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Journal of Technology for Architecture and Environment

EUROPEAN PATHWAYS FOR THE

SMART CITIES

TO COME

on behalf of EERA Joint Programme
on Smart Cities

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RESEARCH & EXPERIMENTATION

DIALOGUES: A VIRTUAL ROUNDTABLE

INTRODUCTION: WHY A VIRTUAL ROUND TABLE ON SMART CITIES?

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Regardless the source, energy is a major factor for development. It is needed for transport, industrial and commercial activities, buildings and infrastructures, water distribution and food production - to quote a few. As a matter of fact, most of these activities take place in or around cities, which are responsible - on average - for more than 75% of a country's Gross Domestic Product (GDP) and can therefore be considered as the main engines of global economic growth. To run their activities, cities require an uninterrupted supply of energy. A sustainable urban energy system needs low carbon technologies on the supply side and an efficient distribution infrastructure as well as lower consumption on the end-user side.

The aim of this Virtual Round Table[1] is to present the perspectives of representatives of selected stakeholder groups we consider as key actors for urban development.

According to the above scheme, the Virtual Round Table Editorial Board[2] have identified four main stakeholder groups: Governmental Stakeholders; Research Stakeholder; Design/Construction and Real Estate Stakeholders; Social/Civil Society Stakeholders. For each group the Editorial Board elaborated a set of questions; each stakeholder group is introduced by a member of the Editorial Board, who - at the end of the contribution - identify the main findings.

Highlights on the topic are provided in the Foreword by Magdalena Andreea Strachinescu Olteanu - Head of Unit, New Energy Technologies, Innovation and Clean Coal, Directorate General for Energy, European Commission - and by Eddy Hartog - Head of Unit Smart Mobility and Living, Directorate General Communications Networks, Content and Technology, European Commission. I would like to thank them and express my sincere appreciation for their contribution.

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NOTES

[1] The Virtual Round Table on Smart Cities is more than a collection of points of view. A Round Table asks for selected speakers to present in depth - and discuss - at their best, a set of given questions.
Our Virtual Round Table is a Round Table in the sense that a set of questions have been given, then the answer - among the same Stakeholder Group - have been circulated for fine tuning. Then it is Virtual as the most of our key note speakers didn't have the opportunity to meet.

[2] Paola Clerici Maestosi, Paolo Civiero, Elena Guarneri.

Government Stakeholders	🏛
Research and Innovation Stakeholders	⚗
Design/Construction Stakeholders	🦺
Real Estate Stakeholders	🏠€
Urban Services Stakeholder	📡🚃
eCommerce Stakeholders	🖥
Analyst, IT project and Big Data Stakeholders	🧑‍💻
BPM Stakeholders	⚙🔧
Financial/funding Stakeholders	💰
Social/Civil Society Stakeholders	🧍

07 | Urban Stakeholder, from RdS, SCC solutions
for Smart Urban District, PAR2016/033

GOVERNAMENTAL STAKEHOLDER GROUP

A Dialogue between **Paolo Civiero** and **Gunter Amesberger, Pasquale Capezzuto, Xavier Normand** and **Rasmus Reeh**

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Cities are facing considerable population growth, increasing pressures and economic burdens. To remain competitive and achieve sustainable growth, cities must find ways to boost their efficiency and reduce costs while ensuring good quality of life for all citizens.

Smart Cities seem the only way that energy systems can be brought onto a sustainable track. This transformation of a city into a Smart City however, calls for both a cultural and a dimensional change, a new scenario that goes beyond cities, regions and nations. It requires that cities broaden their perspective, think globally and search for innovative solutions at a European level and beyond.

According a Smart Cities concept, digital technologies and the use of different types of web platforms will help to transform cities into better place for public services, sustainable use of resources and less impact on the environment, even if innovative technologies are not the only solutions to increase the quality of cities and to ensure the direct relationship between citizens and Institutions.

A Smart City is a complex place where the traditional networks and the use of digital and telecommunication technologies are made more efficient for the benefit of its inhabitants and businesses. So a Smart City concept goes beyond the only use of ICT for better services, resource use and less emissions, and means smarter urban planning, transport networks, upgraded water supply and waste disposal facilities, and more efficient ways to light and heat buildings.

In this scenario, cities are gradually shifting towards innovation, following or supporting sometimes the steps of the private sector toward sustainable enterprises, and also encompassing a more interactive and responsive city administration, safer public spaces and meeting the needs of an ageing population.

