

# AUGMENTED CITY

We expand the way our cities and citizens use time and space, improving their quality of life with new technologies and increasingly sustainable economic and financial models



# WHAT ARE WE TALKING ABOUT?

<b>1</b>	<b>Trends, challenges, and opportunities</b>	4
<b>2</b>	<b>Engineering in the Augmented City</b>	6
<b>3</b>	<b>Sustainability</b>	10
<b>4</b>	<b>Mobility</b>	17
<b>5</b>	<b>Interactivity</b>	20
<b>6</b>	<b>Security</b>	26
<b>7</b>	<b>Welfare</b>	32
<b>8</b>	<b>Digital Enabler: our ecosystem platform</b>	35
<b>9</b>	<b>What is the future of the Augmented City?</b>	41

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After 10 years in the TELCO industry it has passed to deal with solutions for local PA, hiring the technical management of the regional areas of Sicily, Calabria, Campania, Lazio, Veneto, Molise. In Municipia he coordinates the evolution of solutions for the management system of municipalities, Provinces and investee companies.

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Since 2001 he has been working as a senior researcher in Engineering's R&D laboratory. Today he coordinates a group of researchers in many initiatives focused on the application of ICT technologies to energy efficiency and the coordination of prosumers. He is the author of numerous scientific articles discussed at international conferences such as IEEE and Sensors.

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Graduated in Electronic Engineering, he has gained experience and skills in the field of Semantic Web, Data Mining, Web Intelligence and Information Fusion. He is in charge of the team research on Homeland Security and is primarily concerned with design solutions that can support law enforcement a fight organized crime and terrorism.

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Paolo leads the Cybersecurity research team, coordinates EU and national initiatives in the Cybersecurity field: in particular on IT risk management for Local Public Administrations, the impact of cyber attacks on intangible assets and the use of Social Engineering techniques and related mitigations.



# 1 TRENDS, CHALLENGES, AND OPPORTUNITIES



Going beyond the concept of the Smart City, increasing the ability of cities to serve their citizens, respecting the environment, boosting the local economy, and focussing on people by making public services more efficient through the use of innovative technologies and financial tools such as public-private partnerships. **This is the meaning of the Augmented City, a term that denotes an increasingly technological, resilient, and sustainable city.** This is a city that can respond to new needs in a social context that has been profoundly transformed by the Covid-19 pandemic, which has enforced a radical change of pace on everyone, showing local administrators that digitisation represents a unique opportunity for progress and good governance.

Digital technology, the internet of things and people, the use of interconnected sensors, the exchange of data and information and their simultaneous processing, artificial intelligence, and virtual reality all offer local public administrators concrete solutions in terms of simplification, accessibility, and economic acceleration.

What we have before us is a crucial challenge, and local public administrators are called upon to play an active role. They can and must be the protagonists of the digital revolution taking place in our country, charting a course that is not only technological but also socially appropriate, participatory, and inclusive. And in doing so, they are not alone. Indeed, maximum results can be achieved through targeted investments and risk-sharing with the private sector, with sustainable and long-term economic and financial models, and taking advantage of the European funds that are available. **As accelerators of change, this is precisely the goal that we set ourselves for the cities of today and tomorrow.** We invest in skills and make them available to bodies that are inextricably linked to local communities. In other words, we transform individual initiatives into opportunities to improve the quality of life of urban citizens, redesign processes, allow authorities to make savings, and simplify the relationship between public administrators and citizens, acting on five fundamental pillars of a single technological ecosystem: financial and environmental sustainability, security, mobility, welfare, and interactivity.





# 2 ENGINEERING IN THE AUGMENTED CITY

The combined goals of environmental sustainability as well as economic and social development are possible thanks to the digital transformation of the cities and territories in which we live. Technology is not an end in itself but a tool to enable this transformation of the Augmented City in all areas: sustainability, security, mobility, interactivity, and welfare. At Municipia - Engineering Group we aim to simplify our clients' relationship with technology, integrating it into our services to make them efficient and effective.



**Stefano De Capitani**

President, Municipia



II The way we use time, space, the environment, and resources within our cities determines the quality of our lives and forms the basis for the sustainability of our existence in the medium and long term. Public services must therefore be designed in a way that caters to the needs of cities and citizens, who do not consume resources but are fed by their continuous regeneration and optimisation, with interventions that are economically and financially self-supporting. Our commitment focusses on supporting the implementation of city strategies, starting with the enhancement and re-contextualisation of their assets, in order to strengthen and improve their public services. We use **public-private partnership** formulas, based on the shared benefits of higher revenues and lower operating costs, while taking responsibility for risks and the necessary investment. Our clients are able to take advantage of our own experiences in many cities, both domestically and internationally, as well as our technologies and solutions, in order to improve the quality of life of urban centres - not through single initiatives but through integrated interventions.

**We have defined 5 macro-areas to focus** on to improve our cities and the quality of life of our citizens.

1

**Sustainability, understood both financially and environmentally. Revenue management** is the first area of intervention, and is essential for guaranteeing all public services. At the same time, it is also a tool that ensures cohesion and promotes citizens' trust in city administrators. With an end-to-end approach, we oversee all processes, ensuring that the administrative body achieves three fundamental objectives: fairness in terms of taxation, a citizen-centric focus, and planning and control of the resources necessary for the proper functioning of the city.

The second area is related to the protection of environmental resources, because sustainability also means **energy efficiency**, achieving more while reducing waste, and more effective **waste management** with full respect for the surrounding area.

2

Cities are the places where people meet, where social life is made manifest in a more intense and complex way: the second requirement is therefore **security**, which translates first and foremost into the prevention of risk scenarios for citizens. This can be achieved through an active system of monitoring and prevention.



# 3

Thirdly, living in a city also means moving around in it. Today, all urban centres face issues related to **mobility**, access, transit, and parking. We develop hardware, software and IoT technologies to realise smart mobility, smart parking and city logistics projects. These are solutions that optimise access to services, ensure road safety, and reduce environmental impact through technological management and control infrastructures and services. We also design, build and manage integrated systems to create traffic-restricted zones (ZTL) and low-pollution zones using public-private partnerships and project financing formulas.

# 4

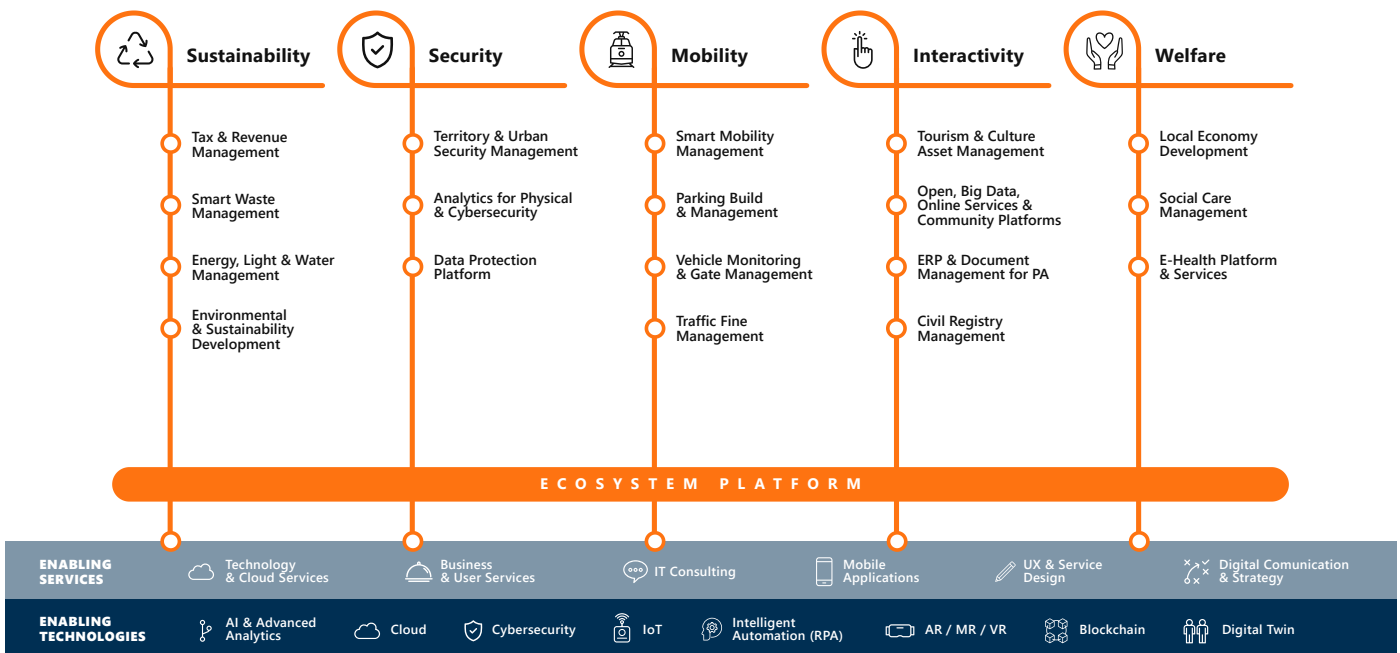
The city is no longer a closed system; it presupposes a high level of **interactivity** which manifests itself in different ways. Every process is aimed at the citizen and the city user, from simple administrative practices to registry management or the management of various payments, and this requires open and transparent technologies and solutions that are accessible at all times and absolutely secure, in line with AGID directives, thanks to Cloud tools.

