilities, community hubs and libraries to ensure that people experiencing homelessness are welcomed, included and supported. Work with our youth service providers to link and support young people into youth specific development and training opportunities to improve their chances of being employed. Solving this problem don't rely in giving houses but integrate each citizen, in a way that they can stabilize their own life, and having a flexible housing market, that can adapt to what each person can afford.

Reducing offer gaps and unbalances related to occupation duration expectancy

Its needed to arrange solutions for young people housing, not only temporary ones, but a range of solutions that the private market can't assure. Public housing development its essential in this matter, providing parallel housing markets that can support rehabilitation of city centers, avoiding phenomena like gentrification, populating it with young people, bringing new dynamics to the urban space. Also housings that don't rely in the traditional renting or acquisition system; buildings that can integrate a community support system, communal houses for sharing, or incentives to appropriation of vacant houses throughout the city. When renting a deposit (equivalent to 4 - 6 weeks rent) and a month's rent in advance will usually be required.

Houses are for everyone, so some of them need to be adapted to everyone, considering possible limitations. People should maintain a power of choice over the place they want to live, independent of their needs. Straight ground level floor entrances, with appropriate doors and halls. Providing the possibility of houses on the street level, creating a direct associations between housing space and urban realm, preventing, as well, emergency situations or just direct and easy access between home and street. Have escalator chairs in the houses which will help them to feel less dependent on other people also have most of the support facilities on the ground floor.

Social housing is accommodation let at low rents to those most in need of a stable, affordable home. The objectives for this measure are that we want to give councils the resources, incentives and flexibility they need to manage their own housing stock for the long term and to improve quality and efficiency also to give tenants the information they need to hold their landlord to account, by creating a clear relationship between the rent a landlord collects and the services they provide. Therefore a construction improvement is needed; through the use of new materials like insulated panels, from renewable resources or vacuum thermal ones, even new forms of walls coating or window and doors frame and materials.

It's needed to facilitate more direct and informal occupation. Considering and allowing different types of housing needs; since temporary to permanent. That can include services or small shops, associating them to homes. Homes that can also contemplate spaces for work. Taking this into account its necessary to rethink the housing market, and the laws that support it, conceding to the different citizens necessities.

10.1.3. Building block-level nature, environment, comfort and water sustainable management

To collect rain water trough the roofs, plain, sloped or even green ones, conducting the water through the building, storing it in the ground floors or attics, and with the help of a pump system reuse that pluvial water for toilets or other uses. Associated with green roofs, it can be naturally filtered and save resources in the water cycle exploitation.

The innovation speed associated with technology make older house equipments to become obsolete in a certain time, making it impossible to upgrade them. Incentives to recycle those equipments giving ways to the citizens easily afford new and more efficient products. Modernization has to be cost-effective and have a minimal impact in familiar finance disruption. Improve building equipment modernization taking in account performance, safety and reliability. Making homes more environmentally and economically friendly.

10.1.4. Protective and sustainable building-city interconnection management

CCTV outside the houses, which would help to monitor who is coming outside and inside the building. Security alarms in the windows which will help fight against thieves entering from the windows. Have a button that when its pressed the nearest police departments will be able to see an alert and the police will have the access CCTV installed in the building in case of robbery.

Having installed motion sensors in the rooms to detect movement will help to reduce consumption of electricity, activating in some points just presence lights. Sensors for water consumption, giving different pressures for different uses, regulating water circulation. Also heating that can be adjusted and programmed shutting off when no one is inside.

Home Care Assistance takes pride in providing the highest level of care for clients. Entire team, including care managers, is on call 24/7 for clients' needs. You can always reach Care Assistance if there's a concern, an emergency or an urgent need for additional care. Care Assistance is

available for regular home visits, family updates, and in-home care assessments. This service can also be connected to a platform were family members or friends know if something is needed in some time of emergency or simply a doubt.

Outdoor spaces and public buildings have to be pleasant, clean, secure and physically accessible. Therefore assistance to visual and hearing problems is a necessity. Replace street name plates with signs that have larger font sizes. Ensure buildings and outdoor spaces are accessible for seniors of all abilities. Ground level floors routes and paths. Managing to assure a high level of autonomy throughout the city.

Promote well living and well driving workshops for seniors. Provide parks and outdoor spaces that support healthy and active living. Associating sports with group activities can be the best solution for a sedentary lifestyle and, therefore, a faster degradation of wellbeing.

City can provide information on seniors' issues such as transportation, by providing links to useful resources and connecting seniors and their families with service providers. Also connection to home devices and equipments, noting through sensors if the water is running, or the heater is on, the stove, etc, preventing accidents or alerting for some in the moment emergency.

Upgrading equipment has more benefits than simply saving money rather than buying a new machine. To modernize buildings using all latest, most efficient and leasing rates, improve occupancy and leasing rates. Modernization has to be cost-effective and minimal building disruption. Improve building equipment modernization performance, safety and reliability. Make buildings more environmentally and economically friendly. Infrastructures like gas, water, heat, etc.

The benefits, as they relate to water, are straightforward: for the building owner, it's a storm water management tool; for the community, it reduces storm water runoff, therefore indirect redirection; and for the environment, it prevents combined sewer overflow, neutralizes the acid rain effect and removes nitrogen pollution from the rainwater. The concept of sustainable drainage makes perfect sense. As part of environmental initiatives the recommendation is that impermeable surfaces be replaced with permeable materials such as grass and gardens. This will allow the rainwater to drain into the soil. The process, known as infiltration, also serves to sustain the plant life. This can be applied not only on rooftops but also in the facades of the buildings, with green walls or artificialization of certain materials.

Energy, waste and water utilities. Social spaces; neighbourhood.

10.2. Products to install as part of demonstration components (marketable post-project)

- Interactive building interface
- Adaptive ownership models
- Rain collector interconnected with delivery pump
- Interconnection interface for safety, environment management and nearby public realm management
- Insulated heat renewable panels interconnect with common storage systems and with passive systems
- Dedicated cost-effective sensors

10.3. Business model

REVENUES SOURCE

Revenues of embedded power and heat generation; Savings of energy demand optimization; savings due to dynamic tariffing associated to storage (due to better balance between supply and demand);

ASSETS REVALUATION

Buildings and housing benefiting of shared energy services available at block scale and reduced energy consumption:

OPTIMISATION EXTERNALITIES

Better balance of grid; new options for renewables integration and corresponding cost reduction; administrative cost reduction; reduction of optimal scale for investment on energy assets and corresponding project-financing;

NEW BUSINESS OPPORTUNITIES

Integrated block-based energy services for heat and power;

OTHER POSITIVE EXTERNALITIES

CO2 emissions reduction; energy cost reductions; easier achievement of 2030 climatic goals.

10.4. Beneficiary

- Public services

- Employment seekers
- Investors
- Public real managers
- Buildings managers
- Housing suppliers
- Social care entities
- 13. Immigrants and expatriates
- Health services users
- Elders
- Bicyclers
- Parking users
- Environment managers
- Recycling operators
- Street light managers
- Energy investors and prosumers

10.5. Promoters

- Regional authority
- Innovation cluster (ict, energy or mobility)
- Significant technology partner, vendor or technology supplier company
- Neighbouring municipalities
- Energy agencies, esco and dso
- Housing cooperatives and associations
- Security, safety and civil protection authorities

- Urban developers, housing suppliers and promoters
- Mobility and transportation infrastructure managers or partnership
- Ngo's and citizenship associations in areas of art, culture, environment, science and education
- Energy utilities and energy distribution cooperatives
- Social care cooperatives, social enterprises, charities
- Significant suppliers of technology, equipment, solutions and services relevant to the areas of ict, buildings, waste, financial services, energy and other utilities, telecommunications, informatics and related (gis, etc.), civil engineering and construction, architecture.

10.6. Solution readiness

- Interactive building interface – TR9
- Adaptive ownership collaborative models – TR7
- Rain collector interconnected with public collection and delivery system – TR8
- Interconnection interface for safety, environment management and nearby public realm management – TR9
- Insulated heat renewable panels interconnect with common storage systems and with passive systems – TR9
- Dedicated cost-effective sensors – TR7

10.7. Challenge

Property ownership as an asset; reutilization of renewable resources; housing for all.

11. WASTE

Governing principle, keyword: Circulating

11.1. Demonstration components (product to be installed, or pilot to be deployed)

11.1.1. Sustainable, automated, clean solutions urban waste management cycle

We have developed a specific plan for the collection and management of waste. Collection of waste, which cannot be recycled in a black rubbish bin will take place once every two weeks, other waste that are segregated, once a week. We also plan to enter accurate information for citizens about waste segregation and collect them. Sustainable waste management policy is to create the optimal recovery system resources by engaging citizens and providing them with all necessary information. Waste from reception will be recycled to recover the maximum amount of resources.

We want to implement more specialized partition of garbage, which go beyond the existing scheme. Separating natural garbage, especially food, into three separate areas of reuse or reintegration. One, more related specially with restaurants, small commerce and markets, avoiding food waste, redirecting it to social organizations and associations. The second, providing the separation of elements ready for composting, evading the home made ones, being picket by the grid of waste collectors. And, third, allowing the production of biomass, reducing taxes or even sell it, encouraging citizens for that measure. Making this more concrete waste separation will allow not only a more social awareness, as well an environment and economy direct participation.

Household item collection is a project that will help reduce bulky waste. After notification by the locals received will be used furniture and household appliances such as dishwashers, refrigerators, mattresses, and electronic equipment. We also intend to introduce a system of transmitting continuously efficient appliances and furniture in good condition for public benefit organizations; allowing its restoration and reuse.

Project include implementation of waste sensors and the development of an adequate plan to introduce in a platform solutions for waste collectors. With this application you can check if the bins are already full when the waste was recently received and the extent to which changed their volume since the last reception. With this solution planning receiving garbage from various parts of the city will be more efficient and waste will not be littered in full dustbins. Drivers of garbage trucks will have the whole picture of the situation on the route which they drive during the day; planning each time a different and efficient route based on the daily readings.

We want to swap normal existing waste collectors with new, electric ones. Exchange is subject to the entire existing fleet, which is owned by the city. These cars do not bring air pollution, are quiet and their work productivity is high. With this solution the equipment to purify the streets will not result in additional pollution, creating a broader sense of awareness starting in the municipality power.

11.1.2. Optimized, integrated, responsive urban waste management cycle

This part of the project is to reduce the amount of land filled waste. Households and manufacturing declare the planned number of delivered waste. If the amount of this waste is higher than previously planned, the entity will have to pay. This solution is aimed at drawing attention to the amount of waste and increasing the awareness of citizens, so that they attached more importance to how much garbage goes to their rubbish bins.

Cigarette butts and gum litter thrown directly into the streets and sidewalks negatively affect the aesthetics of the city. They also may cause danger to children and animals. Therefore we would like to put the special bins near the sidewalks in public spaces, preventing it. Baskets will contain a special part for putting out a cigarette so that the glowing butt does not cause a fire in the bin. In addition to the special bins we will also want to carry out a campaign to promote their use through interactivity. We want to inform the citizens, achieving some beautiful and clean surroundings.

We assume personalization and individual waste collection of shops and manufacturing companies. As a result, we will be able to customize the process of collection and recycling in relation to specific industry. Rubbish collection would take place on the basis of determining specific plan and timetable developed in cooperation with representatives of the company.

Recycling involves recovery of secondary raw materials and reprocessing in a production process in order to obtain material for the original purpose or other. Can be used in this way, even repeatedly, substances contained in waste or different materials. Processing recyclable materials limit the use of raw materials, which contributes to the protection of natural resources. Recovery and processing also reduces the amount of waste, the same amount of space in landfills. Finally, the use of raw materials, which are the carriers of energy is an element of efficient energy management. The basic principle of recycling is to maximize the reuse of the same materials, the least amount of raw materials and energy needed to process them. At the same time recycling is the foundation of urban environmental policy, it helps to reduce waste and restore the life of worn objects. Our concept provide us to look for many innovative solutions for smart cities, where waste will be properly stored, sorted and processed. We want to implement concrete actions to reduce the consumption of new materials and take care of the environment in the most efficient way.

Composting is the natural process of breaking down organic material to produce a nutrient-rich, soil-like material. The process works with the help of micro-organisms such as bacteria combined with air and moisture. Composting turns kitchen and yard waste into usable resources for free. This process returns nutrients to the soil and reduces amount of garbage. We want to organize city composting centre, where citizens could compose organic materials like grass clippings, garden waste, flower clippings and leaves, weeds (before they flower), fruit and vegetable scraps, tea leaves, tea bags, coffee grounds and filters, nutshells and eggshells.

11.2. Products to install as part of demonstration components (marketable post-project)

- Waste management platform
- Pay-as-you-throw system sensorial network and advanced labelling

11.3. Business model

REVENUES SOURCE

Enhanced conditions for urban mining; better and more fair tariffing, namely under pay4throw model;

ASSETS REVALUATION

Scale-up and diversification of assets use with corresponding added value;

OPTIMISATION EXTERNALITIES

Wastes gathering and management costs reduction; scale adjustment along value chaine steps due to open management and feasibility of services externalization options;

NEW BUSINESS OPPORTUNITIES

Integrated management of wastes values chain facilitates new operators to bet involved providing business and making better use of urban waste resources;

OTHER POSITIVE EXTERNALITIES

CO2 emissions reduction due to process optimization, namely gathering; energy cost reductions; easier achievement zero wastes targets.