The participants in the VRT are key note representatives of four European Municipalities, involved in different innovative project programs on Smart Cities.

Paolo Civiero *The development of sustainable and energy-efficient "Smart Cities" is the only way to move the energy system towards a more sustainable path and to limit the drastic increase in urban energy consumption associated with CO_2 emissions?*

Gunter Amesberger It should be remarked at the outset that the term Smart City has gone through some significant changes: at the end of the 20th century, a Smart City accommodated the information and communications technology sector (ICT), which was pushing ahead with the modern infrastructure of the city. A Smart City applied ICT innovatively for controlling urban developments. This perspective primarily had the use of new technologies (innovations) in sight.

The term Smart City broadened out later: a city was now seen as smart when the relevant political, business and civil society stakeholders demonstrated that they were capable of cooperation flexible in the face of change and innovative in the face of challenges. In summary, a Smart City can be defined as the achievement of maximum quality of life with a minimum use of resources with the aid of the intelligent digital networking of digital technologies. Resources deployment naturally applies above all else to the energy sector and the CO_2-emissions that are linked with this. The consequence of this is that Smart Cities are in fact the only way that energy systems can be brought onto a sustainable track. Energy consumption in particular depends on various factors of influence and it was against this background that the City of Linz already participated in the Smart City Profiles project on the initiative of the Association of Austrian Cities back in 2012. The objective of this project consisted in identifying indicators within a range of thematic topics in the context of developing a Smart City. The topics concerned in which the focus was on climate and energy relevant factors, comprised the areas of Building and settlement structures; Transport and mobility, Technical infrastructure; Economy and population; Politics, administration and governance. These thematic topics together with the appropriate indicators will make it possible to create a city profile, which can be a support in the steering of municipal development through to a Smart City.

Pasquale Capezzuto Smart City paradigm, through a global approach, allows cities: (a) governing its energy consumption (thanks to technological innovation and energy management)

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moving towards decarbonisation of urban energy systems by energy efficiency improvement and renewable local supplies at district scale; (b) promoting virtuous citizens behaviour and awareness of their own energy consumption (smart metering, automation, active home, renewable local supplies for distributed energy production); (c) improving lifestyle in mobility (intermodal public transport use , sharing mobility. Use, E.V. mobility, etc.); (d) implementing Power Electricity Distribution (D.S.O.) in smart grids key technology factor for distributed energy production and smart services to citizens.

In order to achieve the energy consumptions and CO_2 emissions reduction according with the Covenant of Majors S.E.A.P. strategic plan it will be necessary adopting the principle of energetic invariance, constructing new buildings with almost zero consumption, nZEB, and refurbishment of existing building stocks.

Xavier Normand Smart energy solutions are undoubtedly a strategic part of future city development, in the perspective of a better management of natural resources and CO_2 emissions, as well as to move towards more inclusive and participatory cities. 50% of the population live in urban areas, which are responsible for more than 80% of energy consumption and CO_2 emissions. Cities are therefore on the front line when it comes to the latest challenges: fuel poverty affecting 4.5 million people in France, tackling global warming, reducing greenhouse gases, optimizing, rationalizing and managing consumption, improving the energy efficiency and performance of buildings, etc.

The city and territory of the future will need to be sustainable, in other words: Eco-responsible (Sensible, managing consumption of water, electricity, gas, heat, etc., enhancing energy efficiency and protecting the environment); Efficient (quality and performance of public services in a context of budget rationalization and constraint); Champions of fairness and social cohesion; Connected (ease of access to information and communication infrastructures and new technologies, and to digital services); Open to a new type of governance (more participatory, uniting the many stakeholders, local participants and citizens).

Making the city more sustainable means, in addition to responsible urbanization, being smart about how resources are produced, managed and used.

The value created by a Smart City and territory is inextricably linked to its capacity to pool, organize, and release data from various urban systems. This is currently difficult because these activities have historically been designed, managed and operated individually by public or private operators.

Over recent years, new information technologies have been increasingly integrated in the various utilities in the city and territory which can therefore be deemed "smart": electricity, gas, water, heat, cold, street lighting, mobility, etc.

The rollout of smart devices in these systems, especially with the arrival of smart meters, is generating profound change and opportunities in the management of infrastructures and hence of the city. This is because it opens the door to an unprecedented amount of data and hence potentially of information and new services to meet the needs of the community and its inhabitants.

