



T-smart

Terni Smart-City Project

- Services
- Mobility
- Autonomy
- Research
- Telecommunications

English Translation

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SMART-CITY:

PROJECT IDEA

A smart city is a city capable of combining technological innovation and services to its citizens, of securing development for businesses and at the same time paying attention to the weakest sectors of the population: it is a city in constant contact with the man in the city, capable of understanding him and making use of his suggestions and requirements. An intelligent city, a smart-city, can be obtained when a whole community benefits from progress and growth.

Together with technological progress with vanguard products and attention to the social development of the innovations, an intelligent city can have many areas of development, from smart economy to smart mobility, to smart governance, without forgetting the basic objectives of sustainability, liveability and social equity through technological and design innovation. The city is not just technological progress: it is social innovation, sharing of progress amongst all the citizens and growth in the quality of life.

Therefore the proposal of a smart city can only be global, shared by all the actors involved in the process of designing, structuring and setting up of an "intelligent" city. The idea is that of a single system able to manage both the economic and productive aspect of the city and also the environmental and social aspect. One must rethink the city as a more intelligent and efficient urban system through using technology which can really give an effective and timely response to the requirements of citizens and businesses, in an open product which is continuously evolving and economically advantageous for the whole Country System.

The development priorities of the smart city are outlined therefore as technology and services for the economic growth of the area, soft and alternative mobility, environment and sustainability, social and cultural aspects, solutions for simplification in the lives of people and public administration. The close link between the priorities is evident, for example, in the link between alternative mobility solutions and policies and solutions to reduce CO2 emissions, closely linked also to the search for innovative solutions for the production of renewable energy and sustainable construction. In the same way public administration, welfare and telematic services for working from home represent a single development point, directly affecting the quality of life of individuals and companies.

To this effect, the development of a project idea on the smart city cannot ignore some preconditions of intervention: broadband and distribution networks, integration, applications, participation and governance.

In particular, the availability of an efficient distribution network (smart grid) and the availability of broadband connectivity (wireless and wireline) are priorities in order to supply the smart city with the hardware structure needed for the development of software applications for companies and users, for the community to participate in

their implementation through use, and for the integration and spread of all the available information which characterises the working of the local operators in open data.

It is important to evaluate and try out new development models of the various priorities and it is essential to involve all the stakeholders in the process: generation, users, utilities, and also regulatory authorities and institutions. Therefore, as is evident, the whole operation cannot work without strong governance of the processes, in which the role of the public, both at the level of incentives and inclusiveness of the offer, and at the level of standardising processes, is fundamental and cannot be replaced, like the high level of involvement of the citizens is essential in the informative and proposal phases, just as in the trialling phase.

The delicate balance of the factors characterising the smart city, the systemic objectives, an overseeing of objectives and coordination in giving long term organic structure to local activities on smart themes, the independent guide to processes, the guarantee of continuity in the choices are all aspects characterising a strong leadership in the process of designing and building the smart city. This is the smart city that the public must, of necessity, make its own and take on itself as an element distinguishing their own governance, even with the direct involvement of its citizens, as primary users, in the choices and in the growth of the assets.

The governing body's primary task will be to encourage and suggest: to encourage all parties, public and private, who are interested in the development of one or more aspects to have an input into the priorities of the smart-city, and to suggest a variety of development environments. The Terni Municipality smart-city project wants to be a great plan of progress and open development, in which everyone can be called upon to make his or her own contribution.

TERNI SMART-CITY:

AN OPPORTUNITY FOR THE WHOLE OF UMBRIA

Terni as a smart-city represents a new and advanced perspective for the management and optimisation of services, an opportunity for growth for the whole community, for individuals as well as businesses.

Terni smart-city is a laboratory the size of a city, a large container in which to develop ideas, proposals, new technologies for the benefit of all and to which all contribute.

The Terni smart-city project implements the Strategic Growth Plan for the city, strengthened by some specifics which make Terni ideal for a homogeneous vanguard development: the breakdown into districts which can be easily mapped, the public property of the networks for electricity, water and gas, the distribution of fibre optics over the whole area, the presence of industrial zones being redefined in the urban fabric.