11.4. Beneficiary

- Open governance bodies
- Public services
- Investors
- Associations
- Public real managers
- Buildings managers
- Tourists and visitors
- Health services users
- City walkers
- 22. Environment managers
- 23. Recycling operators

11.5. Promoters

- Incubator, start-up centres, co-work spaces, FabLabs and entrepreneurship parks business association
- Regional authority
- Innovation cluster (ICT, energy or mobility)
- Significant technology partner, vendor or technology supplier company
- Neighbouring municipalities
- Associations (sectorial trade, chamber of commerce, consumers)
- Housing cooperatives and associations
- Security, safety and civil protection authorities
- Urban developers, housing suppliers and promoters
- Ngo's and citizenship associations in areas of art, culture, environment, science and education
- Significant suppliers of technology, equipment, solutions and services relevant to the areas of ict, urban equipment, transports, waste, financial services, telecommunications, informatics and related (gis etc.), urban management (gardens, public realm, etc)

11.6. Solution readiness

- Waste management platform – TR9
- Pay-as-you-throw system sensorial network and advanced labelling – TR6

11.7. Challenge

Waste management efficiency; coordination and articulation of individual waste production and pick-up.

12. LIGHT

Governing principle, keyword: Illuminating

12.1. Demonstration components (product to be installed, or pilot to be deployed)

12.1.1. Light colour, intensity and heat, lamp-level adaptive, optimised and open control

With this project, we want to reduce the power consumption and energy costs related to the electricity consumption for lightening. We want to introduce the special light sensors that allow electricity saving. To reduce power consumption, late at night, the lights can be switched off in less frequented areas of the city, such as parks. This solution is also conducive to the protection of animals living in urban parks, preserving the urban fauna. We also want to enter the appropriate angle of incidence of light, suitable for both citizens and favouriting the animals living in green areas.

LED luminaires linked together in a network can be individually controlled using light management softwares. If required, distributed across the complete urban area in a wide diversity of lighting applications. Where, when and to what intensity light is switched on and off could be determined via computers and software, either according to specific light points or in

a planar fashion. This approach enables the illumination of various urban areas precisely according to needs and in a concerted way – city centers, residential streets, tunnels or parks.

Additional electrical capacity may also be needed to assist in street, tree, and/or event lighting; proving the capacity for the user, in the public realm, change intensity, color, or other characteristic associated with lighting in the urban space, in a broader sense of association of the individual to the community.

Streetlights are an ideal place for sensors, and they can be easily integrated. Connected streetlights can become a low-cost sensory network taking the pulse of the entire city. Lightning network is ideal for adding additional applications such as parking or asset tracking. Street light control can save energy and reduces operational costs, increase security, increase edibility of the lighting, giving an autonomous control to citizens.

Energy efficient LED lighting reduces carbon footprint and long-term operation costs. It's intended to propose it's application in relevant buildings, public ones till housing, maximizing its impact and to aware the citizens to a real change.

12.1.2. Light-based modulated creative street lighting and illumination ambiances of the city

Lighted sculpture, fountains, bridges, towers, and other major elements in a district, especially those visible to passing pedestrians and vehicles, provide another form of path finding. The difference between a pedestrian-lit street and a highly illuminated highway automatically signals drivers that they have entered a new and different zone, and compels them to slow their driving speed.

The measuring station located in every lamppost consists of many modules: the presence sensor, the sunshine sensor, the failure sensor and an emergency switch. These devices work along and transfer the information to a microcontroller that processes the information and chooses the action. Every of those sensors has an assigned priority of transmission, for instance, the emergency switch takes precedence over the others. The presence sensor has the task of identifying the passage of a vehicle or pedestrian causing the switching on of lamps. This feature permits to activate the lamps solely when necessary, avoiding waste of energy. The sensor ought to be placed at the optimal height, neither too low (e.g. to avoid any erroneous detection of small animals) nor too high (to avoid failure to detect e.g. children). Integrated weather, traffic, people, pollution sensors in lamp poles.

Well-lit maps, along with directional and informational signage, are essential to providing orientation at night. Careful evening lighting around building entrances — especially in residential building doorways — contributes to the safety of a district even more than indiscriminate use of bright lighting that is not focused on areas of use. People feel more secure when bus, train, or trolley stops are well-lit. Lighting also draws attention to and encourages use of such amenities. Lighting retail displays, even when stores are closed, not only provides ambient light for the street, but also encourages window-shopping. This tactic can help to increase the number of people on a street, which is a major contributor to security.

Relate lighting to the evening functions of a particular space, because in the larger view, street lighting is more than just a technical requirement, a security need, or a design element. It can be thought of and utilized in terms of how the type, placement, and wattage affect how a street is perceived and used. Although it is primary purpose is night time visibility for orientation as well as security and safety, successful street lighting takes into account the human users of the street, not simply the requirements set by local DOT and public works agencies. For instance,

one way to emphasize pedestrian activity over automobile traffic is to replace standard overhead street lights with smaller-scale, more frequently spaced fixtures geared to pedestrians, thinking its position relating it to public spaces ambiances, size of streets section, etc.

12.2. Products to install as part of demonstration components (marketable post-project)

- Multifunctional and integrated poles and posts
- Smart grid management and balancing
- LED color, intensity and heat efficiency

12.3. Business model

REVENUES SOURCE

Revenues of additional diversified lighting and illumination services to be provided on top of basic street light conventional service; Savings due to energy consumption reduction for the provision of basic street light conventional service by use of more advanced conversion (lighting) and management technologies; savings due to reduction of compensations and recovery costs not needed because better security and safety; Combination of street light and illumination provision with private and social initiatives in city both related to local services and commerce or in public realm made possible due to use of integrated open street lighting management systems; additional automated urban services to be provided by lamp posts; savings in energy supply due to integration with local energy supply and storage systems

ASSETS REVALUATION

Public realm, local services and commerce spaces and assets revaluation due to feasibility of new, innovative and additional initiatives and services to be offered generating new opportunities for revenues and profit and scale effects for fixed costs reduction.

OPTIMISATION EXTERNALITIES

Savings on lighting system management costs; savings from integration of illumination with lighting services; savings due to integration of hardware in cities by combining multiple functions in same poles primarily dedicated to street lighting; contribution to balance local grids and better integrate renewables in urban space as absorbing intermittence effects on the night time demand side; security and safety related features made possible by individualized post-level control of light intensity and timing.

NEW BUSINESS OPPORTUNITIES

street light and illumination services supply management and infrastructure maintenance services; creative and design oriented services related to urban illumination; new street light and illumination devices design and production, namely locally on basis of FabLab facilities and makers' movement; coordination and dispatching services for integration of street lighting and public illumination with energy supply and storage systems;

OTHER POSITIVE EXTERNALITIES

CO2 emissions reduction related to energy saving in street lighting; energy cost reductions due to integration with locally produced and stored energy; easier achievement of 2030 climatic goals; combination with climate modulation services.

12.4. Beneficiary

- Open governance bodies
- Public services
- Investors
- Public real managers
- Buildings managers
- Art and museums curators
- Tourists and visitors
- Students and pupils
- Elders
- City walkers
- Bicyclers
- Parking users
- Street light managers
- Energy investors and prosumers

12.5. Promoters

- Incubator, start-up centres, co-work spaces, FabLabs and entrepreneurship parks business association
- Regional authority
- Academic institution
- Innovation cluster (ict, energy or mobility)
- Significant technology partner, vendor or technology supplier company

- Energy agencies, esco and dso
- Security, safety and civil protection authorities
- Urban developers, housing suppliers and promoters
- Mobility and transportation infrastructure managers or partnership
- Energy utilities and energy distribution cooperatives
- Significant suppliers of technology, equipment, solutions and services relevant to the areas of ict, mobility, urban equipment, financial services, energy and other utilities, telecommunications, informatics and related (gis etc.), urban management (gardens, public realm, etc.)

12.6. Solution readiness

- Multifunctional and integrated poles and posts – TR7
- Smart grid management and balancing – TR7
- LED colour, intensity and heat efficiency – TR8

12.7. Challenge

Participative urban dynamics; city as continuously daily liveable space.

V. URBAN DIGITAL AGENDA

Addressing the necessity of Europe for a new action plan for making the best use of information and communication technologies (ICT) to speed up economic recovery and lay the foundations of a sustainable digital future, European Commission has created the European Digital Agenda. The new action plan proposes to remove current obstacles to maximising the potential of ICTs, with long-term investments to minimise future problems.

The European Digital Agenda outlines seven priority areas for action[2]:

– Creating a **Digital Single Market**.

A Digital Single Market is one market in which the free movement of persons, services and capital is ensured and where the individuals and businesses can seamlessly access and exercise online activities under conditions of fair competition, and a high level of consumer and personal data protection, irrespective of their nationality or place of residence.

The Digital Single Market Strategy is built on three pillars:

- **Access**: better access for consumers and businesses to digital goods and services across Europe;
- **Environment**: creating the right conditions and a level playing field for digital networks and innovative services to flourish;
- **Economy & Society**: maximising the growth potential of the digital economy.

– Improving the framework conditions for interoperability between ICT products and services.

– Boosting internet trust and security

[2] Source: europa.eu

The internet has now become such a critical information infrastructure, for both for individuals and for the European economy as a whole, that IT systems and networks must be made resilient and secure to all sort of new threats.

- Guaranteeing the provision of much faster internet access.
- Encouraging investment in research and development.
- Enhancing digital literacy, skills and e-inclusion.

As more daily tasks are carried out online, from applying for a job to paying taxes or booking tickets, using the internet has become an integral part of daily life for many Europeans. All citizens must have access to, and understand, the digital world.

- Applying ICT to address social challenges such as climate change, rising healthcare costs and the ageing population.

For each DREAM city, the Urban Digital Agenda will be a zoom in into the European Digital Agenda. DREAM smart cities are cities where the traditional networks and services are more efficient using digital and telecommunication technologies, for the benefit of its inhabitants and businesses.

URBAN PLATFORM

The project aims at providing participating cities with an advanced Intelligent Energy Management System (the IEMSy Urban Platform), which is the Smart City engine, knowledge server, data provider and information utility. The DREAM UP is to be owned, maintained and managed under a community-based model. Under which every component of UP is dynamically, openly multilaterally and freely interconnected. Thus, on defining UP, first priority goes to integrity and interoperability.

VI. URBAN SUSTAINABILITY ACTIONS

Cities concentrate people, investment, and resources, which, despite the potential for positive consequences in the form of creativity, economic development, and social and community well-being, also can be associated with negative consequences for air and water quality, ecosystem viability, poverty rates, and high rates of wealth inequity. Sustainability of urban areas therefore encompasses a range of interconnected environmental, economic, and social issues.
It is crucial for cities to keep sustainability as a main point of their strategies.

Some sustainable actions and project ideas are presented next:

- Promote sensibilization and awareness programs regarding the population and the environment;
- Improve energy efficiency on buildings through technology and innovative solutions;
- Decreasing of emissions of pollutants and CO2 within the urban mobility, industrial processes and daily life actions;
- Increasing energy efficiency in street-lighting networks;
- Reducing the energy consumption of existing buildings for space conditioning, through integrated systems;
- Integrate energy – power and heat – generation into urban infrastructure;
- Implement the energy agenda by focusing on consumers and communities as active participants;
- Establish a highly responsive energy management platform aimed at integrating distributed, unbundled and diversified open market supply sources, making it responsive to demand and providing for distributed storage;

- Increasing the energy efficiency of districts, and the City as a whole, which in consequence leads to reduction of energy bills for citizens and public authorities;
- Achieving more secure, more stable and cheaper local energy system;
- Making improvements in environmental management in case of air quality, noise, lighting, waste collection as well as water management.
- Promoting sustainable, inclusive and healthy smart solutions for energy systems.

PROJECT IDEAS

STRUCTURE

1. PUBLIC ADMINISTRATION

Cities are becoming smart not only in terms of the way we can automate routine functions serving individual persons, buildings, traffic systems but in ways that enable us to monitor, understand, analyze and plan the city to improve the efficiency, equity and quality of life for its citizens in real time. Indeed, it aims at increasing citizens' quality of life, and improving the efficiency and quality of the services provided by governing entities and businesses.

1.1. Government platform (ICT)

E-platforms which involve the residents in the decision-making process of the city's affairs.

The law aims to establish basic e-government norms which will be able to help overcome the major obstacles created by the formal requirements of administrative law. It thus opens up the possibility of carrying out all business processes entirely electronically and offering these processes to the public and business in an easier, simpler and more cost-effective way.

1.2. Ecologic public purchases

E-platforms that help citizens access government services, submit service requests, make payments and track the status of their services/requests. All services and payments can be tracked from a single interface using a single user name/password, irrespective of which government department or agency handles them. These services include: Licenses and permits, registrations, service requests, fines and ticket payment, billing and collection of taxes and other bills.

1.3. E-government law (ICT)

The purpose of this section is to improve the methods by which Government information, including information on the Internet, is organized, preserved, and made accessible to the public.

1.4. Information sharing public services

Share between government agencies where public-sector agencies are making a formal arrangement to share information with other government agencies. Share between government agencies and the non-government sector where the public sector is making a formal arrangement to share information with non-government partners. Share between government agencies and the research sector where the public sector is making a formal arrangement to share information with research partners. Share between government agencies, the public, developers and industry where government data and information is made freely available to the community and business sectors, without formal sharing arrangements.

1.5. 4.0 Industry

Industry 4.0 is a new paradigm in industrial production and its logistical processes. The term industry 4.0 refers to a further developmental stage in the organisation and management of the entire value chain process involved in manufacturing industry, another term for this process in the fourth industrial revolution. Of central importance for industry 4.0 is its interface with other smart infrastructures, such as those for smart mobility, the smart grid, smart logistics and smart homes and building. Future products must have computing, networking, wireless and sensor functions. With the recent emergence of the "maker" concept, numerous customer groups and maker spaces have appeared. This movement is likely to promote the creation of innovative products.

1.6. Digitalization and structural changes

Digital identity is a very important in the world of digital. It used to be that everyone had different identities with different companies and different organizations. Recently the number of sign-on and digital identities has declined a lot. People have their own e-mail address rather than telephone number. Now there are five to seven platforms with global scale that provide login services for a lot of consumer-content, connectivity, and other services. ICT broadens our views and creates a new, more customized, direct and limitless relationship to the world around us. We are no longer limited by physical presence, but instead, each and every one of us has access, on a personal level, to social relationships, goods and services, resources and knowledge as well as innovations from a digital world without borders. People have access to completely new resources for value creation.