Rasmus Reeh I tend to disagree, at least in part. Cities are using the bulk of global energy, and stand as a central must win battle in order to transition from a fossil economy. But smart cities are not the only solution. Rather it is a systemic change where all parts need to be redirected in use and energy usage.

First of all must be considered that in CPH we do not advance the "Smart City" as a concept: this do entail that we do not work within the space of smart cities but we do not approach from the inclination of building a Smart City. Rather we develop to be liveable, efficient, green and we develop solutions to work to fulfil these ends.

The emphasis here is that we work from a demand-led perspective all along. These demands can have short and long time horizons, they include technology in the design, but we do have goals of implementing Smart City technologies per se: I believe this perspective runs against the presuppositions questioned, which infers some challenges answering them.

In CPH like the rest of EU smart meters are being installed, providing new arms to optimise energy systems. 98 per cent of heat consumption is district heating. As a result changing the energy mix on the supply side of heat is a major part ingredient in changing CPH in to a CO_2 neutral capital by 2025.

Along the same logic in transport; busses are being electrified or fuel changed to biogas. The building of new metro lines are also solutions that change the physics, rather than just digitisation.

Renovation of existing building are also key elements in achieving a CO_2 neutral city.

Paolo Civiero *Did your city support participatory processes and structured information campaigns for citizens to increase people's awareness on the idea of what a Smart City is?*

G.A. In the context of the (citizen) participation processes, the City of Linz was already taking steps in the direction of a Smart City at a very early date.

At the beginning of the 1990s special citizen participation processes were established concerning the construction of an HBL production plant (for producing a precursor substance for so-called "slimming pills") at the Linz chemical industry park and also for a high-temperature gasification plant (HTG) for the company *voestalpine*. This all happened at a time when Austria was still not a member of the EU.

Another point to be equally stressed is the energy utilisation plan for Linz and also the waste management concept based on the avoidance of waste, which was produced with the participation

of the citizens of Linz. The local development concept was also submitted to a citizen participation process.

Further to this, it is a standard in Linz, for the population to be included in the planning of parks and children's playgrounds. This very direct cooperation between politics, business and civil society that counts as one of the characteristics of a Smart City and is already introduced in here Issue 1 and it can be seen that it already has a long tradition in Linz.

Following this course, Linz took on a pioneering role in Europe with the "Open Commons Region Linz" project that was started in 2009. The aim of this, amongst others, is to provide data from the internet free of charge. This "open-access asset" includes photos (also aerial views), statistics, maps, specialised scientific works and presentation documentation all for free use.

Online portals are also currently available, such as the look at Linz platform ("Schau auf Linz"), offering the people of Linz the opportunity to report or comment on problems, inadequacies and improvement possibilities for their neighbourhoods using a very easy electronic method. This shows the date when the report was made and how long it has taken for it to be dealt with.

In addition to this, there is also the "My Linz" portal ("Mein Linz"): here the best ideas for important future issues in the city are regularly searched out commented on and evaluated. Following the live phase, these ideas and suggestions are summarized in a concluding report and handed over to the politicians to help them in their decision making. "Mein Linz" is also an archive. Projects which have already been wrapped up and concluded are kept permanently accessible and can be continuously accessed, read and researched.

P.C. Our city has adopted a participatory approach on Smart City design in particularly in urban planning process, social inclusion and educational activities, promoting energy consumption awareness and renewable supplies.

In this context City of Bari has organized several workshops with stakeholders and citizens within a participatory process prior adoption of Sustainable Energy Action Plan as also workshops in schools to raise awareness of energy efficiency and use of renewable energy sources concepts, and the adoption of energy refurbishment measures or the installation of PV systems.

Nowadays Bari is planning his new General Urban Plan in a participatory path activated by the Department of Urban Planning of the Municipality of Bari and that will design the city of the future. Called the "Neighborhood Walks", the new instrument has opened the path for the definition of the new Urban Plan starting from the places perception of the community, enhancing the skills of the inhabitants in the form of widespread knowledge and opening up to the citizens the "decision fields" involved in the new General Urban Plan. The aim of the walks was to expand the system of territorial knowledge, by collecting

the decisions on the future spatial structure of the city of Bari, and opening, through participation, a new way of building the city. The "Neighborhood walks" has always been an instrument of urban participation and democratization able to activate new forms of knowledge about the city, opening the urban plan to a shared reading of the places we live, offering an opportunity for "active listening" of the territory through experiential knowledge, in a dimension of direct relationship between inhabitants and institutions.