In the creation of a city system which is adaptable and applicable even to different urban and social situations, some areas are identified as priorities and are already being developed:

- **smart grid:** development of Terni's electricity grid through digital systems, trials with public/private partnerships;
- **energy efficiency:** creation of a centre for research, development, testing, trialling, certification in the field of energy efficiency, in partnership with interested parties and networked with University and business laboratories;
- **renewable energies:** activities aimed at developing the use of renewable sources, for the production of energy for companies and users;
- **sustainable mobility:** development of e-mobility, through trials with fast recharging points, identification of alternative types of transport and organisation of a different goods distribution system in urban areas, consistent with some of the functions assigned to the logistics platform being established in Terni;
- **access to energy:** energy management autonomy for users and industry, systems for optimisation of consumption, home automation;
- **water system:** remote control, analysis and management of water quality, smart metering;
- **innovative technology in waste disposal:** recycling and re-use centre,

management and chemical analysis of waste, waste handling on logistics platform and rail;

- **telecommunications, broadband and fibre-optics:** register of networks, creation and management of network infrastructures (fibre, wireless), services to individuals and companies.

Networks, brand, circle: the priorities needed to create the smart-city are open data, open for participation and contributions from companies and public administration. The Terni Municipality, through ASM Terni SpA, gives users an efficient network (smart grid) which can support development projects and applications and a series of containers personalised, from which to develop their own project idea or own service. This will allow companies, both locally and nationally and internationally, to become part of a virtuous circle of development and exchange of experiences, know-how and solutions able to produce shared products, which can be immediately trialled within the smart-city system of the city of Terni.

SMART-GRID:

PROJECT IDEA

The project wants to be an inclusive development process for all the public and private energy sources in our area, with the perspective of structuring an intelligent city for the implementation of services to people and the optimisation of resources. ASM Terni SpA has put its own resources and planning into this project, with the intention of identifying institutional and private partners on individual projects, as well as on the whole positioning process.

The sectors identified for the development of the project concern, as a priority, the efficiency of the electricity grid, using digital systems, the load capacity of the grid, the improvement of power quality, the reduction in consumption, the applicability of the technologies. This is considered to be the basis for designing the First Digital Regulatory Plan and the First Energy Regulatory Plan of the city, in order to identify points of investment in individual districts.

From the strengthening of the electricity grid and the replacement of various substations, it will be possible to have an efficient grid with a high load capacity in order to set up study and research projects which will allow for the identification of new investments.

The project concerns the Terni Municipality area and can be repeated and adapted for the whole of Umbria, starting with neighbouring areas.

The principal aim of the main project, centred on the development of the smart grid, is the expectation of developing a grid model which will allow for trialling the possibilities of:

- increasing the load capacity of the grid;
- improving the power quality;
- improving the power factor to the interface with the National Transmission Grid;
- avoiding the phenomenon of islanding;

all through the management of reactive energy flows on the grid and coordination between the producer and distributor.

It is planned to replace the current remote control system with a modern SCADA system. In this system it will be possible to implement evolved technology of voltage regulation and create six Pilot Plants in six Secondary Distribution Cabins, of which there will be:

- 3 MV production plants;

- 1 LV production plant (ASM Terni's);
- 1 synchronous compensator (ASM Terni's);
- 1 recharging station for electric vehicles (ASM Terni's).

The replacement of the RTUs in the two primary cabins of the project and the installation of dedicated equipment in the secondary cabins of the pilot plants, will allow the SCADA system to communicate with the "field" in order to implement the logistics of voltage regulation and avoid the phenomenon of islanding.

With regard to the current system of managing the grid, there will therefore be greater penetration and integration between PBX systems and systems for automation and measurement of the secondary cabin; this will encourage greater development of distributed generation (DG) and an efficient use of all grid resources, keeping the level of safety and reliability of the whole system high, as well as the quality of service provided to users.

The area served by ASM Terni SpA is around 221 km², the territorial sections are 305A and 305B, giving a total of about 63,500 users. The MV distribution grid works at the rated voltages of 10 kV and 20 kV; its range is about 618 km. There are 595 MV/LV substations connected (of which 451 are in walls and 144 PTP) giving an installed transformation capacity of about 132 MVA.

ASM TERNI SpA's Smart Grid Pilot Project, in the context of the Resolution ARG/elt 39/10, has been admitted to the incentive treatment with Resolution ARG/elt 12/11; taking second place in the national merit ranking, drawn up based on the criteria defined by the AEEG.