1.7. Innovative procurement (ICT)

Produce guidance on public procurement of innovation which is relevant for European procurers, the Platform is working to develop changes under the new directives. The extended competence in urban innovation of the members of the Smart Cities platform can offer inputs for the Procurement of Innovation guide. The Smart City Secretariat encourages all community members to contribute with their experience of truly innovative public procurement.

1.8. Cyber security

City infrastructures and services are changing with new interconnected systems for monitoring, control and automation. These may include water and sanitation to emergency responders and disaster recovery. These benefits must be considered against the potential harm that may come from this massively interconnected world. Technical, administrative and financial factors must be weighted with the legal, political and social environment of the city. To give city components and citizens devices, at varying levels of features that, at a minimum, respond to a sensor network. These are interconnected to pass information into a network. That information is computationally available for analysis and making the Smart City intelligent in its operations.

1.9. Interoperability

Interoperability is the ability of a system or a product to work with other systems or products without special effort on the part of the customer. Create unified standards to improve interoperability between the billions of devices making up smart cities, create a single standard in order to unify products based on different protocols. Outline common specifications for product development that enables connectivity among devices irrespective of the form factor, operating system, manufacturer or service provider. Build open architecture systems to make it easy for smart city planners to integrate devices and applications. It also enables seamless sharing of data between subsystems and reuse of code. Different modules can be switched according to varying requirements, eliminating the need to reinvent the wheel every time a new app is needed.

1.10. Vote on-line platform (ICT)

Using government platform, we can allowed audience to vote online which reduces the overpopulated voting areas which can lead to less incidents on the day.

1.11. Optimize scheduling platform

That helps the customers to get the latest information when they are going to book their journey ticket so they know their places are still available.

1.12. Public services cloud system communication

Using cloud system communication helps reducing the amount of memory in their SD cards and hard drives.

1.13. Open Data

Open data is data that anyone can access, use and share. Whether it is data on local housing from government, real-time train times from rail companies, organizing family events, or finding supermarket locations from retailers, open data can help us all better understand, and interact with, the City.

Keeping infrastructure and markets open is the only scalable way to ensure equitable and secure growth in the City. A term that describes the large volume of data – both structured and unstructured – that inundates a business on a day-to-day basis. But it's not the amount of data that's important. It is what organizations do with the data that matters. Big data can be analyzed for insights that lead to better decisions and strategic business moves.

2. Economic/Finance

The favorable conditions in the economy and financial represents the good condition of the city. One of our goals is to build a stable financial situation and opening new opportunities for entrepreneurs. Thanks to the Smart Cities proposed strategy, we want to promote innovative solutions and creating an entrepreneurial attitude among citizens. We also want to open the company to new opportunities and markets and establish new collaborations in international environment.

2.1. Facilitating investment

To support the economic development of the city we want to remove barriers for entrepreneurs. The authorities should strive to facilitate the establishment and development of enterprises. Contribute to this will be to reduce unnecessary bureaucracy and greater transparency in obtaining the necessary permits and accompanying documentation to the whole business process. Development companies can also improve tax incentives. Government support is valuable for entrepreneurs and business friendly environment to attract sponsors to invest in the region.

2.2. Support innovation

The proposed strategy also provides promoting the innovative solutions in the sphere of economy and business. With this strategy, we want to support companies that rely on innovation. To do this, we want to support innovative enterprises financially to help them find new sources of income and support their actions in the international arena, which will allow them to promote modern technology they use.

2.3. Support informal business

The proposed strategy intends to promote entrepreneurship among citizens. We want to support small businesses, the single manifestations of entrepreneurship. People who want to develop their ideas would be exempt from conducting formalities. Sellers vegetables or handmade jewelry could gradually develop their business ideas and with time and development of the company take care of the formalities. Our aim is to facilitate their first steps in business and promote entrepreneurship.

2.4. Internationalization

International approach to entrepreneurship opens up new opportunities for local entrepreneurs. That is why we want to facilitate their contacts with foreign companies. We also want to encourage exports and strive for increased economic development, which will allow

greater investment, also in human resources, which promotes and finances the city's position in the international arena.

2.5. Broadband infrastructure (ICT)

Our objective is to make full use of advances in modern technology to support economic growth. The proposed strategy involves the use of them and creating a special broadband infrastructure. It involves networks of deployed telecommunications equipment and technologies necessary to provide high-speed Internet access and other advanced telecommunications services for private homes, businesses, commercial establishments, schools, and public institutions. As a result, we want to connect entrepreneurs, facilitate them to communicate and maximize the effects of their work.

2.6. Incubators and co-work

In connection with the implementation of the proposed strategy, we intend to implement a favorable environment for the creation of new businesses in the City. A good measure is to run incubators. With incubators, entrepreneurs can count on substantial support and favorable conditions for development, such as the use of office space at attractive prices. The use of such solutions also promotes establishing cooperation between the companies that operate within the same incubator. Cooperation can be a key factor in winning position in the market and finding their place on it.

3. Employment

They do so by targeting four key domains: boosting demand for labour, and in particular guidance on job creation, labour taxation and wage-setting, enhanced labour and skills supply, by addressing structural weaknesses in education and training systems, and by tackling youth and long-term unemployment, better functioning of the labour markets, with a specific focus on

reducing labour market segmentation and improving active labour market measures and labour market mobility, fairness, combating poverty and promoting equal opportunities.

3.1. Informal businesses

Work with partners to develop the concept of a cloud based data integration and Urban Innovation Platform and, together with the commissioning of pilot projects in support of the Council's objectives for service transformation.

3.2. Redirect education towards innovation

Raise business awareness of the e-Business program to make more businesses digitally skilled and look for other funding opportunities to develop complementary programs. Promote Digital Innovation Centre and the Digital Skills Centre which provide space, knowledge transfer and skills and business support programs to urban entrepreneurs.

3.3. Attraction of skilled workers

Play an active role in helping city businesses internationalize through EU programs.

3.4. Integration of disabled people

We want to make a strong correlation between disability, employment and education, to help people with intellectual impairments and mental health conditions face particular difficulties in entering and remaining in the labour market.

3.5. Re-integration of inmates

Work with Education Business Partnership, inmate organizations and training providers, to promote stronger links between schools, organizations and digital businesses. This cooperation

would help city to decrees unemployment and increase young people, new educated people and inmate to get a job they want.

3.6. Migrants inclusion

Explicit and deliberate inclusion of migrants in Social Protection Floor, access to and coverage by social security systems and measures by origin/home countries to extend social security coverage to nationals abroad.

Qualitative or quantitative of fact and extent and nature of explicit legal and administrative inclusion of migrants in social security access, in coverage and in portability in destination countries. Migrant coverage by SPFs -quantitative and qualitative, identification and qualitative/quantitative measurement of unilateral measures by origin/home states to extend coverage of emigrants/nationals abroad. Social Protection is critical for all migrants populations. Note reference to migrant inclusion in ILO Recommendation on Social Protection Floors

4. Companies

Local businesses and entrepreneurs are the backbone of the economy and the prosperity of the city. We want to create the best possible conditions for the creation of new businesses and thus new jobs. The economy is growing rapidly thanks to the search for new markets at home and abroad. We want to promote the search for new technologies and cooperation between enterprises.

4.1. Incentives to efficiency

We want to help local businesses and start-ups and thus encourage them to participate actively in the market and increased development. This point is especially relevant to companies involved in aspects related to the environment. We want these companies to promote their eco-friendly activities and products. The implementation of solutions such as the simplification of bureaucracy and tax incentives to encourage them to spread at the local market.

4.2. System of communication (ICT)

The proposed strategy aims to create a platform through which the company will be able to make contact and make cooperation. We want to bring to the active communication between companies, start-ups, incubators and technology parks. Joint actions conducive to finding new solutions, investment and innovative technologies. Business development is for the city of great opportunity for economic growth and reduce unemployment.

4.3. Support exportation

Export supporting causes economic growth, which is why we want to convince local businesses to seek new markets outside the country. We intend to show to the entrepreneurs a variety of tools, such as internet platforms, which allow them to promote their products abroad. Gaining local markets in different countries will allow the development of companies and it will promote the country.

4.4. Support and integration in public roam

We would like to convince entrepreneurs to seek unconventional marketing methods. They can look for customers and grow their business in many different ways. We want to go beyond their shops and offices and conducted activities outside of them. Businesses can conduct public workshops and demonstrations of their products and services to the people. They could also organize joint events, which not only show their position in the market, but also integrate with other entrepreneurs.

5. Associations/Organizations

Associations operate a public benefit and may benefit from public funds. It is a voluntary, self-governing, stable and non-profit organization. Association alone determine its objectives, action programs and organizational structures and adopt internal acts concerning its activities. In other

words, the association is a group of people who decided to work together for the community. Organizations can take various statutes; their goals can be completely different. We believe that they are a very important element in shaping civil society. That is why we want to encourage our citizens to undertake various initiatives and implement them.

5.1. Facilitate creation of population associations and organizations

The premise of the proposed strategy is to increase the influence of associations and civil society development. In a community divided into private and public sector it is often difficult for the society. We would like to expand the social structures of the association, which will play the role of mediators between the local authorities and companies to develop solutions that will benefit for the whole society. These associations would be free of political influence. Setting the interests of the general public will to prevent conflicts and look for compromises.

5.2. Regulating and decision authority

The premise of the proposed strategy is to increase the influence of associations and other public benefit organizations. We would like to have greater responsibility and be able to introduce their own initiatives to the public. Our goal is also to give them more opportunities in the use of public places. This way they can organize more events and promote social integration among the citizens of the city.

5.3. Informal influence of public realm

We want to strive for a situation in which the association will have a positive impact on civil society. Our objective is to create a culture based on social activity and eliminating destructive social phenomena. Citizens will benefit from the activities of organizations, and act thanks to the motivation. We want to influence the society to create behaviours that promote unity and tolerance. To achieve this we intend to use, among other, events to promote positive pro-social behaviour among citizens.

5.4. Close assist to population

We want to use the Internet platform as a tool by which we will know the needs and problems of society. The platform will allow us to express concerns with many aspects of life in society. Our aim is to bring associations to public to maximize respond to their needs. We need tools that will show us the best extent the expectations of citizens and areas that are the most important to them. With the platform, we will enable the inhabitants of mutual assistance in everyday life.

6. OPEN SPACE

Open space is the public owned land that is set aside, primarily, for recreation, nature conservation, passive outdoor enjoyment and public gatherings. This idea of public realm it's formalized through streets, public parks, gardens, reserves, waterways, publicly owned forecourts and squares.; its urgent the need to potentiate those spaces as a primarily form of identity and necessity to urban life.

6.1. Break unoccupied private boundaries

In dense cities centre's it's difficult to find qualified open spaces for the people usage, lacking the proportionality between the demographics and the space available to receive population flow. Therefore, is important to reconsider other type of approach regarding the built spaces and the private space that they enclose; through public and private uses, concerning the ground floor of constructed fronts of quarters, can be designed paths that go from the street, or other type of public spaces, to those private boundaries sometimes unused, transforming them in new public voids, in the interstices of the city centre.

6.2. Public space to people

Provide new Small Local open spaces through the core area of the central grid that form green oases and encourage people to spend time outside. Investigate opportunities to provide Small Local open space as green oases in the central grid in these major redevelopment sites. Provide additional Small open spaces through the core area of the central grid that form retreats and encourage people to spend time outside.

6.3. Urban services

Through population organizations or associations, it can be created an informal system of participation regarding the interests of the public space; like repairs and improvements. It also can provide indications to the assist of the population, not only medical but also domestic attendance.

6.4. Adapted city to deaf and blind

Crossing the streets or knowing which way to go to reach a certain place can be an issue in cities which are not often accessible for everyone. Help people moving around the streets independently and safely. Connecting with the application user can interact with infrastructures choosing between several actions. A visual impaired person for example could choose to have lights brighten when he pass by streetlamps or receive audio information from digital boards.

Furniture will respond according to users' choice synchronizing with his smart phone when they pass nearby. These urban design aims to be adaptable to every user's need, modifying the ambient around him. It can help visual impaired people but also deaf people, aged people or those one who has difficulty walking, for example giving them a little extra time on green while crossing the streets and extra seats to rest.

6.5. Public safety (ICT)

Police and other security personnel need intelligent IT, communications, and video-analysis technologies to ensure public safety. This new form of security also allows direct sharing, in real

time, through a platform, enabling each person to participate in the wellbeing of the entire population.

6.6. Multi-functional structures

Structures through the city that can facilitate numerous kind of tools to the entire population, assisting in the urban life; electric chargers, for cars and mobile devices; lockers, to bicycles or other similar means of transportation; repairing tool kit, for fixing small problems related with means of transportation; aid and emergency kits, allowing a faster assistance to people in need; screens, with information and interactivity to population passing by; Wi-Fi points, facilitating internet access through public space; music or other audio information, that can be associated with big public spaces, like squares or parks, for informal concerts and shows. This poles can be feed through a solar panel system. The idea does not regard that all of the structures like this has to contain all of the functionalities, but yes to be criterions selected and distributed around the city, facing specific needs in specific spaces or between them.

6.7. Optimize fast Wi-Fi areas

Have wi-fi hot spots all around the city where users can connect to the services by logging in with their mobile phone. Associating them with spaces related with leisure and work, like parks or other public spaces.

6.8. Urban platform (ICT)

A platform where it can be shared problems and suggestions related with the public realm and facilitating the awareness and acting of the public administrations to certain aspects of public life.

6.9. Public space community ways of expression

Urbanists have long held the view that the physical and social dynamics of public space play a central role in the formation of publics and public culture. A city's streets, parks, squares, and other shared spaces have been seen as symbols of collective well-being and possibility, expressions of achievement and aspiration by urban leaders and visionaries, sites of public encounter and formation of civic culture, and significant spaces of political deliberation and agonistic struggle. While urban commentators and practitioners have varied in their views on the precise detail of collective achievement across time and space, they have generally not questioned the assumption that a strong relationship exists between urban public space, civic culture, and political formation, as the quote that opens this paper clearly shows.