The walks are accompanied by special guides and the walkers were joined by institutional representatives, with the aim of returning different points of view in an unpublished image of the city of Bari, which mixes with that of the designers in charge taking into account the communities of places, enhancing the skills of the inhabitants and the practices of use of the places.

In addition the "Urban center" has been established: it represents a physical place where citizens, planners and experts discuss the General Urban Plan: citizens can send their proposal for the future of Bari by filling in a thematic form online and in territorial centers.

X.N. Grenoble's Smart City initiative has been designed from the beginning as a deeply participative process. A very powerful filter is applied to every proposed innovation, made of two questions: will it bring new functions that really benefit to citizens? will it be possible to design the solution/service with the people who will use it?

This was the case for instance with "Vivacité", developed by GEG and Atos Worldgrid, which is a collaborative integrated software platform for real-life data from production and consumption of electricity, gas, heat, water, etc. It consists of interactive, educational interfaces and feedback applications for decision-makers and elected officials in the territory; technical managers of public buildings; managers of collective housing (social landlords, shared ownership schemes, etc.); local authority officers responsible for land use and planning in the territory; citizen-consumers. In concrete terms, the expansion of Vivacité relies on technical and software infrastructures installed in tester consumers' homes, in new or existing residential homes, in public buildings, and collective housing: multi-fluid smart meters (electricity, gas, water), sensors (hot water cylinder, heating, etc.), data displays, etc. combined with energy management services. Another example is "Grenoble Ville de Demain", which is the sharing and anticipation platform of the city of Grenoble to gather around the challenges of the 21st century and all the talents that put the city on the move. Participants are all kind of citizens: residents, students, athletes, scientists, retirees, entrepreneurs, cultural actors, scientific and economic, by joining Grenoble, city of tomorrow, everyone can help make Grenoble a city where the common good is co-built and shared. The lines of inquiry concerning all areas related to the transition: demographic change, social jus-

tice, energy transition, nature in the city, sustainable urban planning, soft mobility, sharing economy, short circuits, new forms of solidarity, citizen participation or boom digital, etc. These themes are divided into three fields: sustainable cities, the city emancipatory and inclusive city.

R.R. No. But we work very hard to transfer citizens in to the digital era.

Paolo Civiero *How much your idea of a Smart City refers - from a technological and cultural point of view - to peri-urban area management and social regeneration aspects?*

G.A. With solarCity which was built on the south-eastern periphery of Linz in the nineteen nineties an exemplary sustainable city district was created and furthermore solarCity was already a pioneer model of a Smart City back then.

Renewable energy is the principle built on here together with short distances for the community in this housing development, taking account of public transport links and with an implemented open-space concept that provides for an intensive coexistence of people and nature.

Furthermore an own neighbourhood office was established in solarCity serving some 3,000 residents of this suburb, and providing an important interface between the living environment in the community and that of official policy and administration, institutions and enterprises. Interdisciplinary and inter-departmental work is perceived here as being essential for efficient regional and district development is perceived as being essential.

The needs and concerns of the people are the point of departure for the community work. The interests of the people who live here determine the issues that are taken up and dealt with. In this process, the people are supported and activated themselves to make their issues a matter of public concern and to work on achieving results for them.

The neighbourhood office is a part of the City of Linz municipal administration. The main objective of the neighbourhood management is to establish all the different, and to some extent contradictory, needs and interests of the residents, and of the local economy, associations, administration and official policy, to bundle these and also frequently to mediate between conflict parties; and furthermore to do this with the firm perspective of always pursuing the development and improvement of the living conditions in this city community.

The biggest single and coherent urban renewal plan in Linz has been implemented in the green centre with an area of 85,000 m². A residential settlement developed on the site of a former freight railway station in low-energy construction consists of 800 apartments, with the inclusion of a nursery school. The high quality of life here is based not least on the central green area with an integrated children's playground.

A district management including a neighbourhood office has also been set up for this green centre in Linz.

Neighbourhood community work on the basis of district managements is also provided in the city communities of Franckviertel and Auwiesen.

The former Ebelsberg barracks area in the south of Linz is currently in new use development as a settlement with 3,000 new homes with the inclusion of infrastructure and commercial uses. The urban development approach that is being assembled here is a cooperation approach with the inclusion of all stakeholders. This area will also include an own district management.