Making a city interactive is also a fundamental step for the local economy. This makes it possible, for example, to increase the use of cultural and tourist **assets**, enhancing them and making them open and accessible to anyone at any time of day, even remotely.



# 5

Last but not least, **welfare**, understood as an integrated system of digital services for data-driven and proactive public policies: knowledge, proximity, wellbeing, community welfare, security to foster social inclusion. Technology is no longer merely a tool but a pervasive dimension of sustainability, capable of impacting society as a whole, on a par with others. Public administrators must focus on knowledge, the ability to forecast phenomena and the consequent activation of services and measures, and the avoidance of discontinuous and ineffective interventions thanks to cooperation between public databases, which are accessible to all the entities providing services in the sector.





# 3

# SUSTAINABILITY







The sustainable development of an urban centre entails the integration of technologies, innovative tools and urban planning projects capable of ensuring a better present and future for those who live and work in the city. As mentioned above, however, there can be no growth without an economic guarantee to enable the activation and continuity of all public services. This is why **financial sustainability** underpins any vision and planning by local government.

In this sense, local public administrators must encourage citizens and businesses to become active players. To this end, they must find the funds to provide the necessary services to meet social needs. In this scenario, **revenue management** is the first tool for identifying the resources that are required to offer efficient services.

Municipia supports local authorities in this process. Thanks to the technologies and solutions implemented, it is possible to make sustainable choices that are environmentally and socially conscious, ensuring that the organisation has the resources to operate, expand and improve its services.

**There are three fronts on which to act.** The first, which is endogenous to the organisation, enables the evolution towards the Augmented City and is based on technology. The objective is to construct a **system of knowledge** that goes beyond the mere possession of databases, giving meaning to information, interpreting and relating it, scaling up from data to the awareness of what it represents in terms of companies and people, and simultaneously giving thought to their individual socio-economic situation and territorial reality. Knowledge that creates value and builds reliable forecasting models, which can be used by the authority to inform decision-making when drawing up its annual budgets.

The second front is exogenous because it is open to taxpayers, who need to be able to access and make payments easily and securely, including remotely, through a **range of telematic services** made available to them. These will include:

- **A taxpayer portal**, developed with the application of human centred design (HCD) methodologies and techniques and an approach that is consistent with the three-year IT Plan;
- **MuniPay**, a modular solution that supports the authority in interacting with the PagoPA world, especially in publishing debts to the citizen, the display of an online payment portal aimed at citizens, and in accounting and financial reconciliation activities;
- **A taxpayer's digital file**, a virtual archive in which all documents relating to the taxpayer's relationship with the authority are stored for both the authority and the taxpayer;
- **Proactive and pre-filled online applications** to accompany citizens in accessing services;
- **A video invoice**, which accompanies a payment notice and opens up other online communication services between the authority and the citizen;
- **Access to online payment tools**, including F24 forms;
- **Sending pre-filled** but editable declarations before return;
- **Engineering of urban hygiene services** to implement active policies to reduce the environmental impacts of human activities, to give just a few examples.

The third front is both endogenous and exogenous: it concerns **actions for effectively combating evasion and compulsory collection**, which can still be implemented thanks to the construction of the knowledge system with the aim of "paying all to pay less". In this context, Municipia provides services that aim to maximise results by significantly reducing the execution time compared to the time allowed for prescription. This is thanks to an in-house and independent software architecture (the ACSOR/e-Movie software) and a different web-crawling activity depending on the tax examined: IMU/TASI, TARI (TARSU, TARES), ICP, COSAP and other minor taxes.

Given the economic resources needed for public services and looking ahead to a higher vision of the city, with a view to concretely improving the quality of life and promoting respect for the environment in the years to come, the sustainability discourse must necessarily include concrete solutions that are in line with the **Sustainable Development Goals of the United Nations Organisation (Agenda 2030)**. In this regard, Municipia offers services to support municipalities in crucial areas such as **energy efficiency** and **waste management**.



## ENERGY EFFICIENCY

Local governments are paying more and more attention to energy efficiency policies, but many authorities do not yet have a system capable of measuring/forecasting consumption and applying a savings logic combined with the use of IoT. For this reason, Municipia offers innovative solutions to make cities more sustainable, optimising the use of energy resources, increasing the production and consumption of green energy, raising awareness among citizens and authorities of the culture of saving and producing tangible effects - even in the short term - in terms of equal well-being.

Municipia develops technological efficiency projects ranging from public lighting to building automation, with the aim of "infrastructuring" the city to reduce energy consumption, cut pollution and free up economic resources that can then be used in new services.

### Public lighting efficiency (smart lighting)

Implementation of projects to innovate existing systems with high-efficiency, remote-controlled and integrated systems within the context of a smart city ecosystem (electric mobility recharging, energy community management). This means:

- Lower energy consumption due to technological innovation (LED) and remote control of lighting (adaptive lighting);
- Lower CO2 emissions, due to lower consumption (given the same level of wellbeing, technological innovation and adaptive lighting) and better supply (FER);
- Increased safety for citizens, due to the upgrading of the entire system (supports, cables, switchboards, and lights);
- Transfer of digital knowledge to the local authority and citizens through the design of web-based platforms for consumption control and complaint management.



**In real estate (schools, sports facilities, ERP housing):**

- activation of remote management systems and presence detection sensors in rooms and on windows for the active and automated regulation of lighting, air conditioning, consumption monitoring and air quality;
- activation of controls on risk areas, evidence of unsafe conditions and potential unlawful behaviour;
- accurate and numerical verification of presences in individual areas and in the building as a whole to check for unauthorised entry/exit, presence and security control for emergency management, checks for noxious gases.

This means:

- Lower energy consumption due to technological innovation (windows, LEDs, thermal insulation) and remote control of consumption;
- Less CO2 released, due to the combined effect of lower consumption (for the same level of wellbeing) and better supply (RES, including self-consumption);
- Better indoor wellbeing for users;
- Transfer of digital knowledge to the local authority and to citizens through web platforms to monitor consumption, improve behaviour (raising awareness, including through gamification processes) and handle reports (faults);
- Counteracting "energy poverty" among vulnerable groups by activating and supporting the management of energy communities.



## MANAGEMENT OF WASTE - DIGITAL WASTE MANAGEMENT

In this context, new technologies can make a real difference, turning the problem of waste into an opportunity for local authorities, multi-utilities and companies in the sector. This is an articulated supply chain that requires tools, such as **ERP** (Enterprise Resource Planning) and smart technologies, capable of guaranteeing **complete integration between administrative, financial, and control functions with operational and planning activities**.

Through the integration of tools and technologies, it is possible to optimise the whole waste management process while containing costs throughout the entire chain: from **the collection service** (vehicle management) to **the disposal of differentiated parts** (delivered to plants), from **charging** (determination and collection of the amount due) to the identification of evasion.

This is exactly what Municipia, a company within the Engineering Group, does, supporting public administrators by sharing efforts and benefits, implementing high-quality services, improving the safety of the territory, optimising management, and simultaneously reducing costs. **A unique solution, from bin to collection**, which demonstrates how technology can be applied to processes to promote efficiency, an increase in economic resources to be reinvested in the area, and concrete results that are also visible to the public in the complex and constantly evolving context of environmental hygiene.

**There are eight key points** through which the process of value creation unfolds, in full compliance with the relevant regulations and related requirements:

- Detailed planning of waste collections using innovative systems, with smart containers equipped with IoT (Internet of Things) technology;
- Construction of forecasting models to support management decisions;
- Control and reduction of collection costs, reducing bureaucracy;
- Improving environmental standards by reducing unsorted waste, supporting the circular economy and collection planning;
- Reducing outstanding amounts by optimising collection processes and increasing fairness;
- Reduction of evasion, maximising the value of recovered amounts, reducing per capita costs;
- Increased safety for citizens as well as a better quality of life and improved liveability in the territory;
- Effective and efficient end-to-end process management.





On the environmental side, over the last three years, Engineering has explored the potential of energy ecosystems and social communities, paving the way for a process of innovation that seeks to serve citizens and energy operators. Citizens in their new role as producers and consumers at the same time: so-called prosumers. This scenario has also seen the emergence of new players such as flexibility aggregators, who can manage the problems of scale that are prohibitive when individual prosumers operate independently. **Engineering has approached the Augmented City as a "system of systems"** in which the smart grid plays a synergistic role together with smart sustainable mobility, addressing the problems of various stakeholders - such as energy distributors, prosumers, energy retailers, operators of electric car charging station networks, and electric car owners. The approach adopted was that of a market for the members of the ecosystem, within which the demand and supply of flexibility matched the different needs. To support the Augmented City ecosystem a blockchain-based flexible marketplace has been created, which is innovative, transparent, trustworthy, and fair. It can also guarantee the absence of prejudicial situations in combining supply and demand as it interacts directly with IoT devices, including manufacturers' electricity meters, electric car infrastructures (to determine their position and typical routes, the charge status, and the remaining autonomy of the vehicle in real time), and electric vehicle recharging stations. **This marketplace supports cities in their systemic transformation towards the decarbonisation of urban environments, activating a sustainability plan** that helps to improve the quality of life of citizens and the competitiveness of local businesses. The active involvement of the population in the transformation process was stimulated by the knowledge that directed the behaviour of the users on the effects of various activities in terms of CO2 emissions.