6.10. Playgrounds for everyone

Movement and play are important for both typical and not typical children. Finding a place to play is a big challenge for every child and their parents, around the city. Sometimes, they must create one, or to find other alternatives. There are lots of design innovations: Broad, flat ramps that can accommodate wheelchairs or walkers to get to the top of play structures. Sand tables at wheelchair height, large swings with back rests and straps for kids who don't sit unassisted, "Cozy spots" for children who need time out from all the distraction and noise.

6.11. Potentiate green and shadow

To increase green areas in the City through sidewalks, parks and other significant public spaces, providing shadow and better conditions for living those spaces. It's important to choose deciduous trees, for guarantee, in summer, protection of public space from direct insulation and, in winter, to take advantage of the falling leafs, letting pass the sun light. If isn't possible to grow trees on a certain space maybe it can be other type of plants; if still not it's possible to intervene in those spaces with other artificial means for shadows, like artistic interventions, in some streets which are not possible due to space.

7. BUILDINGS

More and more people move to urban areas, the City faces ever more economic and environmental challenges, including resource constraints, economic restructuring, aging populations, and pressures on public finances. In their efforts to accommodate growing urban populations and the accompanying challenges, governments can use modern information and communication technologies to create "Smart Cities" and smart buildings that improve the quality and interactivity of urban services while reducing costs and ensuring sustainability.

7.1. Efficient lighting in buildings

Energy-efficient lighting design focuses on methods and materials that improve both quality and efficiency of lighting. Keep in mind that more light is not necessarily better. Human visual performance depends on light quality as well as quantity. Match the amount and quality of light to the performed function. Install task lights where needed and reduce ambient light elsewhere. Use energy-efficient lighting components, controls, and systems. Maximize the use of day lighting.

7.2. Optimization in rehabilitation

Evaluating the condition of structure is area subset of professional engineering practise within the field of structural engineering. We want to optimize buildings energy efficiency and indoor environmental quality. A methodology to optimize the insulation thickness of the external walls and roof on building performance considering the following objectives: the minimization of the annual heating load; the minimization of the discomfort in the rooms due to overheating; and the minimization of the cycle cost of retrofitting external walls and roof.

7.3. Break building limits through public/private uses

Create new walking spaces in the City, make sidewalks or tunnels through buildings, that would help people to reach their destination quicker.

7.4. Social housing improvement

Social housing is accommodation let at low rents to those most in need of a stable, affordable home. The objectives for this measure are that we want to give councils the resources, incentives and flexibility they need to manage their own housing stock for the long term and to improve quality and efficiency also to give tenants the information they need to hold their landlord to account, by creating a clear relationship between the rent a landlord collects and the services they provide.

7.5. Solar power

Solar power panels can be integrated in slopped and flat buildings roofs also in windows and free space next to the buildings. Also, solar power cooling technology makes use of solar-desiccant-evaporator air conditioning, which reduces outside air humidity and passes it through an ultra efficient evaporative cooling system. This cooling process, which uses an indirect evaporative process, minimizes the air humidity, and this makes the use of this technology quite effective in coastal and humid areas.

7.6. Equipment modernization

Upgrading equipment has more benefits than simply saving money rather than buying a new machine. To modernize buildings using all latest, most efficient and leasing rates, improve occupancy and leasing rates. Modernization has to be cost-effective and minimal building disruption. Improve building equipment modernization performance, safety and reliability. Make buildings more environmentally and economically friendly.

7.7. Optimize energy storage

We want to implement solutions whereby modern buildings that use renewable energy sources such as solar panels will be able to share the unused energy from other users, so devoid of modern solved. Sharing the excess energy gained from solar panels will save conventional

energy sources also by the users who do not have access to modern solutions. Thus they gain both companies share the energy and users who collect it, and also the environment.

7.8. Water gathering

To collect rain water in the ground floors of the buildings and reuse that water for toilets or other services.

7.1. Impermeable to permeable

The benefits, as they relate to water, are straightforward: for the building owner, it's a storm water management tool; for the community, it reduces storm water runoff; and for the environment, it prevents combined sewer overflow, neutralizes the acid rain effect and removes nitrogen pollution from the rainwater.

The concept of sustainable drainage makes perfect sense. As part of environmental initiatives that are underway in Europe and across the globe, the recommendation is that impermeable surfaces be replaced with permeable materials such as grass and gardens. This will allow the rainwater to drain into the soil. The process, known as infiltration, also serves to sustain the plant life.

7.9. Facilitate informal occupation

Use all free city space for events and people entertaining. People have to be able to use all free city space. Firstly, to clean neglected squares, parks, and buildings and to initiative citizens make music, art or any event. This would help to make city more liveable and more beautiful.

8. HOUSING

Making the City work more efficiently is an important part of the housing solution, especially with the use of big data. There is still a compelling business case to be made for smart rebuilding, or regeneration, of existing cityscapes, using smart technology and sustainable building materials and constructing denser housing nodes, which can give a kick start to the housing construction industry and revivify economic activity in more deprived areas.

8.1. Homelessness

Establish a network of service providers working in rooming houses to share information and improve service access and delivery. Share knowledge of trends with community organisations, businesses, traders, churches and philanthropic groups to develop new initiatives. Develop a database of corporate and community groups that have an interest in addressing homelessness to ensure they have an opportunity to share their knowledge and resources to develop projects and initiatives which create pathways out of homelessness.

Work with city partners to develop an education campaign and online information to assist the general public to make informed choices about how they can volunteer, donate or assist those who are homeless. Work with our recreation facilities, community hubs and libraries to ensure that people experiencing homelessness are welcomed, included and supported. Work with our youth service providers to link and support young people into youth specific development and training opportunities to improve their chances of being employed.

8.2. Houses for young people

When renting a deposit (equivalent to 4 - 6 weeks rent) and a month's rent in advance will usually be required. This amount of money can be inaccessible for some people, so we are suggesting a help with the deposit for young people until the age 25. Young people may be able to receive help with this deposit under the housing initiative. Youth Refuges are houses for young people. They're run by welfare services, and usually they're free (or if you have some income, you may have to contribute a small amount). Most people use refuges to stay in temporarily because they are don't have anywhere to go. A youth refuge may be an option for you if you don't have any money or anywhere else to go. Public Housing is provided by the

government, which means that it is cheap compared to renting from a private landlord (it's usually only about 20-25% of your income). Public housing can mean flats, houses or high-rise estates. There's a waiting list for most types of public housing, but if you've left home because of violence or abuse you may be able to apply for priority, which means that you can be pushed up the waiting list and get in quicker.

8.3. Houses for elder and disabled

Have escalator chairs in the houses which will help them to feel less dependent on other people also have most of the facilities on the ground floor. Remove the extra step outside the house that will help them feel more secure when going outside the house. Build houses for disabled people near hospitals in case they get injured they can to the hospital quicker.

8.4. Safety (ICT)

CCTV outside the houses, which would help to monitor who is coming outside and inside the house also it would help to scare the thieves away. Security alarms in the windows which will help fight against thieves entering from the windows. Have a button that when its pressed the nearest police departments will be able to see an alert and the police will have the access CCTV installed in the building in case of robbery.

8.5. House resources efficiency

Having installed motion sensors in the rooms to detect movement will help to reduce consumption of electricity. Have solar panels on the roofs, have green gardens on some houses roofs or have rain water collectors on the rooftop or in the underground.

8.6. Equipment modernization

Upgrading equipment has more benefits than simply saving money rather than buying a new machine.

To modernize buildings using all latest, most efficient and leasing rates, improve occupancy and leasing rates.

Modernization must be cost-effective and minimal building disruption. Improve building equipment modernization performance, safety and reliability. Make buildings more environmentally and economically friendly.

9. SOCIAL CARE

Social care allows overcoming difficult situations to those who are unable to overcome their own, using their own powers, resources and capabilities. Social care support them in their efforts to meet the needs and enables them to live in conditions appropriate for human dignity. The task of social assistance is the prevention of difficult life situations by taking measures aimed at empowerment of individuals and families, and their integration with the environment. By many activities we would like to support citizens and make their chances of development similar. We want to reach people excluded by society to work on the integration and mutual understanding.

9.1. Provide assistance to population needs

We want to take steps to help citizens who are faced with different problems. As a result of this we want to support people in difficult circumstances, families and the elderly. Financial and mental support of public institutions is to bring them a sense of stability and security and at the same time encourage them to take action to improve their situation.

9.2. Create programs close to the community

By implementing the Smart Cities strategy, we would like to integrate the society, educate people and fight with stereotypes. That is why we want to work with people socially excluded, young people from difficult families, immigrants. Our aim is to bring them to the rest of society.

We aspire to a common understanding and consistent coexistence. We want to involve citizens from all walks of life and build a consensus between them. To achieve this, we would like to organize events to promote good practices, integrating society, increasing the curiosity and sensitivity to other people's characteristics, interests and needs and problems.

9.3. Regulate the use of public spaces (ICT)

To adjust the effective use of public space, we would like to involve the local associations in its share. We plan to create a special platform that will allow to plan various events and facilitate the entire process of obtaining the necessary permits. We want to encourage citizens to use public space, so the city will be open to the many initiatives and cultural and social life will be much more interesting and active.

9.4. Close and fast acting on population problems (ICT)

Thanks to the proposed smart city strategy we would like to connect people and engage people in mutual assistance. To achieve this, we want to offer citizens a platform through which they can inform others about their problems and needs. For example, older people who need help will be able in this way to ask for the support of young people. We want to give the public a tool that helps them to contacts and common search for effective solutions.

9.5. Promote safety through vigilance and education

The proposed strategy involves the development of pro-social attitudes and responding to unwanted and dangerous situations. We want to promote social awareness and sensitivity to the citizens not passed indifferent to such phenomena as violence in families. For this purpose, we want to carry out promotional and educational events. Citizens, who are aware of the dangers that surround them will be able to react to them in a proper way and take care of their safety.

9.6. Personal sharing information (ICT)

By using a special network, we want to facilitate the everyday life of our citizens. By using this tool, they will be able to, inter alia, provide information about the difficulties to several institutions at the same time. For example, if a child is sick and therefore will not be able to leave the house, the parents through a single information will be able to inform about his absence school, dance teacher or cancel the reserved swimming lesson. The objective is to simplify the communication between the citizens and other institutions.

9.7. Sharing and awarding population deeds

We would like to appreciate citizens who are an example of good practices, and thus will serve as an example and motivation for others. So we want to create an application, using which they can document their actions and share them with other participants. Then users will choose those who particularly deserve the praise. These individuals will be rewarded. The prize can be free public transport card or tickets to events. The object is to promote the right citizenship and reward those, who work for social good. We believe that it will inspire others to take action for the common benefits.

10.ART AND MUSEUMS

Art is an integral part of society, its history and identity. That is why we want to support the institutions of art and culture and encourage citizens to participate in the cultural life of the city. We would like to promote talented artists and to support talented young people. By supporting art, we want to integrate society and show them better way to use their free time. The proposed strategy also takes into support for museums. Museums are a great way to learn the history and the intense experience of the past, the city and its citizens. We want to interested residents of their history and culture, they largely have defined how they look now and how the city is laid the lives of people who live in them.

10.1. Enhanced reality

We would like to increase the participation of people in the arts, their feelings and emotions. Increased means of expression may be, for example 3D technology. Imagine the picture presented in 3D technology and people who may find themselves inside to experience every detail in a completely different dimension. We want to make culture more attractive in order to attract people and inspire them. We want to intensify emotion and make that art even more attractive. People would not be just passive observers, but they could find themselves inside.

10.2. Museums and cultural events association (ICT)

We want to combine the various cultural institutions. Thanks to a special platform, they will be able to connect events with similar themes and cooperate. Events will be more interesting for visitors and more varied. Museums and other cultural institutions will also be able in this way to better promote their events and reach more visitors. Their events can be combined and complement each other.

10.3. Thematic routes through museums

At this point we also want to connect the museums and make them able to combine thematic paths. We want to create effective collaboration, through which visitors will gain new opportunities. Historical and artistic routes will be an attractive way to spend time together and get to know the history and its influence at society of the city.

10.4. Museums home and streets interaction (ICT)

We have also developed the idea of the release of museums outside of physical barriers. Closed within the walls and separated from society does not encourage a large number of visitors. We want to open museums for the largest possible number of people. To achieve this, the museums organize exhibitions and events in the streets and squares in different parts of the city. In this way, we want to convince the people who miss the museums, consider them boring and inaccessible that it is worth to follow the exhibition and learn about their wealth. We also want

people who cannot go to the museum because of their age and health problems can benefit from its resources. For this purpose, we developed a plan for an Internet platform where information is available about the inventories of museums communicated in an attractive way. Also, children will benefit from this solution by research homework.

10.5. Engage education through school programs

We also want to develop curiosity of children by organizing special meetings in schools. Representatives of the museums will be preparing a special programs for children, in which they will present history in an interesting way for the little ones. It will not be boring lecture, but a meeting in which children will be able to participate actively. By doing so we want to encourage children to visit museums and learning. Such meetings may take place in relation to the lessons which students are studying in that specific period of time. We also want to promote collective trips to museums.

10.6. Allow community to participate and interact with visitors

We want to involve the citizens in the promotion of culture and history of the region. Those who do not work or are already retired can work together with museums and other institutions. Thanks to this cooperation, they can take visitors beyond the walls of museums and show them the places in the city, which will complement the exhibitions. In this way share with other people the city, its culture and history. Visitors will have an opportunity to know places of particular importance for its citizens. Such information omitted in travel information will be a memorable and interesting lesson in the history and customs of the region.

10.7. Specific transportation for specific routes

In the proposed strategy we also want to include the use of public transport and the creation of communication between museums and art institutions. Special routes between them will lead through interesting and important streets and link cultural institutions. We want to give visitors

a means of transport to facilitate their searching of interconnected places and make movement between them easier, more attractive and allow to see more places during one trip.