The work to be carried out in the various phases of the Project which will allow for the development of innovative grid management methods, with clear benefits both for the distributor himself and for active and passive users directly involved, is listed below:

- 1) dispatch of reactive energy fed into the grid from producers at the pilot plants;
- 2) grid voltage regulation based also on status estimation algorithms;
- 3) increase in reliability of the interface protection system, by creating an anti-islanding system;
- 4) measurement of voltage quality for assessing the effectiveness of the project and the quality of service;
- 5) management and control of the power factor at the interface with the National Transmission Grid;
- 6) implementation of a mathematical model of the electricity grid on calculation software for the improvement of the grid structure and planning its development.

The creation of a system with these functionalities requires the introduction of innovative techniques compared with the technologies of conventional control systems. Unlike these systems, the operational and decision-making autonomy of the peripherals of the electrical substations (primary, switching and secondary) must increase; this determines a framework of general enrichment of the application functions of grid control. This evolution entails an increase in the quantity and quality of information which the present intelligent equipment (control centre, RTU in the primary cabins, RTU in the secondary cabins, interface protections) must exchange. From a quality point of view, the essential elements are constant connection availability, reduced lag times for the transfer of information (milliseconds and not minutes) and reliability of the same in terms of errors and safety.

T-SMART: SERVICES, MOBILITY, AUTONOMY, RESEARCH, TELECOMMUNICATIONS

To make a city into a test and model centre for the development of technologies, solutions and on-demand services for citizens and businesses. T-smart, Terni smart city project, is made up of a series of application containers linked to the development of the smart-grid.

For this reason containers from the acronym SMART have been created: services, mobility, autonomy, research and telecommunications.

Why T-smart? Because T is Terni, the intelligent city that we want for our community, but it also means "tu" (you), a direct relationship with our consumers in order to propose solutions to them to make everyday life simpler, a model of a new society which starts from now and looks towards an increasingly near future.

Why smart? Because "smart" is the intelligence of our technicians and professionals applied to the networks; it is sound management, reduction of waste, spread of information in real time. Because we also want the lives of our citizens to be "smart", simpler, functional, immediate, thanks to services and technologies which allow them to programme and plan home, consumption, businesses, free time, according to their own needs.

Terni Smart-City Project is an open container of projects, ideas, hypotheses for an intelligent and sustainable future, immediately available to experts and simple citizens, to users and energy producers, to suppliers of services and information, to give a new interpretation to what has been constructed up until now.

Our smart-city is a city-community structured in closely interlinked bands, from research to services, from attention to the individual to communication with citizens and between citizens.

A smart-city is both real and virtual, a combination of physical networks with multimedia, intelligent management of both of them, creation of a system in which everyone contributes to the growth of all, systematisation of resources and proposals, of ideas and professionalism.

Terni Municipality places itself at the head of this movement towards the future with an open and shared programme, opening up to companies many fields of development which they can be part of and invest in, and supplying citizens with a number of services which are ever wider and technologically advanced.

SERVICES:

SERVICES TO THE INDIVIDUAL, TO COMPANIES, TO THE COMMUNITY

Services useful to the community: this is the project linked to Services. An intelligent use of the network for the management of power flows and their optimisation, but also for the useful transmission of data and information and immediate user management.

The sector is dedicated to the implementation and management of networks (hardware) and the optimisation of all services to the user, both domestic and company.

The identified benefits they want to offer are the widest range of technological applications for the management of consumption of companies and users, for the optimisation and management of services provided and requested, for the programming of intelligent consumption in regard to public lighting and for the immediate detection of damage and problems on electrical lines.

The objective of the intelligent services is a more direct relationship between company and users, management without losing networks and a rational and optimal distribution of resources calculated according to the needs of companies, administrations and individuals.