## Augmented city and '15-minute city': people and public services at the core of the digital transformation and urban regeneration process

We have seen how the way we use time, space, the environment, and resources within our cities determines the quality of our lives and forms the basis for the sustainability of our existence in the medium and long term. An Augmented City, built around people and their needs with the aim of bringing services closer to users through digitalisation, simplifying processes, reducing distances and inequalities and achieving greater social cohesion without leaving anyone behind.

This wider vision also includes the concept of a '**15-minute City**', created by Professor Carlos Moreno (Université Paris 1 Panthéon-Sorbonne) and later adopted by the mayors of Paris and Milan and a range of politicians and administrators from urban centres of all sizes.

What does '15-minute City' mean? Creating more efficient and fairer urban organisation, providing 'close at hand' public services, i.e. at a maximum of 15 minutes from one's home. **This means contributing to reducing pollution, optimising travel times and accelerating the urban transformation needed in the aftermath of the COVID-19 Pandemic.** This proposal has been made even more certain by a boost from digital technology and Italy's National Recovery and Resilience Plan.

During lockdown, we all realised the importance of allowing services to continue, while at the same time bringing people and institutions closer together. We also realised however the number of cities that were not ready for or familiar with digital tools. This helped us to understand that digitisation alone is not enough and that we need to make services accessible to all, otherwise we risk widening the existing gaps in technological, cultural, personal and linguistic skills. In practical terms, if it was once enough to simply access the Internet from your own device and then use your municipality's online services, we now need a qualitative leap, such as creating a network of multifunctional branches spread across the country which citizens can refer to during any interaction with local government. **Not only that, a fundamental part of this strategy is the giving cities the ability to share needs and design integrated solutions.** This can also attract investment from private companies and funds for financing sustainable energy, environmental and social development.

In other words, digitalisation must become a tool of enablement, capable of generating positive impacts on people's day-to-day lives, the economy and the country.

The time has therefore come to lay out ideas and projects, rethink public services not only through the use of new technology but also with the creation of **new digital ecosystems** capable of creating solutions from existing assets and technologies as well as from new ones, designing them around the main needs of people, neighbourhoods and cities. '15-minute City' doesn't mean 'closing off into a restricted area', but rather 'opening up to the outside' through greater simplification and efficiency.

# 4 MOBILITY

Vehicles and people are increasingly interconnected, producing data that is still collected in public and private silos, waiting to be integrated and used to improve public services. Technology and connectivity play an increasingly central and strategic role in the pursuit of institutional tasks. Cities are seeing a growing need for Intelligent Transportation Systems/cooperative ITS solutions based on the use of IoT for the monitoring and control of mobility as well as comprehensive and timely governance and user information systems. For large international companies such as the Engineering Group, and in particular Municipia, working in this context means working alongside local administrators and their investee companies on a path of unprecedented change and development.

” **Paolo Lanari**  
Director of Augmented City Consulting, Municipia





Mobility plays a key role in making cities more liveable, attractive and sustainable. Public decision-makers are called upon to reduce the negative effects of the environmental impact of cities in terms of air quality and road safety, by flexibly managing the ever-growing demand for services for both people and goods. **They have to manage and plan mobility infrastructures, draw up regulations for access, transit, and parking for all means of transport** and all categories of users, provide and manage an efficient and sustainable public transport service that supplements/complements the private services available, responding to continuous and rapid change in terms of demand, services, constraints that must be respected, and objectives that must be met.

To succeed in this, they require a strategy that is not limited to small-scale interventions but is able to make the most of the important technological innovations of recent years and, in particular, new technological platforms, artificial intelligence, the internet of things, and big data.

Municipia - Engineering Group, with its IoT technologies, belonging to the broader sphere of ITS (Intelligent Transportation Systems) makes it possible to implement innovative services for citizens, companies, public administrators and their subsidiaries in an organic manner and on a broad scale, aiming to achieve economic, environmental, and social sustainability as well as low energy consumption, low accident rates, and higher productivity levels (with a view to cities with low environmental impact). It offers services and solutions to enhance data and services through technologies that allow their integration and processing in real time, as well as the redesign of mobility systems to optimise the use and development of economic, human, and environmental resources. In addition, with the support of dedicated partners, it is also active in the design management, implementation, financing, and operation of parking spaces and Restricted Traffic Zones (**congestion charge** or **ZTL**).

On the subject of road safety and education, Municipia offers software solutions and services to **cover the chain of traffic offence management and all administrative sanctions in general, as well as compliance in the event of road accidents, lost property, and road signs**. These services enable the large number of disputes generated by fines to be managed, and offer solutions for road safety education. **In other words, an eco-sustainable and eco-efficient way of managing urban mobility is offered**, to support cities and utilities in the implementation of smart mobility, smart parking, and city logistics projects. Municipia offers a single dedicated platform, INES Cloud, which can integrate existing systems and infrastructures by positioning them in an open and interoperable environment. Integration with third-party systems enables public administrators, municipalities, and private operators to achieve unprecedented levels of efficiency and insight into mobility management.

A practical example is parking. Info parking tools, which are integrated and available on drivers' smartphones, drastically reduce the time spent searching for parking spaces, and, more generally, urban traffic, with positive social and environmental impacts and economic advantages for businesses.

More than 100 cities in Italy and abroad have chosen this route. Good smart mobility practices can be replicated in city centres of all sizes by making Italian expertise available to all: because technology knows no boundaries.





# 5 INTERACTIVITY

Cafe  
1154  
231  
110

This AR overlay for a cafe includes a coffee cup icon, a heart icon with the number 1154, a speech bubble icon with the number 231, and a directional arrow pointing right with the number 110.

Museum  
2879  
651  
570

This AR overlay for a museum includes a classical building icon, a heart icon with the number 2879, a speech bubble icon with the number 651, and a directional arrow pointing left with the number 570.





"Public administration must be digitised": every guideline, legislative measure, and regulation from the state bodies responsible for developing digital innovation emphasises the inescapable and urgent need to promote digitisation of public administration. The three-year plan for IT in public administration (2019-2021), Law 120/2020 regarding simplification, and the forecast for action under the initiatives linked to the Recovery Fund all set out actions and deadlines for the achievement of ambitious objectives, which were postponed for so long but have now taken the shape of a real plan of action.

Why such an emphasis, and what form should "digitisation" take in order to fully capture the essence of digital innovation?

Municipia offers its own answers to these questions, based not only on its many years of experience as a software solutions provider and system integrator, but above all on its daily exchange, with thousands of customers, regarding the difficulties and opportunities involved in each individual choice, in both the IT sphere and organisational sphere, and how each of these guides the path of digital innovation. And the emphasis on digitisation underlines the active role that the **public administration takes in the creation of public value**.

Simplification, the pervasiveness of digital services, the paradigm of "mobile first", etc. are all declinations of a single concept of "Augmented PA", reflecting the fact that a form of public administration that is more present, organised, and responsive to the needs of an evolved and digital population will necessarily lead to value creation, improved wellbeing, and liveability for its citizens. And so the path to digitalisation cannot be reduced to the simple use of digital infrastructures (SPID, AppIO, PagoPA, SaaS, Cloud, etc.) and investing in innovation also means completely rethinking processes, i.e. the activities that public administrators carry out to provide public services.

**It is necessary to reinforce the general understanding that digitisation that aims to do things in the same way** (perhaps with additional IT support) will not necessarily achieve the objective of creating value for the community. In particular, it will not expose the extremely important and long neglected contribution made by the recipients of those public services (namely citizens) in the creation of that value. Today it is necessary to imagine services as "natively digital" and the relationship with the citizen according to a full-outsourcing formula, with services built on the experiences of citizens and not on the automation of the administrative process: and all of this must remain mindful of technological security (cybersecurity) and secure data processing (GDPR).





Ultimately, what is needed is a "common public vision" that is integrated among those who provide and receive services and also among the various service providers, to avoid creating cities that are more advanced than others and, consequently, disparities between individual territories, which would only widen the digital divide that already exists.

For the Engineering Group and for Municipia in particular, digitisation of public administration therefore means strengthening and giving content to a new stage, recognising the central role of authorities in the development and recovery of the entire country's system, equipping them with an **integrated digital model**. Based on reliable and secure software and systems, this will allow access to applications and services from anywhere and at any time, guaranteeing operational continuity for the back-office activities of municipal operators and for the use of mobile services by citizens and businesses. A concrete example is **jEnte, a simple, protected and customisable Cloud platform** for rationalising the entire management of local government and its companies.