10.8. Sharing of individual events or initiatives (ICT)

Our aim is also to help individual artists in dealing with major cultural institutions. This way they can organize exhibitions of their work and share their creations with others. We want to promote young talented people that their art could be perceived by the wider public. It will be beneficial also for the institutions that will be able to introduce new, diverse forms of artistic expression.

10.9. Heritage preservation and protection

A very important point of our proposed strategy is the protection of cultural heritage. We want to protect not only the most famous objects in the city, but also those less known, which so far are not covered by adequate protection. This may be a small part of the culture and history of the region. We believe that even such cultural artefacts form the identity of the local community.

10.10. Art as street driving force

The proposed strategy involves increasing the influence of culture on society. That is why we want to promote art beyond art galleries and other cultural institutions. We want citizens to be able to experience its impact in everyday life, on the streets, squares and other public places. We want to take care of proper communication between the institutions so they could share resources they have. It is also important to promote such events and exhibitions, we want to use unconventional and diverse methods of contact with citizens.

11.TOURISM AND VISITING

Tourism is an important source of income for the city and its residents. We want to develop the technical infrastructure that will facilitate the movement of tourists within the City and expose the most attractive places. For a technical mean all measures that enable tourism in a place such as accommodation, meals, tour operators, brokers and travel agents, arts and entertainment activities, including the activities in libraries, archives, museums and other cultural activities and sports, entertainment and recreation. We want the city to encourage active and creative methods of relaxation and let tourists know as much as possible the culture and customs of the city as well as possible, to preserve the best memories and thereby promote the city and its smart city strategy beyond its borders.

11.1. Create tourism platform through city attractions and landmarks

The plan includes the creation of an information platform for the city. Using the platform, visitors will be able to know the most attractive places in the city. We want to include in it as much objects and landmarks as possible. This will be a practical guideline for all those who want to explore city by their own. We do not want tourists to miss important tourist points of the city, because it is very needed to promote the greatest advantages of the region, thus supporting the local economy.

11.2. Community involvement in city experience

We realize that citizens are very important part of positive emotions during the trip around the city. If the citizens of the town are positive and welcoming, tourists will be happy to visit them again. We want to enable local community in sharing the most important parts of the city for tourists and thus promote the city. Citizens who know their city the best will be able to show tourists the most interesting places, while meeting new people from other cities and countries, citizens will have also an opportunity to open up to and draw inspiration for themselves.

11.3. Access to cultural and events agenda

When visitors arrive into a foreign city they usually do not know where they can find information about the most interesting events, which are taking place during their stay. That is why we want to share this information in public places. This information will include not only individual events, but the collective agenda that will allow everyone to choose the event that best suits its interests. We want to rely on the cooperation with cultural institutions and local entrepreneurs to choose the events, which will be interesting, diverse and specific to the region.

11.4. Personalized experience to visitors

Tourists outside the suitcase bring with them the baggage of experiences and preferences. Often, their needs are much different. Some people prefer to spend time in luxury hotels, in need of comfort and tranquility, while others want to fully experience the entire accompanying noise and bustle of life in the city. Therefore, we want to create personalized tours tailored to the specific needs of tourists. Such a solution will require more work, but it may prove to be a successful investment for the city and will provide an unforgettable experience for tourists who will be able to enjoy the activities that best suit their temperament.

11.5. Manage and control tourist flow

To ensure the safety and comfort of tourists, we want to control their flow. This is very important during the summer, the season the most adequate for tourists, the summer weekends cause a large volume of tourists. We want to see which sites are most frequently visited and when this occurs. It's very important for us to know the specific numbers and days, hours, so that we can carry out a thorough analysis and make additional facilities. They will prevent too much flow queues and number of people at the same time in the same place.

11.6. Potentiate heritage and landmarks

We want to take advantage of the potential that lies in the local heritage and landmarks. Our goal is to let tourists know about the culture and history of the city and the customs of the inhabitants. We want them to enjoy visiting the city and recommend our city to their family

members and friends. Sharing cultural heritage obligate to provide them with adequate protection. We want to preserve the achievements of the city for future generations of citizens and visitors.

11.7. Facilitating means of transport

Our objective is also to make public transport convenient for both the citizens of the city and tourists. That is why we want to implement a system of support for different means of transport, not just those as conventional as buses, but also particularly popular among tourists, which will allow them to reach the most popular parts of the city. We want to promote additional connections to these places, so that people can freely get to work even in the tourist season.

12.IMMIGRATION

We want to improve the approach to immigration in a way that best suits the needs of the labour market. We want to have a workplace which supports employers and their immigrant employees who need to play a meaningful role in our economic growth. We want to improve settlement services access.

12.1. Cultural interchange experience programs

Leaving the familiar behind and plunging into the unknown shows a commitment to understanding other people and cultures and a commitment to learning about the world in a way that books, school assignments, and a professional career can never reveal. Increase mutual understanding between the people of one country and the people of other countries by means of educational and cultural exchanges. The purposes of this Program is to provide county's or city's college and university students, recent graduates and young professionals with opportunities to travel overseas to interact with foreign nationals, experience foreign culture and values while sharing their own culture and values overseas. During this program people can

join volunteering, teaching English language, seasonal employment or career training and internships.

12.2. Facilitate communication (ICT)

Facilitate communication is a technique in which physical, communication, and emotional support is provided by a facilitator to an individual with a communication disorder.

12.3. Implement intergenerational education program

Adding an intergenerational component to environmental education programs enriches the learning experience for participants of all ages. Multi-generational approaches to environmental education aim to include or accommodate different generations, intergenerational approaches seek to promote dialogue, collaborative learning, and mutual understanding.

Across the globe, intergenerational environmental education programs are being implemented in diverse urban settings, including schools, parks, urban gardens, and community and environmental centres.

12.4. Employers integration

The growing number of immigrants in the workforce poses challenges in an economy in which high levels of education and technical skills are increasingly in demand.

Focus on English-language training; the high-road employers that engage in immigrant integration; the need to educate employers on the benefits of these practices; the employers' unwillingness to invest in temporary workers; the need for skills and its relationship to employer engagement in immigrant integration; and the employer practices within the diversity and inclusion paradigm.

12.5. Awareness to cultural differences

Cultural awareness becomes central when we have to interact with people from other cultures. People see, interpret and evaluate things in a different way. What is considered an appropriate behaviour in one culture is frequently inappropriate in another one. Misunderstandings arise when I use my meanings to make sense of your reality.

Tailored option whereby we design, develop and deliver a training course on culture that is centred on your specific needs.

Straightforward option whereby we deliver our pre-packaged training programme at your offices or a neutral location.

13.EDUCATION

As much as technology and development are key for the smart city initiative, a proper smart city education program is the foundation. Smart cities need a skilled workforce with training and experience that is in demand to succeed and continue positive growth. A refined, smart city-focused education system aids the urban development scene and combats unemployment simultaneously. Students are frequently ill-prepared for the science-centric paths they choose, especially in the United States, where the programs are not as refined compared to our overseas counterparts.

13.1. Open Library (ICT)

Digital libraries has new societal benefits: one is elimination of the time and space constraints of traditional libraries. Unlike libraries that occupy buildings accessible only to those who walk through their doors, digital libraries reside on inter-networked data storage and computing systems that can be accessed by people located anywhere in the world. When the full potential

of a digital library is realized for a particular community, people shall be able to access all human knowledge hosted in that digital database from any location. Digital libraries that are accessible over the Internet provide opportunities to advance knowledge and to dramatically improve the quality of life. Open access to knowledge is an innovative mode of scholarly communication within the digital environment. It is aimed at achieving universal access to information and knowledge. While open access helps digital inclusion of citizens in developing countries by bringing within easy reach full-text contents of scholarly works, documentary heritage collections and development-related literature, the digital library remains a knowledge repository of such citizens, indigenous people, communities and institutions.

13.2. Towards innovation

For education to have more innovative topics that it teach about

13.3. Exchange programs

Enhance opportunities to attract investment in research and global partnerships to strengthen city's growth as an innovation hub.

Create an International Living and Learning Center to bring together the expanding array of international programs and activities for increased synergy and visibility. The Center would provide interactive space for many programs now isolated around the city.

13.4. Promote sports

Engaging in sport and physical activities, including physical fitness activities, plays a significant role in promoting health and wellness among children and adolescents. Make universal child and youth access to physical education and sport and play an explicit policy objective in the context of national education, health, and sport policy frameworks. Make child and youth development an integral component of all training programs for physical education teachers and

sport coaches. Account for implementation challenges with disadvantaged communities and groups when developing sport and physical activity policies for children and youth.

13.5. Self-expression

When pupils feel like they can freely express themselves, they can then begin to explore their interests and strengths. This helps them think about who they are and who they want to grow up to be. There are a few ways teachers can create a nurturing classroom where pupils feel safe expressing themselves without second guessing their artistic choices.

13.6. Include community

Community education refers to adult education and learning, generally outside the formal education sector, which aims to enhance learning, empower people and contribute to society. It promotes personalised learning and flexibility within the learning group. Participants are involved as equal partners in identifying needs, designing and implementing programmes, and adapting them on an ongoing basis. The goals of the community education sector include not just individual development but also community advancement, especially in marginalised communities. A key feature of community education programmes is that they provide the supports necessary for successful access and learning, particularly guidance, mentoring, continuous feedback and childcare

13.7. Break physical boundaries of school

Students can do activities outside, they can participate in different things, like theatre, sports, etc.

13.8. Travel programs

Travel program is for people from school who want to stretch their boundaries and satisfy their wanderlust. Travel program give people the chance to go beyond the basic touristic travel experience while still giving a satisfying break from school.

13.9. Direct transportation to school

A special transportation for pupils which could take kids from home and bring directly to their school.

14.HEALTH

Improve access to health services to at-risk populations is accomplished. Health is a precondition for economic prosperity. Efficient spending on health can promote growth. Europe needs smart investments in health: spending smarter but not necessarily more in sustainable health systems, investing in people's health, particularly through health promotion programmes, investing in health coverage as a way of reducing inequalities and tackling social exclusion.

14.1. Communication between sectors

Have a possibility to share all the information about people health between sectors. To make people life easier and help them to avoid long queues. Make a connection between all health sectors.

14.2. Support new technologies

Support new technologies which can help people to live easier life. For example, support heart beat monitoring in phones helps the people to maintain their heart level according to their health purpose. If they are older would know they are about to go higher heart rate than they should be, it could help them to avoid any heart attacks.

14.3. Open patient data (ICT)

Have a platform for people who want to have a visit to doctor. Have a possibility to order some medicine from pharmacy and get a deliver to your home in few hours.

14.4. Healthy food programs

In every place where people can buy food should be a choice to get some healthy food. To promote healthy food advertises all around the city. To support people who sell their healthy food, all kind of vegetables and fruits to sell cheaper than in supermarkets, this would help people to buy more and healthier food in markets.

14.5. Incentivize sports in all ages

Organise sport events for families, where all age people could participate. Organise events for all age groups about sport, healthy food etc.

15.YOUTH

We continue to be a local government organisation that values and includes young people in the city where young people are healthy, valued, resilient and confident young citizens who actively contribute to a better future. Ensuring Council programs, services and facilities are inclusive of and accessible to all young people negotiating partnerships that initiate new programs to respond to the changing needs of young people, supporting and resourcing youth-led initiatives, ideas and projects, celebrating the diversity of young people and showcasing their social, cultural and creative contributions, identifying opportunities to involve young people in Council's decision-making processes, providing employment opportunities for young people, engaging with young people internationally through our fellow cities.

15.1. Awareness to digital age education

Nowadays students can use internet to do their research and they don't necessarily need teachers and they cannot use multiple resources to proof their theory is correct and that's how their studies will be more accurate and up to date.

15.2. Open market offer

Apprenticeships offer young people a chance to reach their potential. Through an apprenticeship, they can achieve a successful career and secure finances in the years ahead. Higher and degree apprenticeships are widening access to skilled trades and professions. They provide the higher-level technical skills employers need to improve productivity, whilst giving young people an equally valid career route as going to university.

15.3. Youth and Elders program

Strong ties between generations result in psychological, social and economic benefits. In this mutually beneficial program, the youth gain self-esteem, respect for others, life skills and academic skills, and the elders receive companionship, intellectual stimulation and the chance to feel useful. Activities in all youth and elder's programs focus on volunteers participating with their grand partners. Will be organizing orientation training, service learning, reader theatre, living histories, at-risk youth.

15.4. Promote self-expression

Everyone will enjoy streetscapes, buildings and suburbs that reflect the highest sustainability standards and have been designed by creative young professionals who understand cities changing subtropical lifestyle. We will continue to engage young people in the planning and design of public projects, Living City programs.

15.5. Engage participation of school

Engagement is an ambiguous term, poorly defined and difficult to measure. Engagement is not simply about good classroom behaviour or attendance, but a connection with learning. Behavioural engagement refers to students' participation in learning and classroom activities. This includes adhering to behaviour rules, attending lessons as required and arriving at classes on time. Importantly, behavioural engagement refers to the learning behaviours that are important for high student performance, which may include collaboration and communication with peers. It also covers student participation in other aspects of school life, such as extracurricular activities and school social life.

15.6. Support initiatives or organizations

Mobilize young people around promising sustainable ventures and help take the emerging green economy to the next level. It is a response to the confluence of the ecological and economic crises and to the increasing fragmentation in our societies. The measure strives for a positive mobilization and for significant concrete results by combining existing initiatives into real collaborative forces of change.

15.7. Platform for youth issues (ICT)

Have a platform where young people can communicate to each other and share their issues and problems.

15.8. Include youth on democratic process

Help youth to participate in democratic process. Talk to them in a language they understood, talk to them directly, regularly and in their own environments, listen and respond to their concerns and respect their diversity.

15.9. Increase parent's participation

Establish regular, meaningful communication between home and school, promote and support parenting skills, encourage active parent participation in student learning, welcome parents as volunteer partners in schools, invite parents to act as full partners in making school decisions that affect children and families, reach out to the community for resources to strengthen schools.