Some fields of application which can be immediately developed within the smart-city project have been identified. The sectors are as follows:

- . **Optimised management of grids:** implementation of an electricity grid able to support a greater load capacity and a wider transmission of information;
- . **Reduction in energy and resource losses:** reduction in waste generated by electromagnetic fields to zero with regards to loss during transmission from the producer to the energy user and other resources;
- . **Regulation in energy supply:** possibility of programming the quantity of energy needed at specific times, avoiding waste;
- . **Energy storage:** energy accumulators for full operation of the grid even in an emergency, so as not to waste the energy generated in the grid;
- . **On-demand services:** remote control and management of flows directly from the supply company;
- . **Security:** services linked to monitoring and reporting of problems linked to security, immediate reporting procedures and anticipation of events;
- . **Management of self-generated energy:** control of the energy produced by renewable energy plants, management of consumption and networking of the production surplus;

- . **Smart metering:** management of the water supply network with a reduction in waste and losses in the network channelling of the products;
- . **Direct user management:** control in real time of users and actual consumption;
- . **Consumption programming:** possibility of programming and designing the model of consumption and supply of energy and other products according to the requirements of individual companies and individual users;
- . **Regulation of public lighting:** possibility of regulating the intensity of public lighting according to the times when there is greater or less usage;
- . **Reporting of problems in real time:** possibility of immediate intervention on grid problems and resolution of the same in real time.

Services are enhanced by the possibility of access to an electricity grid structure implemented by the development of the smart-grid, made available to companies and public administration. The structuring of the smart grid, smart metering, reduction and optimisation of energy flows and constant monitoring of flows are based on the idea of using a completely new mesh distribution compared with the past, a mesh which needs to have a high load capacity and be more flexible for the diffuse energy generation arising from production from renewable sources. Of further importance is the demand for services in the so-called last mile. Definitive progress is seen in the structuring of the energy smart grid, integration of electrical, thermal, geothermal and methane gas networks, which manages to combine demand, production and energy efficiency, optimising resources and reducing waste to a minimum.

MOBILITY:

INTELLIGENT AND SUSTAINABLE MOBILITY FOR THE BENEFIT OF ALL

E-mobility is the regulation and management of traffic intelligently, but especially it is the idea of a new model of sustainable mobility in our cities, through the use of vanguard technologies and non-polluting means of transport like electric cars, electric mopeds and bicycles, public services with zero impact.

Sustainable and soft mobility is the first response to the pollution of cities.

E-mT is the project to create and manage the necessary structures for Terni to become a city with soft mobility, designing a sustainable mobility system which goes from fast recharging points to car-sharing and bike-sharing services, but also the possibility of immediate and promotional initiatives which can make the population aware of a good use of means of transport, particularly public.

Thanks to the support of the networks, it is possible to have a single management of the different initiatives and types of intervention proposed in recent years for mobility in city centres and regulation of traffic flows (alternate number plates, preferential lanes for transport of road freight). At the same time, constant monitoring of urban pollution will be possible, so as to allow suitable policies to be adopted.

The fields of development identified concern both the aspect of flow management and standardisation of policies on mobility, and the use of incentives and promotion of alternative solutions to using individual means of transport in favour of public transport. All services will be able to start from the innovative waste collection centres placed in various districts of the city.

. **Intelligent management of traffic flows:** it will be possible to coordinate traffic lights on fast-flowing routes and luminous signs on streets with many lanes, both on ring roads and inside cities;

. **Monitoring of traffic flows and pollution:** the installation on street lights of suitable technologies will make it possible to detect street traffic flow in real time, consequently allowing for the development of fast-flowing routes, together with detection of the environmental impact of emissions from cars and other means of transport, in order to create continuously updated mapping of the urban points of pollution linked to the traffic;

. **Fast recharging points for electric or hybrid vehicles:** installation of fast recharging points for electric or hybrid vehicles, with the possibility of creating a self-powering service station with the use of solar panels to produce the charging energy supplied;

- . **Sustainable mobility:** system to coordinate all the policies of soft mobility and reduction of road traffic in the service of public administration;
- . **Alternative mobility:** use of incentives, for all types of transport and mobility other than individually owned road traffic;
- . **Bike-Sharing:** creation of exchange stations with electric bicycles and related construction and extension of urban cycling paths, improvement of the system already in place in the city;
- . **Car-Sharing:** use of incentives for policies linked to the collective use of cars;
- . **Services for public mobility:** support through the electricity grid for recharging all vehicles linked to alternative mobility, with particular emphasis on public transport;
- . **Integrated and telematic management of public parking:** remote control on public parking both for internal security and for methods of paying for parking;
- . **Awareness actions:** support for initiatives to promote soft policies on urban mobility.