A **circular digital public service model**, an "end-to-end" digital transformation process that, in addition to **improving the quality of life of citizens, also generates economic savings and administrative efficiency for the public administration and therefore value for the community.**

In questo ambito, abbiamo maturato anche esperienze innovative grazie alle competenze della Direzione Ricerca ed Innovazione, come ad esempio:

- **HyperCuTE**, a system for the management and valorisation of sites and objects of artistic and cultural value, which uses new technologies for user interaction, immersiveness, multimedia, and artificial intelligence, allows administrators or individual tourist or cultural sites to define locations with a touristic/cultural value within the territory and link sophisticated multimedia content to them. The content can enhance the location by adding a level of connection and interactivity through pre-existing and new immersive productions. The resulting immersive experiences are useful both in the preparation stage of the visit, where the potential tourist will typically obtain information via a simple web browser or even a virtual reality viewer, and during the actual visit itself, helping visitors to make the most of the attractions and services of the area thanks to mobile apps (iOS and Android) that suggest experiences in a contextual way. These visit preparation tools have been updated to help tourists and citizens plan their visits with the best possible awareness of the marvels on offer, but also of the services and safety conditions post-Covid. The level of granularity in the description of a territory or a site is flexible: one can start from the main attractions and then progressively enrich the content available in the system, even mapping cultural and tourist assets at different levels: Point Of Interest (POI) - e.g. a museum or an archaeological site, Environment Of Interest (EOI) - i.e. important areas or rooms of a PO, e.g. the halls or rooms of a museum, and finally Items Of Interest (IOI) - e.g. individual works of art or artefacts in a museum.
- An exhibition created entirely in Virtual Reality for the MAXXI in Rome (Museo Nazionale delle Arti del XXI Secolo), digitising the models of the greatest contemporary architects - from Campo Baeza to De Feo, from Rossi to Sacripanti - and obtaining 3D models that can be explored by users in detail through an immersive app, which can be used with virtual reality visors.

Engineering has been committed to open and transparent technologies and solutions for many years. In particular, with our expertise and our digital platforms, we support cities in the optimal management of their data to transform it into a strategic tool to provide citizens and businesses with new digital services and create public value.

In this context, we have acquired consolidated experience and technical skills on the **Urban Data Platform**, working on various research and innovation projects (e.g. the Large Scale Pilot SynchroniCity; CEDUS, Sustainability Enabler and Easy2Go within EIT Digital; the pre-commercial tender SELECT for Cities, ToNite funded within the European Urban Innovative Actions programme on the theme of Urban Security) which have seen the application of our solutions on issues related to the interoperability of data in the urban environment.



The use of application programming interfaces (APIs), data models, and open standards shared by relevant European communities (above all FIWARE and Open and Agile Smart Cities) is a key element that distinguishes our solutions. These include the Digital Enabler, the digital ecosystem platform powered by FIWARE, which is the subject of the Focus Box.

We therefore present ourselves as enablers of open innovation in the context of cities, which can be understood as complex ecosystems that are characterised by a high level of interactivity and must be supported through the adoption of an open and collaborative model of government (Open Government), based on transparency, participation, and data sharing. In this area, we have gained strong experience with respect to:

- **Participatory innovation** (both public and private), with the creation of the Open Innovation Area (OIA) platform, thanks to several national (e.g. "Capital of Culture 2019", Municipality of Lecce) and European pilot projects (e.g. the research projects Chest, WeLive, Unalab, Select for Cities). The platform is used in cities such as Genoa, Eindhoven, Tempere, Anversa, and Helsinki to allow the city's stakeholders to interact and collaborate in the definition of their development strategies. According to the "quadruple helix" approach, OIA empowers the four different souls of society (public administration, academia/research, business, and citizens) in expressing ideas and shared needs, identifying possible solutions to problems, and managing the innovation life cycle in all its phases;
- **Open data, through the Idra platform**, which, as the result of a European-Japanese research project (Festival), provides a single point of access to all open data made available by public administrators and private entities through their portals. Idra enables the collection and harmonisation of open data, facilitating its reuse by citizens, businesses, and other urban stakeholders, enabling the creation of new value-added digital services and applications. Idra also provides advanced, multilingual data search capabilities and data harvesting techniques for the identification and extraction of (open) data available on the Web.



## DIGITAL EXPERIENCE: CULTURE & TOURISM

In the context of interactivity, particular attention should be given to **cultural and tourist enhancement**. The demand in the sector, which - now more than ever - needs a new impetus, has long since shifted from "seeing and doing" to "living and feeling". This represents an evolution of the desires of tourists and access that sees the tourist as the protagonist of his/her own experience and the organisation of his/her holiday in a general context that requires increasingly punctual and timely responses. It is therefore essential to revitalise these sectors by addressing short-term challenges and at the same time seizing the opportunity offered by digitisation to build a tailored experience with a view to medium- to long-term sustainability. In this context, Engineering Group, and in particular Municipia, offers municipalities of all sizes a comprehensive solution tailored to their specific needs, thanks to the availability of a series of integrated services ranging from **destination management to digitisation, control and management of flows for security purposes to the creation of truly immersive and personalised itineraries**.

The aim is to enhance the use of digital technology to help tourists "live" the experience remotely before they set off, and then support them in choosing the activities that the destination can offer to create a tailored experience. Tourist incoming activities are also enabled and supported by the analysis of data generated by technological systems for the management of cultural and tourist assets, enabling particular actions for specific targets.



# 6 SECURITY





Urban safety, a prominent theme in public opinion and in the political and social debate on city governance, goes beyond the concept of security and public order. Making cities safer means providing a network of services and specific technologies that can improve citizens' quality of life, reduce their sense of insecurity, and actively involve them in the process of urban security management, in line with an innovative model of participatory security supported by collaborative applications and ubiquitous technologies, as well as increasingly advanced and widespread sensor networks.

This principle forms the basis of the security of the Augmented City, which can perceive and monitor what is happening constantly, and react quickly to protect its citizens. The technological solutions we have developed to support urban security are positioned within this context, thanks to our participation in the TRILLION, SURVANT and APPRAISE research projects, which make it possible to automatically detect anomalous behaviour and public safety events and promptly notify the relevant authorities - while also fully respecting citizens' privacy. Specifically:

### **RESEARCH PROJECT / TRILLION**

Trillion offers an ecosystem of integrated applications for acquiring, classifying and correlating useful data for urban security management, analysing both data from sensor networks located throughout the territory and the content shared by citizens on various social media platforms concerning events they have witnessed or crimes to which they have fallen victim on a daily basis. Particular attention is paid to educational aspects, which are addressed through the use of the game metaphor to raise awareness among citizens of the correct behaviour to adopt in the various critical situations they face on a daily basis. TRILLION contributes to the elimination of decline and danger in the identified areas by eliciting the direct involvement of citizens, strengthening their sense of belonging and encouraging their active participation.





## **RESEARCH PROJECT / SURVANT**

Survant contributes to the identification of events relevant to public safety through the automatic analysis of heterogeneous and distributed video archives, acquired and processed in near-real time, to recognise behavioural patterns considered dangerous to public safety. The system can be configured and trained to detect and monitor various types of events and crimes that take place in the street (vandalism, thefts, muggings, assaults), large public events (violent demonstrations, uncontrolled crowd movements during sports or music events, etc.), as well as crimes against minors and the elderly.

## **RESEARCH PROJECT / APPRAISE**

Appraise offers an integrated threat intelligence solution for augmented cities, enabling the continuous and effective monitoring of internet sources (including social media and darknets) to detect potential threats and improve strategies for the protection of soft targets by promoting collaboration and the proper exchange of information between local authorities, law enforcement agencies, and security professionals from both the public and private sectors, who work together to manage citizen security. By adopting a proactive risk assessment and resilience-driven approach, APPRAISE helps prevent criminal and terrorist acts, significantly reducing the vulnerability of cities, urban spaces, and their citizens, who are constantly exposed to physical threats and cybercrimes.

The solutions offered allow for:

- The real-time provision of graphs and risk maps of urban areas to law enforcement agencies and local administrators, allowing the real dimensions of the phenomena to be determined and quick and effective decisions on the problems of crime and urban disorder to be taken.
- The direct handling of citizens' complaints, as well as prompt intervention and updates regarding the actions taken.
- The automatic detection of threats to public safety through careful intelligence activities that aim to anticipate and prevent action by individuals and organised groups of troublemakers of various types and backgrounds (such as groups that are linked to certain forms of terrorism, violent sports fans, anti-vax groups, flat-earthers, etc).

## **RESEARCH PROJECT / COMPACT**

In the field of urban security, another research project is of considerable importance: this is the COMPACT project, which aims to strengthen the cyber-resilience of Local Public Administrations (LPAs). In order to achieve its objective, COMPACT provided the five municipalities participating in the project (Bologna, Afragola, Amadora, Donostia-San Sebastián, and Bremerhaven) with a set of tools that enable LPAs to carry out quick and effective risk assessments, benefit from training services, carry out efficient monitoring activities, and share information and knowledge with other LPAs.