16.ELDERS

The Elders will use their independence, collective experience and influence to work for peace, poverty eradication, a sustainable planet, justice and human rights worldwide. Working both publicly and through private diplomacy, they will engage with global leaders and civil society at all levels to resolve conflict and address its root causes, to challenge injustice, and to promote ethical leadership and good governance.

16.1. Special transportation for special needs

The ability to access daily needs, including education, employment, and health care, is crucial to maintain quality of life. Have a specialized form of par transit service where a driver meets customers at their door and walks with them to the vehicle and then to the door of their destination. Specific program services, such as medical, community service, and education, including school buses, and employment.

16.2. Home assistance

Home Care Assistance takes pride in providing the highest level of care for clients. Entire team, including care managers, is on call 24/7 for clients' needs. You can always reach Care Assistance if there's a concern, an emergency or an urgent need for additional care. Care Assistance is available for regular home visits, family updates, and in-home care assessments.

16.3. Assist to visual and hearing problems

Outdoor spaces and public buildings have to be pleasant, clean, secure and physically accessible. Replace street name plates with signs that have larger font sizes. Ensure buildings and outdoor spaces are accessible for seniors of all abilities.

16.4. Devices daily tasks guide (ICT)

City can provide information on seniors' issues such as transportation, by providing links to useful resources and connecting seniors and their families with service providers. City can provide information about seniors' services and other resources on the City of Surrey website, including transportation options within the City.

16.5. Sports and activities

Promote Well Living and Well Driving workshops for seniors. Provide parks and outdoor spaces that support healthy and active living.

16.6. Exchange of experience with young people

Public transportation is accessible and affordable. 3. Housing is affordable, appropriately located, well built, well designed and secure. 4. Opportunities exist for social participation in leisure, social, cultural and spiritual activities with people of all ages and cultures. 5. Older people are treated with respect and are included in civic life. 6. Opportunities exist for employment and volunteerism. 7. Age-friendly communication and information is available. 8. Community support and health services are tailored to older persons' needs.

MOTION

17.WALKING

Walk Plan is about making the city better for walking. We want to make walking the first and best way to get around the city, with more people of all ages choosing to walk more often and to more places. Achieving this bold vision means walking in the city must be convenient and accessible, safe and enjoyable. Road user hierarchy places the needs of pedestrians first, followed by bicycles, public transport users and finally, motor vehicles. It's about making our streets people places, not spaces for cars. Our walking plan lists priorities for action to improve walking paths and bike lanes and to develop incentives for non-car transport by providing car-free streets, reducing speed limits, improving infrastructure and spaces for bikes and pedestrians as well as providing community bus services and shuttles and improving safety and enforcement.

17.1. Crossing design

Increased, higher and larger road crossings.

Crossings for people have to be higher than roads for cars. Higher crossings will decrease cars speed and will increase people safety. Higher crossings have to be at the same level as sidewalks to make walking easier, especially for people who has disabilities. Visible crossings with wider sidewalks are for people safety increasing.

Pedestrian crossings create safe crossing points, mostly at intersections, by giving priority to people crossing the street. As previously described, zebra crossings require motorists to stop whenever a pedestrian wishes to cross. Signalized crossings require motorists to stop when signals turn red. There are also many other places that pedestrians may wish to cross the street where formal crossings are not provided. It would be too expensive and inefficient for the operation of the street to provide crossings in all these locations. Under the road rules, pedestrians wishing to cross the road may do so anywhere except within 20 meters of a pedestrian crossing. Painted median islands have been used to assist people to cross in places where no crossing is provided. Allowing people to cross the street safely where they want to

often reduces delay and walking distances. It can also promote business in shopping streets by allowing easier access between shops on different sides of the road.

17.2. Pedestrian streets

Reallocation of car lanes from roads for new and different functions such as vegetation, cycling or walking paths may help achieving systemic improvements and balance the use of the street environment. Street space dedicated to cars in the periphery, expanding mobility to other modes in the city center, while also preserving traffic flows and improving safety.

17.3. Ground level trails

It's important to enhance ground trails around the city because it is the contact that we make with the public realm. As main way and level of movement it has to be provided conditions to facilitate this paths through the city like ramps for people with disabilities, electrics streets and stairs to make people's walking easier, as public elevators to facilitate access to higher grounds and also wider sidewalks with better ground pavements

17.4. Routes (ICT)

Map platform which shows all the events, routes at night and day time, public data in real-time, providing improved lighting conditions and even enabling tracking or check in features.

Accessibility and inclusivity - digital technology has the potential to make the City more inclusive and accessible, especially through access to accurate, real-time data and planning. Crowd sourcing can be used to map wheelchair accessible routes and places; platforms can provide tailored guidance and help to visually impaired users; and providers of public services can publish accessible route information. The result is a city in which it is easier for everyone to explore, roam and move.

Safety is a concern for many people considering walking, especially at night or when alone. New digital systems, services and technologies can ease these fears by mapping crowd sourced or public data in real-time, providing improved lighting conditions and even enabling tracking or check-in features. In addition, safer public spaces can be enabled through data-driven urban design, maintenance and policing.

17.5. Walking flow

Safe crosswalks and intersections; implementing audio or visual aids to crossings and intersections can reduce the boundaries posed by roads on pedestrian mobility. They are able to increase the safety and ease of travel for those on foot, while also raising the awareness of drivers. They also make it possible for people with mobility issues or impairments to manoeuvre junctions independently.

Auto-on pedestrian phase signals; at crowded intersections, or intersections through which many pedestrians move, the pedestrian phase should be automatically activated rather than pedestrians being required to press buttons to activate crossings. These signals are called auto-on pedestrian phase traffic signals; they automatically activate the pedestrian signal when traffic lights turn green without needing someone to press a button. They reduce wait times for pedestrians as pedestrians do not miss an opportunity to cross if they reach the intersection after the time a walk phase could start. They give pedestrians a similar level of service to motorists, public transport vehicles and cyclists who do not need to manually activate lights.

17.6. Street ambiance (ICT)

Automated sensors that respond to weather conditions in a certain area of the public realm. The idea is to provide liveable conditions to streets or squares, "acclimatizing" them, through water sprinklers in the summer, for instance, or movable and removable systems to give shadow or isolating space from rain.

17.7. Charging points

Free public charge points distributed across the city, with additional points in car parks, parks, streets and bus stops.

It is very important to be able to use our mobile phone at any time during the day. We nervously keep an eye on our battery bar, dreading that fateful moment when our phone will run out of juice and we will lose our link with the rest of the world. Running out of battery power is more common that one would think, but it is a problem that now has a solution - the new renewable energy-powered mobile device charging station.

The renewable mobile device charging station, marketed as the Smart City Charging Station, provides a focus point for increasing citizen awareness about the need for efficient use of resources. The renewable mobile device charging station is a compact solution specially designed for outdoor installation, providing a battery charging and Internet connection point. The system includes mobile device charging terminals and free Wi-Fi connection using renewable energy sources.

17.8. Special assist

To provide disabled and older people to have access in every part of the city, feel comfortable and safe. To reach this aim we would like to create a special infrastructure for all people. City has to have lifts, lift stairs, escalators which make every all routes accessible for everyone. Benches In parks and squares, special routes without stairs which would be leading to the main points in parks. Special street crossings for people with disabilities, for example, special sound and ground for blinds, lights for deaf.

18.BICYCLING

A humanistic, people-friendly city is first and foremost an accessible city, where mobility is possible for all. Sadly, big metropolises like New York City, London or Tokyo are often a living mayhem, with throngs of people, congested roads and a polluted atmosphere. Traffic

congestion represents a major economic problem because of the many working hours lost each day from sitting in traffic jams and soaring petrol costs. In Mexico City, for example, one of the city's worst afflicted by traffic congestion, the average speed of cars is 4 km/h during rush hour. In our fast-paced societies where every minute counts and time is money, the daily struggle to get through life is leaving people frazzled and exhausted… and in a very bad mood. So, what's the solution? A growing number of cities around the world are eager to become bicycle cities, as part of a wider strategy to raise their green profile. A case in point: in Copenhagen, Denmark, for example, the majority of cyclists favour this means of transport to get to their destination quickly, saving the city 90 000 tonnes of CO2 emissions annually. From a corporate perspective, sponsored bike sharing systems form an interesting vehicle for building corporate reputation. Citibank's title sponsorship of New York City's bike sharing program brought the company a 41% increase in brand consideration three months after its launch. When leveraged to improved financial performance, this may lead to economic benefits for the city in terms of employment and paid taxes.

18.1. Trails just for bicycle

To increase bicyclist safety, we would like to separate roads for cars, trails for bicycles and pedestrians. The most dangerous parts for bicycling are highways and fast roads. The measure involves building a wider two side road with enough space for bicycles with special and colourful ground. Trails for bicycles have to be marked with special signs, especially in more narrow streets where are too close to cars. Build new trails for bicycles and pedestrians through the most attractive and green parts of the city.

18.2. Parking in buildings and streets

To build more bicycles parking with lockers which would be easy to find and safe to leave bicycle. Parking should be near shopping malls, offices, touristic places, parks, schools, hospitals, bus stops, stations, etc. Some of the parking have lockers which can be used for locking bicycle. Parking have to take as small area as it is possible.

18.3. Bike sharing and renting

Bike sharing points on the main city streets which will be available for city citizens and tourists. To rent a bicycle user has to have a special card or download an application and register. Also can be created an platform where people can share and rent their bicycles.

18.4. Electrical bicycles

Electrical bicycles can be a good solution for higher places where are more heels. Electrical bicycle has to have charger where people can charge their phones, laptops also people can be able to connect to a special program with their smart phones and see how many kilometers they rode, can see some information about their health.

18.5. Structures for transportation

To make an escalator for bicyclists in a road where are a big heel which can help people to ride a bike easier in hilly cities. To make escalators bigger, wider and adapt them for bikes for example in the places where escalator is only one possibility to move. To adapt busses and trains for bikes transportation, for example, lower bus entrance or special place to keep a bicycle in/on the bus or train.

18.6. Bike repairing points

Points have to be in the parking, city parks and other bicyclist's common points. Repairing points are free and there bicyclists can find all the equipment for repairing a bike. Also there should be electricity charging points with solar power to charge phones, electric bicycles, etc. Repairing point has to have a lamp and screen which show time, temperature, and map. People can be able to connect their smart phones with that screen.

19. PUBLIC TRANSPORTATION

The public transportation system is the lifeline of a smart city. It fills the city with life through a continuous and controlled flow of people and products and carries everybody to his or her destination. In an intelligent city, the development of the public transportation system is promoted because it provides the general public with basic services. If it is expanded city-wide and its efficiency is improved, public transportation make a significant contribution to the reduction of traffic congestion and emissions. The individual can contribute to a more efficient and safer transport system with the help of intelligent traffic routing. Today, there are some Smartphone apps on the market that provide drivers with traffic information in real time and other platforms use the communication between vehicles and traffic infrastructure or that mediate ad-hoc shared-ride services that contribute to more efficiency and safety on the road. The areas of traffic routing and driver assistance offer even more development opportunities for individual traffic in the areas of information and communication technologies.

In addition, the internet increasingly contributes to mitigating traffic: The dissociation from the concept of the static office space and the increasing acceptance of telecommuting or internet-based cooperative work at different places make many trips superfluous. Trips to the place of work or to meetings are often no longer necessary because employees and especially an increasing number of self-employed persons work from home or in co-working spaces nearby. The great success of online shopping has the same effect on the mobility in smart cities: Trips are no longer necessary for the customer and retail stores require fewer deliveries of goods. If this will compensate the increasing number of deliveries by delivery agents still has yet to be analyzed.

19.1. Virtual tickets (ICT)

Virtual tickets can be used in trains, metro, busses, plains, taxis. Create an platforms where customers can go and purchase a ticket for all kind of transportation and download into their smart phones and benefit customers to reduce their time wasted in the queue to get those tickets visible printed, which can cause the customers to lose their train or plain, therefore increases the happiness of the customers by reducing their stress.

19.2. Transportation for bicycles

On top of taxis, having a section in the busses and trains, on the back for instance, where you can strap your bike, or just inside of the transportation. People can easily travel from one city to another or just inside the own city, avoiding more difficult or time-wasting trails.

19.3. Real time journey planner and alarm (ICT)

A platform that combines maps and the actual alarm that would be automatically created after selecting when you would like to arrive at your destination, associating different types of transportation as well as singular way of movement, with bicycles and walking, giving schedules and last time changes in a specific route, allowing to trace the mean of transportation through a GPS signal.

19.4. Multi-functional bus stops

Bus stop with bicycle lockers, chargers that use solar power, screen with temperature, time, real time journey planner platform, electrical bikes charging spot, ticket machine, and Wi-Fi. In case of public transport network, it can have associated other tools useful to the population, like first aid kits and repairing tools for bicycles or other similar means of transportation.

19.5. Facilitating design

Public transport with the same floor height as sidewalks, facilitating entrance in the transportation, prepared accommodation for people with motion disabilities, in the entrance and exit as well in sitting or localization for wheel chairs. Potentiate connectivity inside the transports, through an open Wi-Fi network and chargers, not only for mobile devices but for electric bicycles and others, allowing them to charge during the trip.

19.6. Place of parking and charging station

To be able to reallocate, in a more efficient way, the stop stations for public transportation, creating two stops equidistant from the bigger traffic service flow, allowing buses to not do routes vacant just going to parking. Adding electrical charging through solar panels system in the stations.

19.7. Public electric cars to share

Have car points with chargers and solar power all over the city. Electric cars will be using throw an platform where customers can find where cars are available, see their journey price and free points where they can leave the car. Car key is in the car and customer will be able to unlock by application and security code.

19.8. Taxi booking service

A platform where customers can go and order their taxi even when they are not familiar with the city so the taxi drivers will not charge extra and customers would know how long it would take.