Thanks to the smart grid, it will be possible to use a full and complex database of data on traffic flow, rush hours and pollution rates which can allow public administration to coordinate all the standardisations and initiatives aimed at urban and suburban traffic management.

AUTONOMY: EVERYTHING FROM HOME OR FROM THE COMPANY, WITH A SINGLE CLICK

Taking care of the citizens, to make every user independent in the management of their own needs, through software and services in which they can programme and plan each of their requirements directly from home or their own Company.

T-care is a container for solutions linked to the quality of life, to wide accessibility to goods and services, with great social impact.

T-care is also a service to Public Administrations, to make it easy to access them immediately, directly usable through on-demand transmission of information, comprehensive expression of an e-city which takes care of its own citizens in every requirement of their life.

Freedom and ease of access mean, consequently, also freedom and ease of offer, the limitless possibility for companies, citizens and public administration to directly draw up direct models for the use of services. The project intervenes directly in the programme through a series of services which are directly usable through the electricity grid and internet.

One can assume therefore two fields of working, as regards the taking care linked to the smart city. On one hand is the simplified and easy to use relationship between public administration and citizens/companies and, on the other, the direct relationship between supply companies and users:

- . **Simplified access to Public Administrations:** simplification of the system for requesting and issuing of certificates, booking services, linking to sites for government simplification;

- . **Access to energy:** direct management of consumption through production, planning and energy saving systems;

- . **Management software for the home and business and home automation:** possibility of a choice of a series of efficiency and management programmes and technologies for the home and business;

- . **Systems for immediate report of emergencies:** systems for reporting faults and systems for people in difficulty with recording and immediate intervention;

- . **Integrated management of services with the Company:** direct link through the electricity grid with the supply Company and cross-checking for faults and consumption;

- . **Contact in real time with the Company's Office of Public Relations:** an always available automatic and interactive answering service for users;

- . **Utilities payment:** utilities payment on-line or through teletext, digital management systems;
- . **Development:** possibility of accessing dedicated programmes for interventions on the home or company network and use of associated technologies;
- . **Scouting for energy autonomy:** full screening of energy requirements and plan for conversion and optimisation of existing resources, innovative proposals for consumption and energy production;
- . **On-demand services through access to the network:** widespread and easy access on the network to services on request;
- . **Energy efficiency:** support policies for advanced technological solutions linked to the energy efficiency of buildings and infrastructures, digital management of hot/cold temperatures;
- . **Smart being:** projects and services linked to the protection of health, electronic medical record, mobile remote medicine for the analysis of processes of the human body;
- . **Edutainment:** to educate and inform through software applications for computer and smartphone and telematic panels distributed in citizens' meeting places.

Company and administrative taking care, on the agenda in customer services, proposes to make each user independent in managing their own requirements, through software and services with easy access for public administrations and companies. The idea is to develop an urbanisation model of services which can guarantee a high quality of life and personal and social growth of individuals and companies, optimising resources and space for sustainability, immediately and fairly managing access to goods and services.

RESEARCH: A LARGE CONTAINER TO MAKE THE CITY GROW

The search for innovative solutions without losing sight of eco-sustainable values: to invest in patents and projects linked to renewable energy and energy efficiency is the main response to the economic crisis.

The project proposes creating a large container in which to bring together the industrial, productive and scientific expertise of the community in products dedicated to the development and growth of the area.

A sector dedicated to research on new technologies and renewable energy, for energy efficiency and smart-waste, for which to create a research centre able to request reporting and exchange of information and know-how between all the players involved, to create one of the mechanisms for the development of the city.

In particular, specific policies will be implemented and also technologies to balance the lack of continuity of energy production from renewable sources for full integration into the grid, where particular requirements linked to the variability of production can find an answer both in grid flexibility and in a series of applications which will point the new energy supply model towards a diffuse energy generation and the creation of VPP (virtual power plants).