The latest reports published in the field of cybersecurity in PAL indicate that malware, especially malware that blocks information systems and threatens to unlock them only after a ransom has been paid (ransomware), is behind several cyber attacks that took place in a number of Italian cities. In 2019 alone, data belonging to approximately 140 public administrations in the US was reportedly taken hostage as a result of ransomware attacks. Unfortunately, the fact that PAL staff are not prepared to face such events inevitably leads to more and more cyber attacks. And the situation is no better abroad. The city of Atlanta was forced to pay around \$9.5 million to restore services following the attack it suffered in 2018, for example. During a ransomware attack in May 2019, the US city of Baltimore, Maryland, saw its servers largely compromised by a ransomware variant called RobbinHood: the city was forced to pay around \$18 million to recover and secure its systems.

COMPACT offers the following benefits:

- It improves the ability of PA staff to handle cybersecurity issues both technically and behaviourally, making use of training techniques that are typically well received by the workforce (especially those who are digitally inexperienced);
- It provides tools to protect against a basic set of cybersecurity threats, i.e. those with the greatest impact on PA;
- It provides an information hub to facilitate the exchange of cybersecurity guidelines and best practices and to share information about Indicators of Compromise (IoC) in a reliable and timely manner.

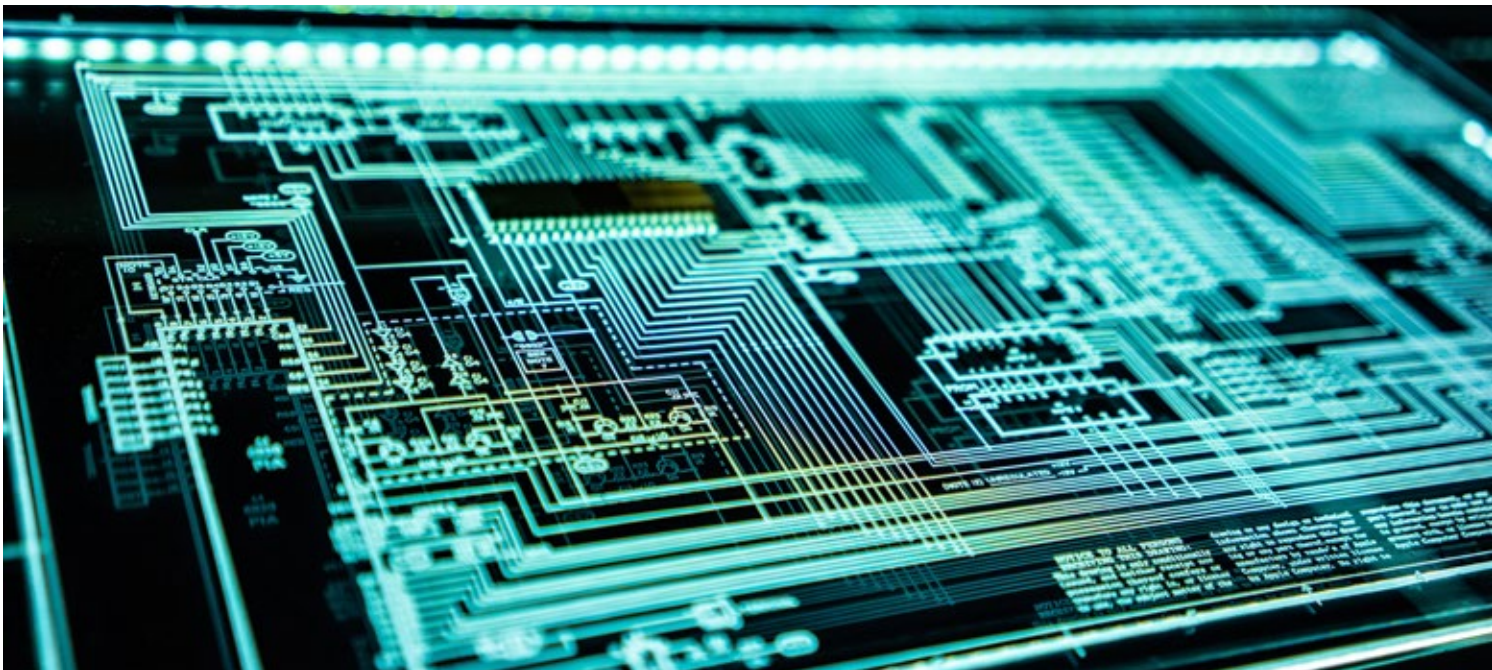




The creation of an adequate infrastructure to support the safety of citizens through the installation of sensor and camera networks, intelligent street furniture, variable message signs, cutting-edge sensors that are strategically placed and able to detect events and record different types of information and movements, makes the analysis of territorial phenomena more effective and supports the decision-making process.

**The many advantages of this approach include:**

- A reduction of insecurity among citizens and an increase in their level of trust in the police and local authorities;
- Timely and effective law enforcement and local government interventions on the ground;
- Overall decrease in crime;
- Increased citizen awareness of potentially dangerous behaviour and various types of public safety events;
- Progressive reduction of urban decline;
- Reduction of extraordinary maintenance costs due to vandalism;
- Promotion of respect for legality and urban decency;
- Higher levels of social cohesion and civic cohabitation;
- Decrease in traffic offences.



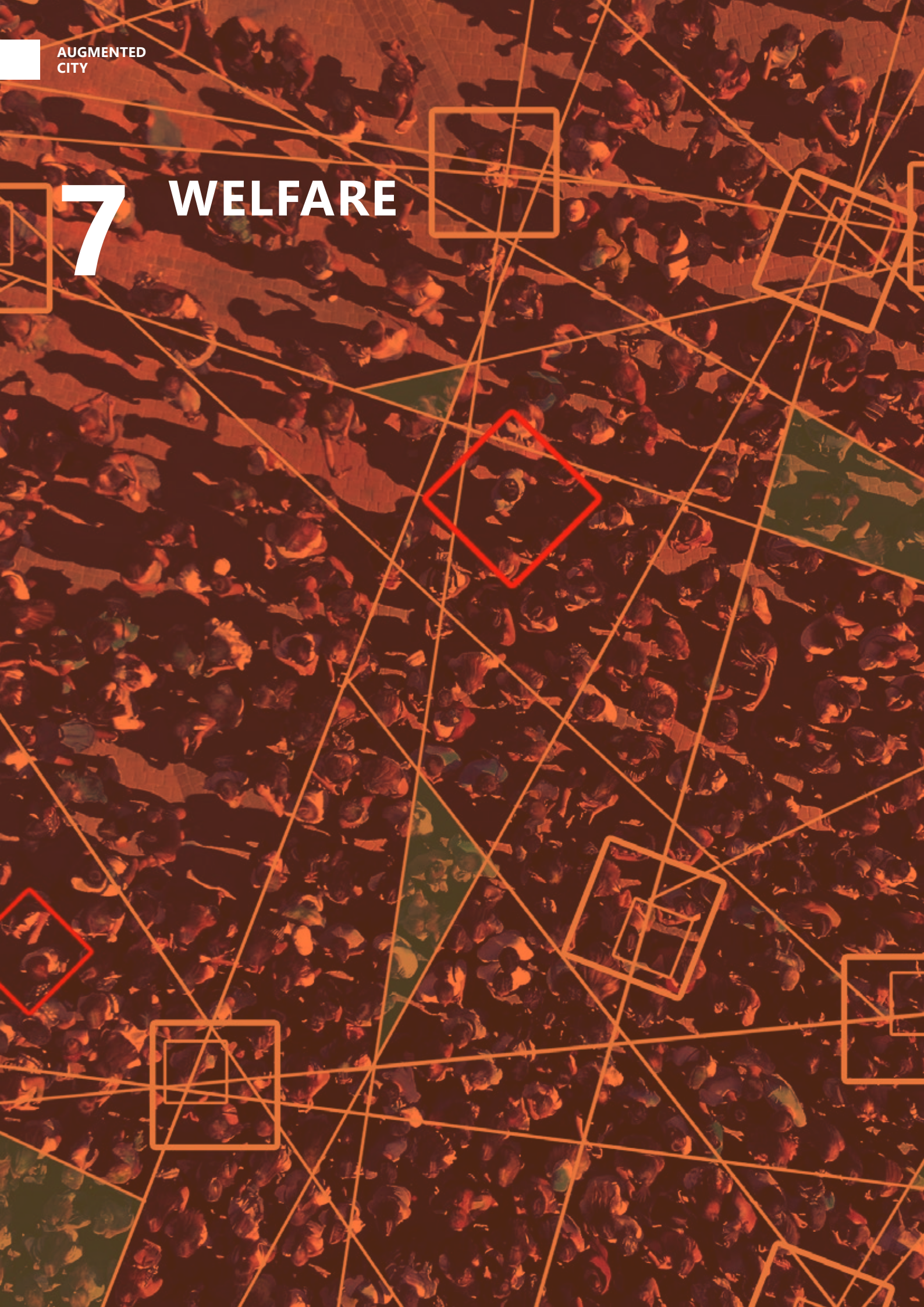
Urban security projects contribute to the promotion and implementation of a unified and integrated security system that aims to promote the wellbeing of local communities and make cities both liveable and respectable. These aims are also pursued through a series of activities that aim to drive urban, patrimonial, social, and cultural redevelopment and enhancement, as well as energy efficiency, environmental respect, and the health of citizens (through "healthy" environments). This is why security measures are most effective in broader areas:

- **Patrimony:** remote control systems for public works sites, structural monitoring of buildings at risk/in risk zones (e.g. due to seismic activity), control of access for heavy goods vehicles, control of unused municipal buildings, control of access to and perimeters of municipal buildings, environmental health monitoring.
- **Energy efficiency and public lighting:** installation of sensors and video-surveillance/remote control systems on smart masts; installation of smart streetlights in strategic areas; access control, anti-intrusion, video-surveillance and video-image analysis systems; automation and monitoring of authorised personnel access.
- **Tourism:** systems for the control and management of flows for security purposes, e.g. in the case of major events or sites at risk, including protected sites/assets; the control and structural monitoring of assets in risk areas (e.g. areas at risk of seismic activity), protection against theft and intrusion, unauthorised access, deterioration, damage and fire; the security of visitors and staff; access and perimeter control; automation and monitoring of access for authorised personnel.
- **Social/educational:** the installation of security systems in school buildings, attendance counting, monitoring of proximity areas, monitoring of environmental health.
- **Mobility:** implemented solutions to city access services (ZTL, Area C), smart parking and traffic gate management.

Different perspectives that converge into a single system, capable of governing a multitude of data and situations to meet the needs of the area and its inhabitants. To consider the issue of security in cities, it is necessary to have a non-generalist but organic vision and a governance tool at local level that is specifically suited to the municipal sphere, allowing for a focus on the fundamental role and responsibility of local authorities and administrators, and to enhance the indispensable relationship of proximity with citizens.



# 7 WELFARE





The welfare of an Augmented City involves different areas that come together to offer citizens services to support them according to their needs and possibilities. In this sense, Engineering's expertise focusses on various objectives, which concern the development of the local ecosystem and the city's various stakeholders. We promote the development of local communities by enabling, for example:

- Businesses, including small and medium-sized ones, to operate within the Industry 4.0 framework, through the application of ICT in areas ranging from goods logistics to the development of innovative methods for trade, local promotion and increased business services;
- Citizens to take advantage of expertise by applying it to education, adding value to big data, supporting teachers' learning processes and activity design, in order to make the school system modern and accessible, including in terms of building and teaching quality.

Engineering's Augmented City also has a positive impact on the lives of citizens from the point of view of health. It aims to improve the quality of life of citizens through the technological and digital infrastructure of the many care services present in urban contexts, which also offer benefits in terms of economic-management efficiency, which is increasingly essential in this sector. **The quality of life of citizens is closely linked to requirements in terms of health, care, and socialisation - aspects that are at the basis of the individual's wellbeing.** These needs are increasingly intertwined and strongly embedded in individual urban contexts.

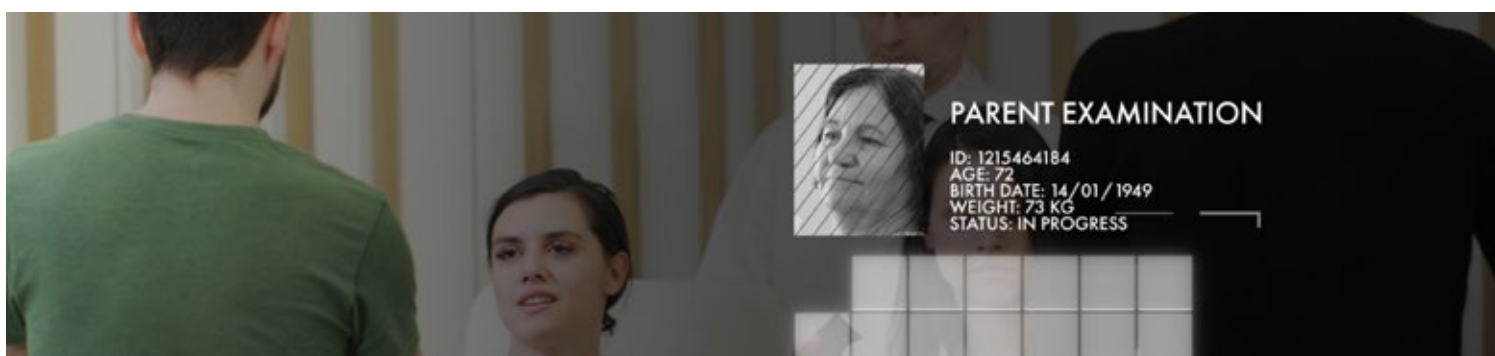
Prevention, treatment and care processes are now tending towards networked and multidisciplinary models, capable of building integrated pathways profiled on individual specificity, according to a "pathology-assisted" logic. Information infrastructures, and in particular their integration across clinical and organisational domains, enable the implementation of these models. The opportunities opened up by "data management" and its potential for value creation are enormous, both for citizens and providers. Operational benefits, such as:

- **A reduction** in (or the elimination of) waiting times for "scheduled appointments", as well as intervention times for health emergencies;
- **Continuous monitoring** and remote assistance for patients who do not require hospitalisation;
- **Immediate availability and delivery** of specialist drugs to the many health facilities located in the cities, the continuous and widespread monitoring of air quality, water quality, workplace quality, and much more.

From a clinical and organisational point of view, the benefits of increasingly intelligent cities (including in terms of health) make it possible to optimise specialist resources of all kinds (which are becoming increasingly limited) by allocating them in a preventive and targeted manner to specific urban areas or health facilities, integrating demographic, epidemiological, environmental, meteorological, and behavioural data (for example). This is an optimisation with immediate clinical implications, evolving the care activity in an increasingly proactive and preventive way as an alternative to the traditional "reactive" approach, both with regard to individual patients and entire populations. Big data, advanced analytics, IoT, geo-referencing and next-generation sensors - combined with specific solutions for e-health - are just some of the enabling technologies and paradigms that we have always implemented through our application platforms, which are scalable at every level: from the individual operational needs of a healthcare facility to the infrastructure projects of an entire region.

These well-established functional, organisational, and technological skills, which are specific to healthcare, can now be effectively "grafted" onto increasingly smart city projects and models, allowing IT to reach its full potential in terms of care and assistance for all sections of the population. With life expectancy increasing and as health emergencies have shown, local authorities are required to provide new and rapid responses to guarantee adequate services and at the same time promote social inclusion, the same level of care, and quality of services. Understanding the social context and the number of beneficiaries makes it possible to adopt an unambiguous and unified vision that enables informed management and renders expenditure more efficient and better directed, leading to social equity, an increase in services, retraining, and a broadening of service recipients. The management of data relating to the resident population (not just patients), makes it possible to respond rapidly to changing territorial needs, acting on precise, surveyed, and georeferenced clusters to intervene in a preventive and proactive manner. What is required is an evolution **from a rationale of social services to one of social policies**. In this context, we at Engineering, and in particular Municipia, offer local authorities a complete range of solutions - also in outsourcing - to guarantee greater efficiency, activation of resources, control of evasion and avoidance, simplification of all procedures, increases in essential service levels, expansion of the area of intervention, and new services to respond better to the needs of citizens and users, thus creating a real sense of **community welfare**. This translates into concrete benefits for public administration, citizens, and stakeholders:

- Knowledge and control of the territory and its real economic and social needs
- Inclusion of the third sector in territorial planning
- Reducing costs and streamlining revenue items
- Spending efficiency, service effectiveness, and delivery monitoring on the ground
- Implementation of the service so that it can be offered to more citizens and act as a driver for the local economy
- Moving from a response-based form of management to predictive and generative management
- Simplified access (language and barriers)
- Integration between the different sectors of the public administration: from a viewpoint of welfarism to a project perspective through inclusion strategies, advanced digital skills, the facilitation of access to funds, management and monitoring of the whole social framework.





# 8 DIGITAL ENABLER: OUR ECOSYSTEM PLATFORM



Data is a key resource for achieving our vision of an Augmented City. But although urban centres today generate an increasing amount of data, it is still under-used due to the size of the data, the high heterogeneity of the data sources, and limited interoperability between existing information systems, both from a technological and organisational point of view ("data silos").

Instead, data and information must be easily accessible and usable in cities: by those who administer them, by those who provide services, and by all those who live in them on a daily basis. Only in this way will it be possible to use data to effectively address the priorities and needs of cities and to create sustainable value for the entire urban ecosystem, by fully exercising data-driven governance.

To this end, **Engineering Group has developed a digital platform "ecosystem", the Digital Enabler, with a specific verticalisation dedicated to the smart city domain (City Enabler)**, which supports cities in their decision-making processes, facilitates new business models based on the data economy, increases business opportunities for the various players in the urban ecosystem, and allows citizens to benefit from better services. **Digital Enabler™** is a scalable platform that locates, collects, and evaluates data scattered across heterogeneous sources (including IoT devices and Industrial IoT) providing a single point of access to an integrated urban knowledge base.