P.C. Transforming a city in a Smart City represents an opportunity for urban regeneration global model to improve quality of life of inhabitants in surrounding urban areas. Urban regeneration is a tool for transforming degraded parts of city from both a physical and social and economic point of view through redevelopment, promotion of social and economic inclusion activities, and improvement of civic services available to include parts of the population often far from development process of city.

The City of Bari has employed dedicated Regional Funds promoting these activities, as required by Regional Law n. 21/2008, carrying out urban redevelopment interventions in peri-urban neighborhoods e.g. S. Girolamo, S. Paolo, Carrassi Japigia and in Urban Re-qualification Programme "S. Paolo Lama Balice".

The experience of the Urban Regeneration Project "P.I.R.P. S. Marcello" refers to a complex project with public governance, which includes agreements with private entrepreneurs for the construction of public buildings, social housing and urban infrastructures in exchange for building volumes for private market . The area was characterized by a strongly degraded public housing stock and poor social cohesion. The program will equip the district with services, infrastructures and greenery, both increasing its attractiveness, e.g. enhancing existent excellence such as the University Campus, by the implementation of Regeneration Plans (PIRP). The district showed all the signs of the marginalization of the "inner" urban suburbs, devoid of squares and real places of socialization, yet with the negative characteristics of the periphery. Despite the emergencies highlighted, the district has built, over a period of 50 years, also its strength: a sense of belonging with a strong identity connotation of the residents, which makes this piece of town a sort of "urban village" with a precious system of relations, not to be forget in the renovation process. The choice proved to be founded in light of the participation of the inhabitants and of the intense collaboration in the construction of an Intervention Program that redeveloped the district, without however distorting it[1].

The respect of the environmental characters of the territory is also the guide idea of the "San Girolamo seafront and Fesca program". The municipal administration wanted to "open" to pos-

sible designs that were able to configure new public spaces on the coast, intended as a land-sea interface, in order to expand and redevelop the areas designated for public bathing (e.g. complementary structures and equipment), to the free time, to the walk, to the stop and to the restoration, isolating them from the polluting actions of the traffic.

The prized project meets, in a complete and original way, all the issues such as urban relations, the configuration of new public spaces with designated areas bathing, the balance with pre-existences, the reorganization of the routes and the insertion in urban area of the road, the articulated planning of public horizontal spaces, creating the necessary conditions for the desired elevation of the role of the area in the most general urban context and the conditions for a successful public-private partnership[2].

X.N. Grenoble initiated the "City-Zen, New urban energy" project with the city of Amsterdam and a pool of public and private partners in 2014 within the framework of the EC-FP7 "Smart Cities and Communities" program.

The main goal is to explore the conditions of the transition to renewable energy in urban and peri-urban contexts, especially in disadvantaged districts. Such a transition must be based on a strong involvement of all stakeholders: industries, decision makers, knowledge partners and citizens. All infrastructures can play a role in a zero-energy solution, but it all needs to be decided through transparent and cooperative processes. What is noticeable is that different infrastructures are today mixing, supplementing and even substituting for each other. And it isn't just for domestic heat system and gas grids, but also for electricity, fuels, sewage, drinking water, ICT and solid waste.

Social participation is crucial for this process. By applying (technical) innovations in the city, we learn how to overcome barriers, how to build business models and how to make technology both user-friendly and attractive. These innovations are both on system level (smart grids, district heating) as well as on household level (renovation, citizen engagement, home batteries and games).

Social monitoring is a major part of the project. The monitoring strategy in Grenoble are based on the results of the previous European project, "Empowering", which raised the importance of considering the energy profile of the users. To determine the behaviour and relationships involved among different parties such as: users, co-owners, social housing, public services, the municipality of Grenoble has decided to focus on the empowerment of stakeholders with the Spiral methodology, which aims to determine indicators for progress and well-being of citizens and communities.

This is a good illustration of how we think that Smart City solutions must first and foremost be applied to the most critical social situations, to tackling fuel poverty.

R.R. We do not have a Smart City idea. We have political goals for the city as a whole where technology plays a part in the solution.

Paolo Civiero *Is your municipality/city/administration prepared, under a cultural and technical point of view, to face governance challenges thanks IoT and Big Data?*

G.A. The City of Linz is committed to working on the technological level for a transformation into a Smart City.

Current examples of this include the Smart City square street lighting being tested at the Pfarrplatz in Linz: motion sensors here increase the illumination level whenever pedestrians, cyclists and cars approach and the light is also adjusted automatically to the weather conditions.