. **Patents:** trials and production of hardware and software solutions set up for patenting. Networks of patents cutting into the same field and able to offer a homogeneous range of solutions can be formed;

. **Systems for managing energy produced:** systems will be drawn up to manage the input onto the grid of energy produced variably and in a diffused way from renewable sources (VPP). Creation of energy production chains integrated through all types of renewable energy to reduce variable generation to a minimum;

. **Hydroelectric power:** innovation in the hydroelectric field both regarding large production, with solutions to make hydroelectric poles efficient and limit waste, and in micro solutions, with applications and tools able to keep the quality of public water high together with widespread production of energy from primary and secondary waste waters and sewage;

. **Photovoltaic:** projects to set up photovoltaic production for home use and self-generating projects for the energy needs of companies;

. **Wind:** analysis and trials of innovative solutions for large and small plants, precision mechanics;

. **Co-generation:** creation of co-generation plants supplying essential grid sectors,

increase in production covering public needs;

- . **Smart waste solutions:** solutions for the collection, storage and intelligent recycling of waste, with the creation of a recycling and re-use centre and the use of technologies for separating unsegregated items;
- . **Biomass:** implementation of the collection and use of biomass for energy production and carbon free disposal of organic waste;
- . **Energy efficiency:** solutions for urban and industrial energy efficiency, digital management of hot/cold temperatures in houses and buildings, technological products for producing and managing energy and resources for the smart building;
- . **Partnerships:** partnerships with international, national and local actors for the creation of innovation plants directly in the area.

Terni Municipality and its companies wish to become institutional, technological and developmental partners of companies in smart technology trials applied to the community, to the creation of a city-laboratory whose model can be exported into various Italian situations starting with the user and his needs before arriving at the structuring of networks and services in accordance with the needs of all.

TELECOMMUNICATIONS: INVISIBLE NETWORKS FOR A TANGIBLE SERVICE

Invisible networks as a fundamental requirement for having a city always "in contact", available for interaction with citizens and between citizens, Companies and Administrations, a networked city which grows together with, and thanks to, its actors.

Exchange of information in real time and interactive services with immediate responses: these are the two fields in which to invest for full coverage of the needs of individuals and the community.

The intelligent network goes from concrete to abstract. From tangible to intangible. But the starting point is always a virtual Terni.com which offers this reality all the tools to grow and understand how the new services work.

From interactive guides to multimedia products, from e-TV to e-commerce, the service of the invisible networks is the necessary complement to an intelligent network support and means of transmission of a world which is both virtual and real. An enhanced and soundly managed wireless and wireline network will provide the necessary hardware for the trial and subsequent networking of applications dedicated to the management of goods and services.

The telecommunications sector will, in fact, be open both in the area of management, and also to producers of software for companies and users, to make on-line working smart with a significant and positive impact on quality of life.

Principally, in fact, all the software applications relating to the priorities identified will be able to be developed and trialled on an efficient wireless and fibre network, thus increasing the transmission speed of open data.

. **Broadband and wiring:** management and set up of services for the last mile, implementation of telematic islands with free access;

. **Wireless and fibre optic:** management of the wireless and wireline network, connectivity for companies and users, full coverage of the city, increase in capacity in the transmission and archiving of data;

. **Register of networks:** creation of the first Digital Plan of the City of Terni;

. **Telephony:** telephone services, access to the operators' network, telephone applications for the use of services, creation of virtual service centres and call-centres;

. **E-commerce:** distribution of products and services through the internet network, creation of Web-TV commercial channels;

- . **E-TV:** distribution of products and services through digital television channels and internet, creation of Web-TV for the spread of information and multimedia products;
- . **Interactive guides for managing services:** multi-lingual on-line guides and applications for good management and use of products and services, virtual Office of Public Relations for companies;
- . **Multimedia products for managing services:** centre for the trial and management of Web, TV and telephony applications relating to the management of services, both for the corporate channel and for the customer;
- . **E-community:** creation of a virtual platform for contributions from the people to the expansion and improvement of the smart city, creation of the smart-community.

With the expansion to the TLC of the Smart City it will be possible to create contact portals between the network operator and the user in a continuous relationship, but also places for discussion and comparison which encourage full participation of the Community in the development and growth of smart technologies and proposals. From the website to the web-community, to interactive TV, all means of communication will be aimed at creating a community not only for the services offered to the city, but also for the construction shared with all its inhabitants.

WASTE MANAGEMENT: EVEN WASTE CAN BE SMART

To manage the entire waste chain, from waste sorting to recycling and re-use. Even waste can be smart, something not to be wasted, a source of energy and raw material to be re-used while respecting the environment.

The project proposes to change the control in the field of waste collection and management with an even more complete perspective.