**Its main characteristics are the following:**

- It enables rapid development of new vertical applications by managing transactions;
- It allows several systems to interoperate;
- It consists of a suite of independent and interoperable tools;
- It allows automatic identification of open data sources (data discovery);
- It is able to manage different IoT devices that can interact through standard protocols such as HTTP, MQTT, OPC-UA, ModBus at different levels (Edge, Near Edge and Cloud);
- It includes tools that guarantee scalability in the management of big data and data streams;
- It provides graphical approaches for design and monitoring processes and for the integration of data without requiring specific programming skills (low code);
- It is capable of deducing new information from data and analysing trends using AI tools and a catalogue of ready-to-use algorithms;
- It offers opensource tools for building dashboards in self-service mode without requiring in-depth programming skills;
- It offers developers a code deployment environment in serverless mode;
- A layer of standard API ensures maximum interoperability with existing third-party systems/solutions. of clients;
- It guarantees that the processing of personal data conforms with the European General Data Protection Regulation (GDPR).

The Digital Enabler, which is based on opensource software, complies with the standardisation specifications promoted by major international communities such as FIWARE<sup>1</sup>, GAIA-X<sup>2</sup>, International Data Spaces Association<sup>3</sup> and Open & Agile Smart Cities<sup>4</sup>.

These are distinctive elements in a market characterised by digital solutions and platforms for Smart Cities, most of which are proprietary and which make the Digital Enabler attractive even for cities with increasingly limited resources.

The Digital Enabler also aims to radically transform the way urban services are designed and delivered, directly involving citizens and other stakeholders in their co-design and co-creation through a shared open innovation space, to develop user-centric applications and services.

The Digital Enabler is a success story that has seen various applications since 2017. It has been adopted by several projects implementing pilots in diverse areas (such as parking management, bike sharing, mobility, the environment, disaster resilience, tourism, health, utilities, and agriculture) in Europe and South America: Italy (Genoa, Milan, Ancona, Palermo, Trento), Belgium (Antwerp), Finland (Helsinki), Denmark (Copenhagen), France (Rennes and Nantes), Spain (Madrid and Malaga), Germany (Hamburg and Monheim am Rhein), Argentina (La Plata), Uruguay (Montevideo) and Brazil (São Paulo).

The journey taken with the Digital Enabler continues with a commitment to consolidate additional partnerships at national and international level to contribute to the digital transformation of urban services in European cities and around the world through the platform, with the aim of improving the quality of life and wellbeing of citizens.

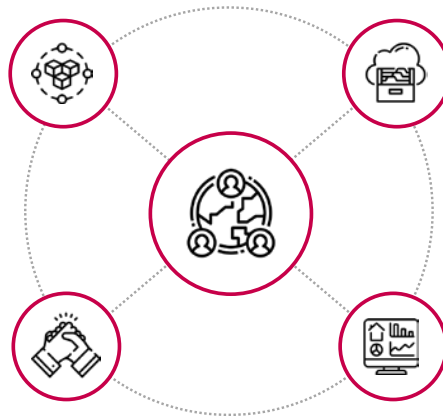
## STRENGTHS OF THE DIGITAL ENABLER

### INCREASING INTERCONNECTION OF EVERYTHING

DE is a native IoT oriented platform based on Open Standards and Open APIs

### BIG CHALLENGES NEED A COLLABORATIVE RESPONSE

Designed to quickly and easily enrich and mash-up data, integrate third parties capabilities and services through Artificial Intelligence technologies



### THE RISE OF PLATFORM BUSINESS MODEL

DE is a data driven, Cloud enabled, multi-purpose platform for organizations, communities and marketplace end-users

### INFORMATION BECOMES THE MOST VALUABLE ASSET

Advanced analytics, data exposure and data monetization are well defined process

1 <https://www.fiware.org>

2 <https://www.data-infrastructure.eu/GAIA-X/Navigation/EN/Home/home.html>

3 <https://internationaldataspaces.org>

4 <https://oascities.org>

## **DIGITAL ENABLER FOR SMART CITIES**

We achieved an important recognition at European level thanks to our participation in the Pre-commercial Procurement (PCP) called SELECT for Cities. Funded by the European Commission under the Horizon 2020 Research and Innovation Programme, the initiative aims to design, develop and implement a data-driven Internet of Everything (IoE) platform to transform European cities into "large-scale urban co-creation labs": an open, standardised, data-driven, service-oriented, and user-centric platform, which can support the co-creation, testing, and validation of large-scale IoE applications and services.

Within the context of strong competition at European level, the consortium led by Engineering was among the top performers in each of the three phases of the PCP process. The first two stages were solution design (initiated in 2016) and implementation of a prototype that fully met the requirements of the SELECT for Cities challenge. We were among the limited number of candidates (only three) admitted to the third phase, which concluded in September 2019, aimed at validating the solution in real operating environments within the contracting cities of Antwerp (Belgium), Helsinki (Finland) and Copenhagen (Denmark).

The Digital Enabler was chosen as one of the enabling solutions for the SELECT for Cities vision. In the third and final phase of the tender, it was extensively used for the implementation of several real use cases for the cities of Antwerp and Helsinki. To this end, the consortium led by the Engineering Group also organised two open calls, a series of hackathons to collect the most significant use cases around which to design innovative services for the two cities, and the involvement of real actors such as citizens, public officials and companies from Antwerp and Helsinki.

In particular, local developers used the Digital Enabler to implement several real-world scenarios including:

- The management of urban traffic congestion;
- The suggestion of healthy routes to be covered on foot rather than by ecological means;
- The integration of IoT sensor networks to correlate real-time mobility data with air quality data to provide public officials with forecasts and support in decision-making.

The success of SELECT for Cities is a testimony to the affirmation of our platform in the panorama of solutions for European Smart Cities. It also represented a further incentive to continue in the diffusion and commercialisation of the Digital Enabler at international level.

The adoption of the Digital Enabler across European borders marked another important achievement. In particular, two of the most significant experiences to date have been the adoption of our platform in the Montevideo area in Uruguay and in the city of Monheim am Rhein in Germany.





## **○ CASE STUDY / THE CASE OF ANTEL, URUGUAY**

ANTEL is the largest telecommunications company in Uruguay, with a monopoly position for landline and mobile telephone services and internet services. The company needed an IoT solution to monitor parking and air quality in the Montevideo area where the company's headquarters are located, using advanced IP (Internet Protocol) cameras and air quality sensors.

After an evaluation phase to determine the best IoT solutions available on the market, ANTEL decided to adopt the Digital Enabler for its feature of making use of APIs and open standards. Thanks to the high flexibility of our platform, it was possible to integrate the two different types of sensors (IP cameras and air quality sensors), harmonising their respective data through a unified data model and aiming to provide users with a real-time overview of the parking and air-quality situation in Montevideo. Specifically, the Digital Enabler allowed for the creation of three different dashboards:

- to display the status of car parks in live streaming, identifying available spaces through an advanced image processing algorithm and notifying staff who are interested in parking near the Antel Tower in real time via a special app;
- to show historical and current values of air quality, detecting the presence of pollutants (such as CO, O3, CO2, PM2.5 and PM10), as well as showing forecast models and deductions concerning the level of traffic expected in the area;
- a control room to monitor the most relevant data.

## **CASE STUDY / SMART MANAGEMENT OF CITY LIGHTING IN MONHEIM AM RHEIN (GERMANY)**

For some time now, the IT market has been in turmoil.

Germany, too, is embracing the digital transformation processes that are affecting cities - both large and small - all over the world. One German smart city that is moving in this direction is Monheim am Rhine, which has chosen the Digital Enabler to carry out this delicate process.

The activities carried out concentrated mainly on the domain of intelligent public lighting but did not fail to consider the issues of the environment and mobility. In these terms, the great flexibility that the platform provides was a valuable resource that made it possible to deal with any customer request. The project entailed the preparation of a scale model that would feature exactly the same IoT technologies as the real system, and would demonstrate the feasibility of the features of the German city's public administration plans. In particular, through the Digital Enabler, we provided a control room that enables the automatic switching on/off/dimming of street lighting when certain events occur, such as fog, rain and snow. This scenario required the development of models for the integration and correlation of data from different sources, which were rapidly developed through the Digital Enabler.