In addition to this environment sensors in have been integrated in the lighting systems. These measure the temperature, air humidity, fine dust pollution, noise levels and many other values. These continuously supply all current sensing data to a control centre, where the data is processed to give instant forecasts and compile long-term analyses. The work of traffic management is supplemented by environmental aspects and optimised by this means.

Furthermore the urban public utility LINZ AG operates its own project LORA (low range): an infrastructure network in the scope of which devices and equipment can be controlled online with own IP addresses and which also have the capability of submitting data to a central unit. The data can be further processed at this point, for example in the course of energy monitoring work for a specific facility. Energy advice can be provided for example, through the use of this database.

At present LINZ AG is still only using this system within its own service area, but there is already a plan concept to create a noise register for Linz, with data available and provided for the population and which is intended for interactive operation in a further development phase - and thus with participation as an integral element of the concept.

The big data issue is thematically linked to this: the vast quantity of data produced needs to be aggregated and analysed, with cross-links then established to other data and with the IT technical requirement in this context for appropriate object-oriented databases - and Linz intends to move ahead in this direction.

It is a matter of course that data protection will be given top priority in all of this.

P.C. Iot and Big Data require technical competences which are hardly available in municipality/city administration. Italian cities often refer to external technical expertises and promote innovative funding mechanisms and new business models: it calls for a review of public procurement codes for services which represent a tricky problem in our country.

Anyway IOT and Big Data analytics represent important drivers for understanding city thanks to real time data.

The Digital Agenda 2016-2018 adopted by the City of Bari endorses a set of actions and standards to be put in place to exploit the potential of digital technologies in order to boost innovation

and economic growth in the city. The aim is to lay the foundations, through a precise and clear path, for a series of activities and projects to be implemented in the next three years according to the needs of the citizen.

The document represents an update of the IT strategy for the next years with a program of initiatives addressed to a participatory model of both administration and citizens, for the development of a Digital Citizenship, e.g. the Breakdown of Technological Innovation, through actions involving the citizens themselves to encourage and support a participatory construction of the agenda. The guidelines adopted with a view to participation and collaboration are: (a) Co-planning participatory and collaborative path with citizens; (b) Exploring user needs, trying to understand the context; (c) Services and rights demanded by the citizen; (d) Change of perspective that leads to the creation of knowledge networks through a wide collaboration between Local Authorities and citizenship.

The implementing paths to be pursued in the execution of the main projects planned for the next three years will have as reference the following thematic areas: (a) Digital Citizenship: foundation for a new digital Bari, open and accessible to citizens through the creation of a civic platform; (b) Intelligent Cities (Smart City): conversion of urban reality into a "smart" format through the implementation of interventions aimed at improving the quality of life of citizens while making the city more sustainable from an energy point of view; (c) Citizen services and eGovernment: improving the delivery of online services to the citizen in terms of efficiency and effectiveness; (d) Smart Administration: improvement of sectoral information systems and municipal digital infrastructures.

X.N. We consider IoT and data processing systems as very powerful tools to move towards much more efficient management solutions for urban systems. This is done through the EcoCité and City-Zen projects, which are real scale innovation laboratories, to test a new approach to managing urban utilities that is better integrated, covers more disciplines and is more participatory, thanks to the involvement of several local participants.

Their aim is to prove that it is possible to make a city more attractive, more environmentally-friendly and in particular less wasteful of energy and water, facing several challenges at the same time: Social (developing effective communication methods and tools to raise citizens' long-term awareness of the challenges and the impact of consumer behavior on energy and water resources); Methodological (implementing a collaborative working approach between partners and the parties involved in these projects); Technical (the concept of the smart city is still very new. Consequently, one of the aims of these trials is to define common national and European standards relating to data exchange,

especially from the perspective of Open Data); Organizational (these programs offer the opportunity to try out a way of organizing and working collaboratively across a range of disciplines. These projects can be used to propose a governance model which involves the community in the administration of this data management platform); Conceptual (many questions are asked about the benefits of digital technologies for citizens and communities, especially at a time when smart meters are being rolled out. These projects explore all the possible ways to use these devices, especially collected data which can offer real "added value" for the different parties in the city).

R.R. IoT is a moving target as tech evolves all the time. We are fully compliant with GDPR and are investing in finding optimal ways to reap the benefits of IoT while remaining within the governance frameworks.