20.PRIVATE TRANSPORTATION

Having your own private vehicle can offer you the ease of being able to travel at any time to any place. It can also give you peace of mind that if there should ever be an emergency where you need to reach the hospital or simply return home, you would be able to do so immediately. Your own vehicle could also accommodate the exact needs of your child. If you need a wheelchair accessible vehicle, this can be altered to perfectly fit the size of the individual wheelchair.

The downside to your own transport is of course the cost and maintenance of a vehicle. However, there are many providers of good quality second hand vehicles in the U.K. and the U.S. which can save on costs. Wheelchair permit holders will further benefit from being able to park

their vehicle for in a more convenient location. If you or your child has limited mobility, then this can be a real plus point.

20.1. Electric chargers network

Charging points for electric cars will be near living houses, offices, shops, shopping malls, where cars will be charging by solar power, so people can leave their cars for few hours and in mean time they can use their time usefully.

20.2. Platform for electric cars (ICT)

Having a platform with map where citizens can find, and which are free electrical cars charging points. Charging points with solar power so in that in the platform people can also find how much energy which charging stop has.

20.3. Automate navigation system (ICT)

A platform where are city map and real time journey planner. Navigation system is giving an ability to plan A to B (to C) travel in real time as well as to plan future operations. Use as a mechanism to influence traveller behaviour and distribute travellers across models. Use data to plan future infrastructure and service provision based on demand.

20.4. Car sharing platform

Having a platform where people will be able to communicate and show where and when they can rent their cars for few days or month also they will be able to share their everyday routes where others will be able to apply for that journey. For example, one person who is going from the same place to work from Monday to Friday, at the same time, can share his car with others who have the same or similar route to their work. So an application will be helpful for people who want to share their car seats, save money for fuel and decrease traffic congestions.

21.PARKING

Drivers need parking spaces, high amount of off -street parking, a legacy of past policies to support increased commuting by car. Parking in offices and commercial parking stations attracts driving into the heart of the city where it contributes to peak hour congestion and compromises the operation of the tram and bus services. To avoid the costs of basement car parking there has also been a recent developer trend to provide this off -street parking in multi-level above ground. This is resulting in developments where up to the first 10 levels of the building are car parking, presenting a 'dead' frontage to the street and fostering a lifeless streetscape.

Many existing and new city residents do not own a car. Much of the city has good to excellent public transport services and many dwellings can access shopping and full their other needs easily by walking or cycling. There is evidence to suggest that off -street parking in many residential areas is over-supplied, with vacancy rates in residential body corporate garages of up to 30 per cent.

21.1. Parking lots on city outskirts

Parking made underground which are located outside of the City. It will save city centre from traffic jams, air pollution and will increase walking space.

21.2. Maps for parking locations (ICT)

Having an application which shows every parking's free and occupied place and in which they will be able to reserve one place for 10 minutes. Places will be made with sensors which will be connected to the platform. So, drivers will save their time by searching for free parking place.

21.3. Parking payment (ICT)

A platform where customers can go and pay for their car parking, after they registered there with their car number and phone number or bank account.

21.4. Efficient parking constructions

Parking constructions, created under parks in the city, or in the ground floor in the houses.

21.5. Sensors in parking (ICT)

Sensors are installed in every parking, every place for car. Sensors will help to save people's time instead of searching for place to park their vehicles they can just find which closest parking have a free place, reserve it for 10 minutes and park the car.

22.TRAFFIC

We want to make the City traffic better and safer for citizens. We want to have systems for speed control and management, have more sensors in the City, to know what is the current level of pollution. We want to help people to avoid huge traffic jams and make city smarter.

22.1. Systems for speed control and management

Systems indicate the drivers to reduce their speed this helps to reduce accidents on the road.

22.2. Redirect traffic because of pollution sensors (ICT)

Sensors will allow to drivers to use equal friendly journeys which will help not just the city to be pollution free but allow the drivers to remain healthy by not breathing polluted air.

22.3. Traffic signal timing (ICT)

Allow the traffic to flow naturally by giving equal time frame for all the drivers so the most conjunction areas can be flued at all the time which allows less risk of accidents.

22.4. Traffic flow map (ICT)

Traffic flow platform helps the driver to get to his destination avoiding the busiest roads and motorways that have accidents by diverting to the most time efficient journey.

22.5. Public Transportation Lanes

Public transportation lanes are for buses which have a minimum of 10 seats (including the driver), licensed taxis, motorcycles, mopeds, scooters, tricycles, bicycles. Bus lanes are part of the road that is indicated on the carriageway by a thick white line. They are reserved for certain vehicles, shown on the sign. They increase journey time reliability and safety for certain vehicles and encourage the use of sustainable transport such as public transport and cycling. The hours when you can or can't use bus lanes can differ due to the volume and frequency of buses using the route.

22.6. Two stop strips

To separate road stops before crossings and traffic lights for cars, busses and motorbikes. In front of cars and buses should be made a special space for motorbikes. Two stop strips is useful because motorbikes are faster, they start moving faster. This measure will help to make motorbike’s journeys safer and faster as well as car’s.

22.7. Traffic control by emergency vehicles

Connect emergency vehicles with traffic lights through sensors, so traffic lights could change to a green light in the directions of emergency vehicles and red for opposite directions immediately and let emergency vehicles move.

22.8. Piezoelectric tile flooring

Piezoelectricity is electrical energy harvested from mechanical pressure such as walking motion. When pressure is applied on an object, a negative charge is created on the expanded side and a positive charge is created on the compressed side. As this pressure is relieved, electric current flows across the substance. Piezoelectric flooring is ideal for places that receive heavy foot traffic. It can be installed at tourist attractions, town halls, schools, stadiums, or dance floors. In fact, the firm Energy Floors has a product called the Sustainable Dance Floor especially designed for clubs. Piezoelectric flooring can also be installed in other busy places such as subway stations, airports, universities, and malls.

22.9. Message signs (ICT)

The electronic signs have to be installed between the bridges or in the streets where traffic is intense. Each line has a sensor that gives drivers information. The sighs can also tell drivers when to change lines because of a crash or stall and suggest driving speeds based on conditions.

ENVIRONMENT

23.PRESERVATION

Protection and pollution prevention is a prerequisite for proper environmental policy. Without protection, the effects of the negative impact on the environment may be irreversible or deleting them will be costly. Environmental protection is also very important part of protecting human and animal health. It also increases the attractiveness of the city and makes it become a convenient place to live and leisure. The proposed strategy involves the creation of a number of solutions that will allow the detection of threats, study the causes and prevention of negative effects. In addition, it engages residents in protecting the place where they live. We want to promote aware and well-informed citizenship and a sense of environmental responsibility. Active participation of citizens, including the socially excluded, unemployed, will allow for the creation of a modern civil society. Solutions for modern city also engage local entrepreneurs and show them the perks associated with the introduction of environmental protection in their companies. The proposed smart city strategy also envisages the protection of vulnerable areas, such as forests. We believe that a sustainable environment is the goal of this indispensable factor smart city.

23.1. Pollution sensors

We would like to create an intelligent and modern air pollution detection system, including the dangerous substances, i.e. sulfur dioxide, nitrogen dioxide, carbon monoxide, benzene, lead, arsenic, cadmium, nickel. Work on the study of air pollution will cover two main areas: transportation and production. The study of air pollution is developing a plan warning citizens and getting control of the most dangerous compounds into the air they breathe. Sensors monitoring the noise level, which also negatively affects the health of residents of the city, causing among other things, hearing problems and persistent headaches. In addition, we want to investigate the noise associated with the transport and traffic in order to counteract the negative effects of excessive noise and emerge the most vulnerable parts of the city.

23.2. Domestic efficient equipment

Have a system of effective use of the equipment by the citizens and the safe storage of waste from households. This part of the proposed smart city strategy is to raise awareness of citizens regarding the use of everyday appliances such as washing machine, dishwasher or refrigerator,

in such a way as to minimize the loss of energy and water. We intend to encourage the safe disposal of equipment, for example by giving an old dishwasher would receive a discount on the purchase of a new one. These solutions will also help in recycling equipment.

23.3. Office efficient equipments

We assume cooperation with entrepreneurs and the introduction of environmental principles in their offices. We want entrepreneurs to promote the efficient use of office equipment among their employees. Equipment such as air conditioners cause large energy losses, we want to convince employers to seek new solutions that benefit both employees and the environment. The motivation for entrepreneurs is not only taking care of the environment, but also lower consumption of resources and ecological prestige of the company. We also plan to offer other solutions, which encourages employers, such as tax incentives for the introduction of favourable policy environment.

23.4. Industrial efficient processes and equipment

Reducing the unnecessary consumption of resources can bring a large, visible difference to the environment and society. The proposed strategy involves promoting the introduction of innovative solutions aimed at reducing energy losses in manufacturing and help businesses find new methods of planning the production process with maximum use of the equipment.

23.5. Sustainable water management

We assume raising public awareness, through the implementation of sustainable water management, we want to promote reduced water consumption in private flats. For this purpose, we want to hold a series of educational campaigns for the public. Public places are to serve as an example of saving water. We would among other things introduce special filters that reduce the flow of water and reduce wastage. Example of public places is to motivate residents to work on the reduction of waste water.

23.6. New irrigation system

As part of the Smart Cities strategy, we also want to introduce modern irrigation system. It aims to minimize the wasting of water in public space. An example of this is the impressive use of sprinklers to water parks and other green areas irrigated. In this case must be analyzed hour run and sprinklers so that water under high does not evaporate too quickly.

23.7. Lighting sensors (ICT)

We want to introduce the special light sensors that allow electricity saving. To reduce power consumption, late at night, the lights can be switched off in less frequented areas of the city, such as parks. This solution is also conducive to the protection of birds living in urban parks. We also want to enter the appropriate angle of incidence of light, suitable for both citizens and favouring the animals living in green areas.

23.8. Old dumping sites treatment and preservation

As part of efforts to protect the environment we want to maximize the recycling of waste. In order to achieve optimum results, we want to create and promote an attitude of "referral" of received raw material in its natural form, which does not compromise its functioning.

23.9. Clean forests and woods

This part of the plan involves environmental conservation, forests against fire and the effects of adverse weather conditions. The efforts of nature we want to involve volunteers and citizens, including those excluded by society as prisoners. We would therefore support the process of rehabilitation and strengthen their relationship with society.

23.10. Communitarian urban gardens

We plan to develop untapped areas of the city, such as the areas between blocks of flats. If the city will provide the area concerned citizens, they will be able to productively use their free time and serve the appearance of the area. This solution is particularly favorable for those staying retired. They planted vegetables and free access to these sites to take care of the appearance of the city. Green areas could also be made available to non-governmental organizations and neighbourhood clubs.

23.11. Impermeable to permeable soil

The proposed strategy is intended also to protect the purity of the soil through repeated cycles of water. The activities are expected to include methods for softening water by means such as calcium and soda. Such cycles will assist in purification of the water and thereby preventing the entry of contaminants with it into the soil. As part of these measures we want to implement the simple and completely natural ways to recover drinkable water.

23.12. Electric waste collectors

We want to swap normal existing waste collectors with new, electric ones. Exchange is subject to the entire existing fleet, which is owned by the city. These cars do not bring air pollution, are quiet and their work productivity is high. With this solution the equipment to purify the streets will not result in additional impurities.

24.RECYCLING

Recycling involves recovery of secondary raw materials and reprocessing in a production process in order to obtain material for the original purpose or other. Can be used in this way, even

repeatedly, substances contained in waste or different materials. Processing recyclable materials limit the use of raw materials, which contributes to the protection of natural resources. Recovery and processing also reduces the amount of waste, the same amount of space in landfills. Finally, the use of raw materials, which are the carriers of energy is an element of efficient energy management. The basic principle of recycling is to maximize the reuse of the same materials, the least amount of raw materials and energy needed to process them. At the same time recycling is the foundation of urban environmental policy, it helps to reduce waste and restore the life of worn objects.

Our concept provides us to look for many innovative solutions for smart cities, where waste will be properly stored, sorted and processed. We want to implement concrete actions to reduce the consumption of new materials and take care of the environment in the most efficient way.

24.1. Sustainable waste management

We have developed a specific plan for the collection and management of waste. Collection of waste, which cannot be recycled in a black rubbish bin will take place once every two weeks, other waste that are segregated, once a week. We also plan to enter accurate information for citizens about waste segregation and collect them. Sustainable waste management policy is to create the optimal recovery system resources by engaging citizens and providing them with all necessary information. Waste from reception will be recycled to recover the maximum amount of resources.

24.2. Biomass

The proposed strategy also envisages obtaining energy from biomass. It includes: sewage sludge, manure of animals, wood, low-quality technological and wood waste, straw and other waste agricultural production, vegetable oils and animal fats, Algae, which are grown specifically for this purpose, waste organic (corn stalks, alfalfa or grass, sugar beet pulp. Biomass is the oldest and most widely used source of renewable energy. Of all existing organic material on earth, and all the solid or liquid vegetable or animal origin biodegradable. The use of biomass takes advantage of waste and develop wasteland. Biomass converted into units of weight (gram,

kilogram), a unit of energy (calorie, joule), as well as organic carbon. With it, you can calculate the biological production of an individual, ecosystem, biome, or the population, biosensors or the entire biosphere. Takes the form of fresh or dry mass of living organisms (after evaporation of water, or after drying).

24.3. Different waste separation

We want to implement more specialized segregation of garbage, which go beyond the existing scheme. Within the proposed strategy we receive rubbish in appropriate containers, segregated as follows:

Black recycling box: batteries, usable clothes and textiles, engine oil, glass bottles and jars: rinsed out, newspapers, magazines, catalogues, junk mail, yellow pages and telephone directories, paper and envelopes: not brown, shoes: shoes must be paired, tied together, dry and in an untied carrier bag.