Alongside ever more optimised and efficient collection procedures, centres will be created for recycling and re-use of materials, together with disposal procedures which entirely respect the environment, prioritising the most innovative technologies.

Collection method: proximity waste sorting using innovative technologies in mechanised collection centres, door to door collection, traceability and recognition of waste through new technologies.

Recycling and re-use centre: creation, in place of an incinerator, of a recycling and re-use centre which can operate efficient selection of waste and direct it to recycling, environmentally-friendly disposal procedures including offsetting CO₂.

Integrated and innovative collection centres: creation of integrated and innovative waste collection centres for differentiated and undifferentiated collection, with low visual impact and high technology, with recognition systems for waste and sorting and storage for collection.

COMMUNITY:

THE COMMUNITY SMART-GRID WHICH GROWS WITH THE CITY

The growth of a smart-city is also the growth of its community. It is formed of contributions, advice and use of the services, all factors which contribute to improving and developing a city which increasingly meets the needs of its citizens.

Smart-Grid Community is the community, both real and virtual, with which we want to always be in contact in order to create an intelligent city which really meets the needs of its citizens.

Smart-Grid Community is a community in the widest sense of the word, a place which is both virtual and real, where the whole Community can test and implement services, give suggestions, ideas and products. Not only that: it is also the correct response to management and administrative difficulties arising from excessive centralisation of service management, which, although on the one hand optimising resources, on the other loses quality and quantity in what it offers users, focusing on system macrostructures which create a further additional cost owing to the need to recalibrate individual services in accordance with the specifics of the areas served.

Terni Smart City is a calibrated model designed for full cover of a city community, able to offer a huge range of services to the individual and businesses, together with energy efficiency and saving which a vanguard technology ensures to the networks. This is why we can speak of a smart community, which takes advantage of the individual use of services and contributes to improving and implementing services by daily usage, a real social innovation linked to experimentation, the participation from all citizens in a smart city which facilitates a smart life.

Smart-Grid Community is an intelligent, thought out and structured network for complete energy efficiency raising over a whole area. It encompasses the efficiency of the networks and use of advanced technologies for the benefit of users and a real and virtual meeting place where everyone can make their own contribution to the development of the intelligent city, supplying proposals and indicating need.

Terni Municipality and ASM Terni SpA in this way offer an adaptable know-how in the context of smart grids. In a close and direct link, they can relate the demand to the offer in the planning process as well in the process of implementation. A smart city strongly centred on the individual user, able to offer everyone a vast range of services and innovations: the Smart-Grid Community begins and sets off from here.

SMART-EUROPE: WORKSHOPS AND EVENTS

Smart events for a smart city. High level meetings and workshops for stakeholders, companies and users. Smart Europe is the promotion and comparison event about the smart city, the presentation of projects and work on new perspectives.

Smart Europe wants to put the definitive international dimension of the smart-cities phenomenon at the centre of its own schedule, just as their market is global.

Smart Europe is the container on the smart city which, in a series of meetings, workshops and displays, aims to get international and local stakeholders to talk to each other in order to create virtuous circles on trialling smart technologies for cities and their liveability. However, it is also an informative moment on smart cities which is open to citizens, a window for companies and administrations, a window which is continuously being updated with that social innovation which intelligent cities carry with them.

Administrations, citizens, companies and competition authorities all together in the same place, both real and virtual, means creating that appropriate community place for developing an idea of a smart city which assumes moving towards a smart life, for all.

The development of the event means renting meeting places in more city hotspots, in order to immediately supply participants and visitors with the idea of a whole community structured according to a smart logic. A convention area is needed in which to hold workshops and conferences and an exhibition area prepared to accommodate even more broadly based meetings and ones with large numbers attending.

National and international stakeholders will be set up in the exhibition area, with areas reserved for local entrepreneurs and production, in order to create a virtuous contact and shared chain of growth. The events will be structured in accordance with at least three principal guidelines:

Smart-Technology: displays, workshops and meetings dedicated to innovative technologies for smart cities.

Eco-Smart: window for associations and organisations operating in the field of safeguarding and protecting the environment.

Smart-Culture: meetings and seminars on recycling from disused industrial sites in a smart way, with the creation of cultural centres in place of old factories, smart being and edutainment.