Paolo Civiero *How Smart City plays a key role in promoting innovative and sustainable economies or processes of economic transformation and sustainability?*

G.A. Sustainable enterprise management or corporate sustainability (CS) means successful operating of *core business* while taking full account of social and ecological responsibility.

Companies that are managed sustainably ensure that their employees and suppliers receive fair payment. They use resources efficiently and avoid using any contents that are harmful to health or the environment. Their products and services contribute to sustainable development insofar as they assure a basis for life and the livelihoods of future generations.

These enterprises build on the basis of the "cradle to cradle" concept, according to which all material used must either be compostable or must stay in an industrial closed circuit.

Innovations play a crucial role in all of this and so too does the cooperation capability of the stakeholder in politics, business and civil society (as already mentioned in Issue 1). Against this background, it can be clearly seen that the Smart City has a key role in promoting sustainable forms of business.

The Linz City Administration has begun to give direct support to sustainable enterprise management in the city; it does this by promoting innovative young companies such as those seeking a move to the Linz Techcenter or to the Tabakfabrik.

In addition to this, a new business location strategy for Linz is currently being developed with six action plan areas: the service sector; business, real estate property and infrastructure; location marketing and internationalisation; employment and qualification; research, technology and innovation and also cooperation and networking.

Taking account of a number of fundamental sustainable business principles as outlined above is intended in establishing the content for each of these action plan areas.

P.C. Holistic and global approach to next city challenges appear to be the best way to transform our cities in cities of tomorrow.

Transforming energy systems in decarbonized systems produce important economic development in terms of investments promoting ICT technologies, digital services, IOT and sensors device in city life, and new sustainable technologies for urban transportation. This stimulate private companies and innovative start up. Innovation in governance can attract talents and skills which can contribute to the urban development of the city in cultural and social terms.

The Municipality of Bari, in collaboration with the Apulia Region and with the technical support of Capitale Lavoro S.p.a. (In-house public company) has launched the experimental service "Porta Futuro Bari" funded by PON Governance and System Actions 2007-2011: an innovative Job Center of 500 sq. meters, already successfully tested in the City of Rome since 2011 and promoted as a pilot model on the regional capital. The aim of this service is to adequately link the metropolitan users with the labor market, running as an aggregator able to mobilize resources, information, skills and opportunities in the service of autonomy, social innovation and local development.

The center hosts the necessary skills and resources to perform its function as a platform for orientation and meeting between the demand and supply of work, operating in continuity with the current headmasters and agencies active in the territory, engaged on issues of employability and self-employment.

X.N. Since 1998, Grenoble hosts every year the "Forum 5i", where the 5 "i" stand for Innovation, Industry, Inclusive, Investment and International. This is a big event which involves all the companies which deal with technical innovation as well as universities and research centers. As one can observe, topics linked with the Smart City issues are more and more important in this arena, since the titles of the previous editions are as follows: The Industry of the Future: what stakes for tomorrow? (2017); Enernet: a new paradigm to manage energetic transition (2016); Internet of things: what impact on economy and society? (2015); Silver Economy: autonomy, a new field for innovation (2014); Smart mobility, use and innovations (2013); EcoCity, innovation accelerator (2012).

Smart city is not only a question of technology, and that is why it is so deeply connected with many fields. As far as business models are concerned, there are many ways to promote a more sustainable development scheme, as collaborative or functional economy.

These different aspects are also explored by the city of Grenoble, which organizes international events like the "Biennale of the transition cities" of the "International forum about well-living" for the first time in June 2018, and Smart City is always shown as a multifaceted concept which can be first put in service of citizens.

R.R. We work steadily to increase the efficiency of the city administration while improving service levels. IoT and technology play substantial roles in achieving these ends.

Paolo Civiero *Which key stakeholders and key actions better deploy transition to Smart Cities?*
G.A. The internationally established term "Stakeholder" incorporates various interest groups such as corporate target groups. It was intended as a counterpart to "shareholder", the owner of business stock.

Business and enterprises play a decisive role in the transformation process for becoming a Smart City. The stakeholders of a company are in essence the staff, the suppliers and the customers, but also academic and scientific institutions and non-governmental organisations (NGOs). It is above all the latter of these that demonstrates ever and again the demands of those affected and that can also influence the social acceptance of a company.

NGOs not only influence the behaviour of companies, however, but also that of politics and of society in general:

A clear example of this is how Linz already joined the 1991 *International Climate Alliance* in 1991 as a response to a suggestion by the environmental NGO GLOBAL 2000 - an action that was a milestone by the City of Linz on the path to becoming a Smart City.