Green recycling box: aerosols: empty, without lids, plastic bottles including: milk, squash, cola, ketchup, shampoo, cleanser, shower gel, bleach, washing up liquid, bottle tops, lids and caps: metal and plastic, cans: rinsed food and drink cans, cardboard: size no bigger than the box, cartons: food and drink cartons rinsed and flattened, foil and takeaway containers: rinsed and squashed, plastic yogurt pots, ice cream and margarine tubs, plastic trays: meat, fruit, biscuit.

Brown food waste bin and caddy: bread, pasta, cereal and rice, cooked and uncooked food, dairy products and egg shells, fruit and vegetables, leftover food, meat, fish and bones tea bags and coffee grounds.

Black wheelie bin: waste that can’t be recycled, garden waste.

24.4. Waste agglomeration

Agglomeration of waste are all activities related to the recovery and disposal of waste, i.e. the acquisition of these new materials or bring them to a state that does not endanger human health

and the health of the environment. In the process of agglomeration, we want to introduce innovative solutions tailored to the needs of a particular city. To achieve this, we expect to use a variety of methods. The main goal of agglomeration of waste is creating larger agglomerates of waste particles. This process is carried out in order, for example. Reduction of the area of waste, increase bulk density, anti-dusting like. Agglomeration may occur as a result of the following processes: compression (tabletting, briquetting, baling, extrusion), build-up of material on the primary particles (granules), sintering.

24.5. Water treatment

The premise of our strategy is the modernization of water treatment processes, both for municipal and industrial. Proper water treatment, which citizens use every day is necessary for their health and safety. It also provides the basis for many of the production and is very important for medicine and pharmacy. Water treatment process is carried out using various technologies, such as iron removing, filtration, disinfection and aeration. We want to introduce solutions for enhanced scrutiny of the composition of the water and effectively adapt it to the citizens.

24.6. Household item collection

Household item collection is a proposed strategy that will help reduce bulky waste. After notification by the locals received will be used furniture and household appliances such as dishwashers, refrigerators, mattresses, and electronic equipment. We also intend to introduce a system of transmitting continuously efficient appliances and furniture in good condition for public benefit organizations.

24.7. City composting centre

Composting is the natural process of breaking down organic material to produce a nutrient-rich, soil-like material. The process works with the help of micro-organisms such as bacteria combined with air and moisture. Composting turns kitchen and yard waste into usable resources

for free. This process returns nutrients to the soil and reduces amount of garbage. We want to organize city composting centre, where citizens could compose organic materials like grass clippings, garden waste, flower clippings and leaves, weeds (before they flower), fruit and vegetable scraps, tea leaves, tea bags, coffee grounds and filters, nutshells and eggshells.

24.8. Compress garbage

Compression of waste is at the maximum to reduce their volume. We want to use the professional equipment and vehicles to limit the size of the waste and thus facilitate their storage. Compression can also be a first step in the process of recovery of raw materials. Thanks to the landfill will not be littered heap of used items.

24.9. Waste sensors

The proposed smart city strategy include implementation of waste sensors and the development of an adequate plan to introduce in a platform solutions for waste collectors. With this application you can check if the bins are already full when the waste was recently received and the extent to which changed their volume since the last reception. With this solution planning receiving garbage from various parts of the city will be more efficient and waste will not be littered in full dustbins. Drivers of garbage trucks will have the whole picture of the situation on the route which they drive during the day.

24.10. End-of-life cars scrap page

The proposed smart city strategy involves scrapping the used cars while leveraging useful parts. The main objective of the end-of-life scrap page is to try and minimize the amount of waste generated from the whole disposal process, whilst also reducing any adverse environmental impacts. We want to provide of an end-of-life vehicle recovery through the scrap metal recycling process. our aim is to recover positive and useful components of the vehicles and prepare it to recycling process and re-using. Moreover we plan to develop new vehicle de-pollution process to remove all negative parts of vehicles, which could be harmful to the environment.

24.11. Cigarettes and gum litter bins

Cigarette butts and gum litter thrown directly into the streets and sidewalks negatively affect the aesthetics of the city. They also may cause danger to children and animals. Therefore we would like to put the special bins near the sidewalks. We want to prevent stuck spent in many places chewing gums and the remnants of cigarettes. Baskets will contain a special part for putting out a cigarette so that the glowing butt does not cause a fire in the bin. In addition to the special bins we will also want to carry out a campaign to promote their use. We want to inform the citizens, it is a way to achieve beautiful and clean surroundings.

24.12. Sewage sludge to energy

Sewage sludge produced as a result of operating wastewater treatment plant. In this process they are separated from the purified water, then the level of the water therein is reduced to a minimum. Sewage sludge is then dried and stored. In our proposed smart city strategy we want to use these deposits to generate energy. The most common method allows for the energy use of sewage sludge is burning in incinerators unions or co-incineration in industrial equipment such as boilers or rotary kilns. This process needs to be processed sludge, ensuring at least auto thermal combustion. The resulting combustion product or the ash is completely absorbed and does not pose a threat to the environment.

24.13. Specific commerce collector

We assume personalization and individual waste collection of shops and manufacturing companies. As a result, we will be able to customize the process of collection and recycling in relation to specific industry. Rubbish collection would take place on the basis of determining specific plan and timetable developed in cooperation with representatives of the company.

24.14. Pay-as-you-throw

This part of the proposed smart city strategy is to reduce the amount of landfilled waste. Households and manufacturing declare the planned number of delivered waste. If the amount of this waste is higher than previously planned, the entity will have to pay. This solution is aimed at drawing attention to the amount of waste and increasing the awareness of citizens, so that they attached more importance to how much garbage goes to their rubbish bins.

25.LIGHTING

Streetlights are an ideal place for sensors, and they can be easily integrated. Connected streetlights can become a low-cost sensory network taking the pulse of the entire city. Lightning network is ideal for adding additional applications such as parking or asset tracking.

Street light control can save energy and reduces operational costs, increase security, increase exibility of the lighting.

25.1. Efficient lamps

Energy efficient LED lighting reduces carbon footprint and long-term operation costs.

25.2. Position of lamp poles

Relate lighting to the evening functions of a particular space, because in the larger view, street lighting is more than just a technical requirement, a security need, or a design element. It can be thought of and utilized in terms of how the type, placement, and wattage affect how a street is perceived and used.

Although it is primary purpose is night time visibility for security and safety, successful street lighting takes into account the human users of the street, not simply the requirements set by local DOT and public works agencies. For instance, one way to emphasize pedestrian activity over automobile traffic is to replace standard overhead street lights with smaller-scale, more frequently spaced fixtures geared to pedestrians.

25.3. Individual control

Additional electrical capacity may also be needed to assist in street, tree, and/or event lighting.

25.4. Illuminate ground floor frontages

Well-lit maps, along with directional and informational signage, are essential to providing orientation at night.

Careful evening lighting around building entrances — especially in residential building doorways — contributes to the safety of a district even more than indiscriminate use of bright lighting that is not focused on areas of use.

People feel more secure when bus, train, or trolley stops are well-lit. Lighting also draws attention to and encourages use of such amenities.

Lighting retail displays, even when stores are closed, not only provides ambient light for the street, but also encourages window-shopping. This tactic can help to increase the number of people on a street, which is a major contributor to security.

25.5. Electric installations

Lighted sculpture, fountains, bridges, towers, and other major elements in a district, especially those visible to passing pedestrians and vehicles, provide another form of way finding.

The difference between a pedestrian-lit street and a highly illuminated highway automatically signals drivers that they have entered a new and different zone, and compels them to slow their driving speed.

25.6. Sensors

The measuring station located in every lamppost consists of many modules: the presence sensor, the sunshine sensor, the failure sensor and an emergency switch. These devices work along and transfer the information to a microcontroller that processes the information and chooses the action. Every of those sensors has an assigned priority of transmission, for instance, the emergency switch takes precedence over the others.

The presence sensor has the task of identifying the passage of a vehicle or pedestrian causing the switching on of lamps. This feature permits to activate the lamps solely when necessary, avoiding waste of energy. The sensor ought to be placed at the optimal height, neither too low (e.g. to avoid any erroneous detection of small animals) nor too high (to avoid failure to detect e.g. children).

Integrated weather, traffic, people, pollution sensors in lamp poles.

26.RENEWABLE RESOURCES

Renewable resources are resources that are replenished by the environment over relatively short periods of time. This type of resource is much more desirable to use because often a resource renews so fast that it will have regenerated by the time you've used it up. It is also a green energy without harming the environment.

The renewable energy includes: solar, wind, hydro water (drop of water, tides, temperature difference of water), geothermal, biomass energy and biofuels. Energy from renewable energy sources can be electricity, heat or cold. It is very important for us to develop renewable sources

of energy for cities. This will allow to product energy without harming the environment. Renewable resources plan is a chance for effective use of the resources that surround us. Finding renewable energy sources is an essential part of our plan for the development of the City and making them smart and modern.

26.1. Solar power

A solar energy converts the solar energy to electrical energy. Energy can be used immediately or may be stored for use at a later date. The solar energy is converted to electrical energy by a large photo-voltaic array. This system allows the use of solar energy, which is the proper selection of places to locate the panel can be an endless source of power. We would like to maximize the use of renewable energy resources, install solar panels on public buildings, lighting, as well as promote the use of solar energy in households.

26.2. Biofuels and other alternative energies in transports

Biofuels are formed from biomass processing, which may be a plant, animal substances, and microorganisms. Currently, the most widely used is called. I kind of biofuel, which is made from plants are also used for food production. As biomass is considered to be the whole plant matter and animal, biodegradable and products of their metabolism, eg. cow manure. Therefore, different types of biofuels are plenty and they exist in the form of gas, liquid and solid. Because biomass is a renewable source of energy, it can successfully be considered environmentally friendly fuels as the carrier's renewable energy. We realize that resources such as coal, lignite, natural gas, nuclear fuel or fuels derived from petroleum slowly depleted, so we want to think about the future and develop biofuels and other energies in transports.

26.3. Biomass and forest waste as energy

Biomass is harmless to the environment, renewable energy source. Its biggest advantage is the zero balance of carbon dioxide released during the combustion of biomass, and also lower than in the case of fossil fuels, emissions of sulfur dioxide, nitrogen oxides and carbon monoxide. Biomass is advantageous from the environmental point of view, not only because of the reduced emissions. Obtaining energy from biomass we prevent waste of food surpluses, develop is waste production forestry industry and agriculture, recycle waste. In addition, the use of biomass from forest areas and pasture reduces the risk of fire, and crops for energy purposes also allow develop agricultural wastelands and reclaim brownfields.

26.4. Efficient impelling systems

At this point we want to implement some solutions for impelling system for the use of water power and steam. With this solution we use energy generated by water as a renewable energy source, we want to do this by a modern infrastructure and development system.

26.5. Promote and incentivize projects of energy pollutions

The objective of smart cities is to support people who are looking for modern solutions. We want to devote a lot of attention to citizens, who will have innovative ideas related to environmental protection and the use of renewable energy sources. We believe that the citizens who base on their own observations and experience can make a lot of positive changes. This part of the proposed smart city strategy is addressed mainly to people introducing ideas in their homes and owners of small, local companies.

26.6. Store energy

In this proposed smart city strategy, we want to implement solutions whereby modern buildings that use renewable energy sources such as solar panels will be able to share the unused energy from other users, so devoid of modern solved. Sharing the excess energy gained from solar panels will save conventional energy sources also by the users who do not have access to

modern solutions. Thus, they gain both companies share the energy and users who collect it, and also the environment.

26.7. Energy management system

We propose the idea based on the determination of the exact energy consumption in specific units, compare this consumption, as well as determine where the flow of energy is the most effective. This will fit the plan consumption and adapt solutions to the introduction of renewable energy sources in places where it is most needed and efficient.

27.CLIMATE CHANGE

Modern, smart city should be aware of climate change and prepared for the risks associated with its consequences. Even now, when raising the average temperature of less than 1° C, we observe a series of unprecedented phenomena: the record heat, shifting climate zones, melting glaciers, the disintegration of the ice cap of the Arctic and the ice of Antarctica, raising sea levels, thawing permafrost, storms and hurricanes, desertification, droughts, fires and floods. These changes are caused primarily by human activities. In our proposed smart city strategy, we take into account both the prevention of drastic changes and the protection of citizens against the dangers related to the adverse effects of climate change.

27.1. City committee

To respond to climate change and reduce their hazardous effects and impact on the environment we want to prepare the evaluation committee, response action plan and mitigation strategy. With the right plans taking into account the impact of human activities on the environment will be able to create a plan to respond to the changes that have already occurred and to minimize the negative actions in the future. We also want to work on solutions that will help us reverse the changes that have already occurred.

27.2. Impermeable into permeable

This is a task for transformation impermeable in permeable resources in the context of climate change. We want to achieve in the way of activities, which will have no negative impact on the environment. We also want to use natural methods to prevent significant climate change.

27.3. Structures receive and redirect water

At this point we want to make changes in sewage and improve the system of wells, so as to regulate the water level and improve its drainage. Thanks to efficient sewage torrential rain will not damage the infrastructure of the city. We want to develop the system of reception of water and directing it in the appropriate direction to prevent damage and flooding in low-lying parts of the city.

27.4. Floating systems

We want to develop flood control infrastructure in the City areas located in the vicinity of rivers. We want to introduce appropriate restrictions that make citizens aware of the threat. Expanding the infrastructure river to avoid the dangers associated with floods.

27.5. Buildings re-occupation

In the case of flood risk, we want to increase the security of citizens. For this reason, we develop a plan move people from vulnerable places, such as the ground floors of the buildings and the buildings closest to the river. Security of citizens is a priority for us because we want to be aware of the threat and protection system work efficiently and as quickly as possible.

27.6. Transportation re-occupation

We believe that it must be adapted not only buildings but also transport. Therefore, in case of danger caused by climate change, we develop a plan to improve public transport. For example,

in the case of flood we can replace traditional means of public transport such as buses, by boats. We want to be to prepare for various eventualities and to respond in an appropriate manner for the safety of citizens. We want to be to prepare for various eventualities and to respond in an appropriate manner for the safety of citizens.