Further to this, a working group for the creation of a City of Linz sustainability programme - the "Linz Agenda 21" - was established at the turn of the new century by the Linz City Administration. This public body is comprised of a series of different stakeholders:

In addition to the *Linz City Administration* the *political parties* are represented amongst others including the Linz *Johannes-Kepler-University*, the Linzer *energy supply utilities*, the city *public transport authority*, the *Chamber of Commerce*, the *Institute for Economic Development*, the *Chamber of Labour*, the *Chamber of Agriculture*, the *Conservation Association* and the *Climate Alliance for Upper Austria*.

Each of these stakeholders is a typical Smart City stakeholder.

The first municipal sustainability report Europe-wide was produced for the City of Linz in 2004/2005 under the auspices of the Austrian sustainability group the *Österreichischen Instituts für Nachhaltige Entwicklung (ÖIN)*.

A further milestone on the way to a Smart City was set by Linz in 2014 when the city became a Fairtrade Town in the scope of the EU TRINET project with powerful support from the development NGO *Südwind Agentur*.

P.C. The holistic approach is extremely important to deploy transition to smart cities as is a booster of various stakeholder types. A national framework to smart cities transition could be a key element even if City government need to assume leadership role in the process promoting and facilitating private initiatives.

Key Government Stakeholders could be referred to administrative Ministers, members of parliament - MPs, local authorities, consultants contractors, NHS, other government departments and agencies, Emergency services, Regulatory authorities, lobbyists, media.

X.N. The City of Grenoble is aware of the necessity to protect its environment which participates in its own prosperity. Political actions in favour of sustainable development has been set put, emphasizing the strong political will of local authorities on this issue. As a major player in the Local Climate Plan since 2004 and as Covenant of Mayors member since 2008, the city of Grenoble is committed to reduce energy consumption, encourage the use of renewable energies, promote social solidarity, set up alternative forms of transport and develop Environmental, Architectural and Urban quality. The main objectives of Grenoble Local Climate Plan, launched in 2004, recasted in 2009, remain to divide local greenhouse gas (GHG) emissions by factor 4 by 2050. In Grenoble, between 2005 and 2012, energy consumption decreased by 3.7% and GHG emissions were reduced by 17%. The final energy consumption per Grenoble inhabitant in 2011 was 19.7 MWh. To go further and to offer a future and Smart City to inhabitants, Grenoble has presented its ÉcoCité project on the north side of the town. The Grenoble innovative concept of smart integrated city has been selected, with 13 other advanced Cities in France by the French Government in 2009, to receive grant on some innovative actions. Among inspiring cities, Grenoble is at the first place, because EcoCité project is gathering private and public stakeholders around demonstrations projects for which political decisions have already been taken in the fields of mobility, building and energy. The objective is to transform the ÉcoCité area into a positive energy and carbon neutral district.

R.R. Cities and citizens.

NOTES

[1] The participatory process started with the drafting of a Preliminary Intervention Program, followed by a Public Notice where the municipal Administration invited the public and private subjects concerned to propose themselves as actors for the realization of the P.I.R.P. of San Marcello. The private interventions proposals received were publicly presented to citizens and residents together with the framework of public interventions. Then a single integrated project proposal was designed with the contribution of citizens. Thanks to the coordinated action of the Municipality, Region, IACP and building contractors, distinct redevelopment interventions will be implemented in the future, i.e. the restructuring of 240 existing public housing and the creation of 8 new housing units, new meeting areas, new public offices, energy saving actions, primary and secondary urbanization, and further 55 apartments.
The overall investment on the district will be around 23 million euros, 80% of which by private funds.
List of Public Entities involved in the PIRP program: the Municipality of Bari, the Province of Bari, the Autonomous Institute of Popular Houses of the Province of Bari (IACP).

[2] The project involves the construction of a pedestrian plaza at high altitude, that is, raised above the level of the sea, which hides two parking lots and is crossed by a cycle path. At one extreme a large amphitheatre, at the other an aquarium of 6 thousand square meters (the first of the south center, able to attract tourists who can be accompanied directly by the port by sea taxi). Also envisaged bars and restaurants hidden from the road but with an enviable view of the sea, a nautical basin and two beaches. All the interventions, except the aquarium and the enlargement of the square are included in the European funding by Region Apulia for a total of 18 million euros.

ACKNOWLEDGMENTS OF VALUE
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