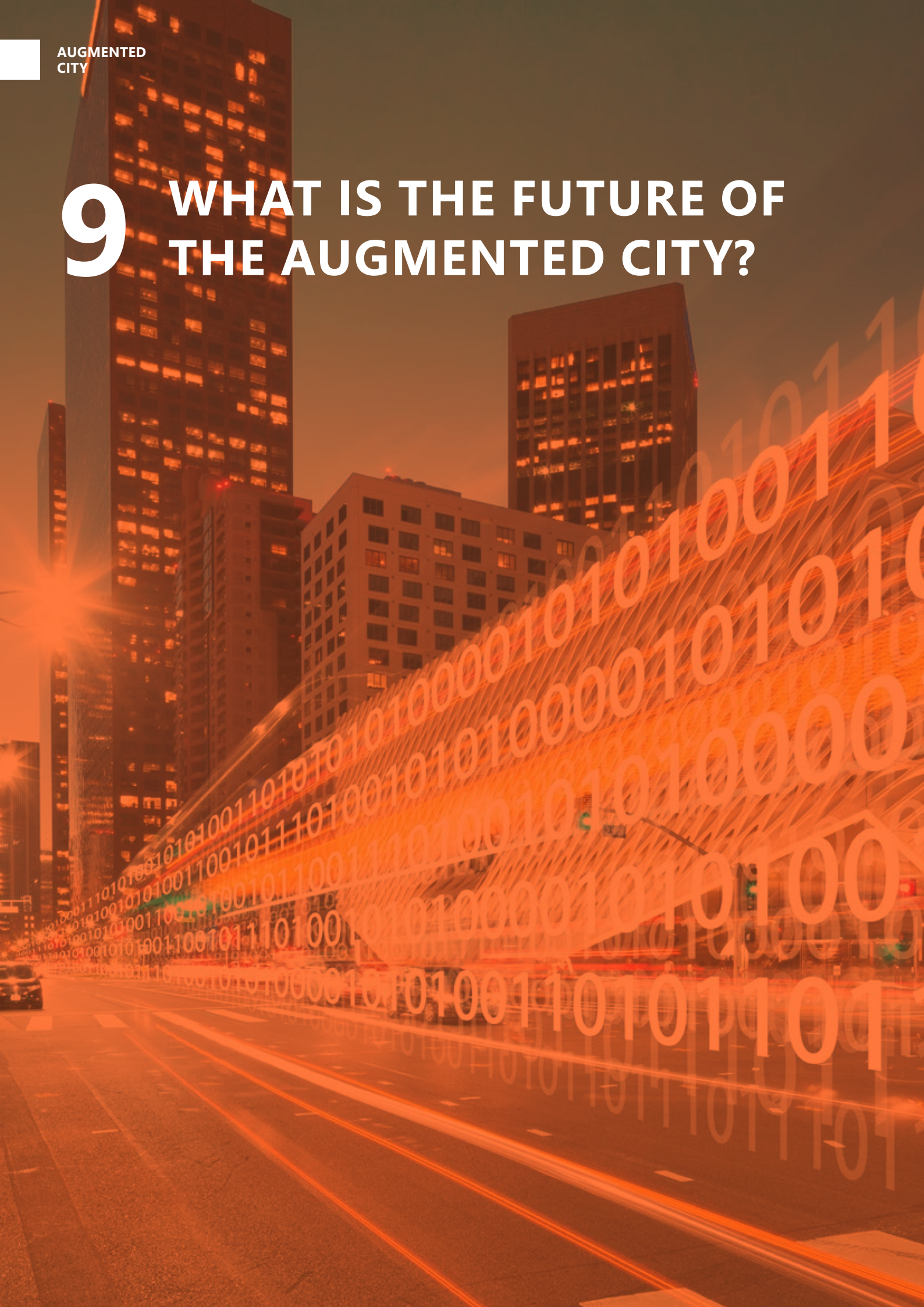
### **THE DIGITAL ENABLER: EXAMPLES OF CONTEXTS WHERE THIS VERSATILE PLATFORM CAN BE USED, WHERE DATA CREATES THE BUSINESS, NOT VERTICAL DEVELOPMENTS.**

- Mobile SIMs: the existing infrastructure that anonymously manages mobile SIM data across the territory, integrated with the tourist tax management system, supports assessments of the economic impact of tourism in the city.
- Smart Building DigitalTwin: the use of sensors installed in buildings with a structural and engineering complex, integrated with BIM (Building Information Management), enables the creation of a digital simulation model and management of operating scenarios
- Bio-surveillance system: the bio-surveillance solution provides a tool for monitoring the evolution of the epidemic, mapping and geolocating infected individuals and identifying the presence of clusters requiring particular attention.



# 9

# WHAT IS THE FUTURE OF THE AUGMENTED CITY?





Augmented Cities are an open challenge that must increasingly consider citizens and their needs, respect for the surrounding environment, as well as the impact on businesses and therefore the economic development of an entire area. Because a living territory is a territory that grows, invests, promotes change, and generates jobs.

Let's begin with a crucial point. The future starts today: it takes place at the exact moment when we make decisions that positively or negatively influence our lives. It's up to us to choose. And we must choose to overcome the limitations and contradictions of the urban development model we have referred to so far, making the most of the potential offered by the new integrated technologies.

Number 11 of the 17 Sustainable Development Goals set out in the United Nations 2030 Agenda is **"To make cities and human settlements inclusive, safe, resilient and sustainable"**. This means, among other things, limiting the waste of energy and water, reducing greenhouse gas emissions, and managing waste and mobility more efficiently.

So let us ask ourselves a question: where will the next generations, the millennials and those who follow them, of all social classes, origins and cultures, choose to live? And where, consequently, will investors choose to establish their economic activities?

Will they prefer polluted cities with unsustainable public services and an unstable social climate? Or will they favour cities that have made environmental, social, and economic sustainability their concrete model of reference?

It goes without saying that a new balance needs to be struck between all these social, environmental and economic aspects. In other words, it takes courage to make choices. Starting, for example, with those concerning mobility and the introduction of LEZs - Low Emission Zones (otherwise called LTZs, somewhat counter-productively). The aim is to introduce technologies aimed at limiting and regulating access, traffic and the parking of private vehicles - not only cars but above all delivery trucks - within the city perimeter. The aim is to help reduce polluting emissions and protect the health of citizens.

However, **the use of new technologies, big data analysis, and the adoption of advanced tools** would be insufficient. An overall vision and a strategic framework for the city's evolution are required.

There is a lot of talk about the circular economy and sustainable development. This is not merely the responsibility of politics, various governments, and large corporations. It is more correct to speak of a common good that is built together with increasingly active roles for all and an open dialogue between citizens and local and central government. This is the direction in which Augmented Cities are heading, and this is what market leaders such as Municipia and the Engineering Group in general are driving forwards.

Grounded in Italy but internationally minded. This gives a sense of the crucial importance of interaction and the exchange of expertise. This is why we must continue to invest in skills and training, especially for the younger generation.

Our country has what it takes to lead this global change. Consider our country's extraordinary artistic, natural, and human heritage, which is so beautifully expressed in both our small towns and villages as well as our large cities. A blend of innovation and tradition that the whole world admires. But these two elements must go hand in hand. Only in this way can we overcome the challenges facing us.





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For more than 40 years Engineering has been one of the main actors in the digital transformation of both public and private companies and organisations, with an innovative range of services for the main market segments.





With approximately 11,600 professionals in 40+ locations (in Italy, Belgium, Germany, Mexico, Norway, Serbia, Spain, Switzerland, Sweden, Argentina, Brazil, and the USA), the Engineering Group designs, develops, and manages innovative solutions for the areas of business where digitalisation generates major change, such as Digital Finance, Smart Government & E-Health, Augmented Cities, Digital Industry, Smart Energy & Utilities, and Digital Media & Communication. In the course of 2020, Engineering has supported its partners in the continuation and protection of their businesses and key processes, assisting in the design of their 'New Normal' and the mapping of new digital ecosystems. With its activities and projects, the Group is helping to modernise the world in which we live and work, combining specialist skills in the final frontier of technologies, technological infrastructures organised in a unique hybrid multi-cloud model, and the ability to interpret new business models. With important investments in R&D, Engineering plays a leading role in research, coordinating national and international projects with a team of 450 researchers and data scientists and a network of scientific and academic partners throughout Europe. One of the Group's strategic assets is the expertise of its employees, whose development is promoted by a dedicated multidisciplinary training school that provided more than 15,000 training days over the last year..

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## THE WORLD WE LIVE IN

-  **AUGMENTED CITY**
-  **SMART ENERGY & UTILITIES**
-  **SMART TRANSPORTATION**
-  **DIGITAL MEDIA & COMMUNICATION**

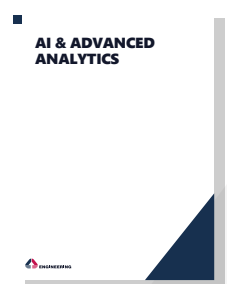
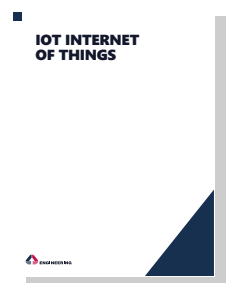
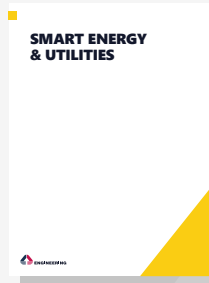
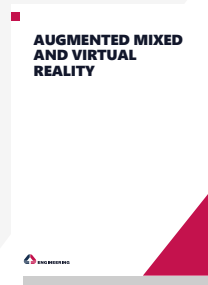
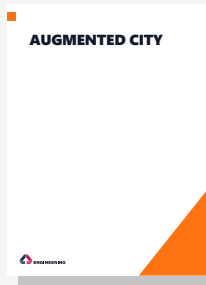
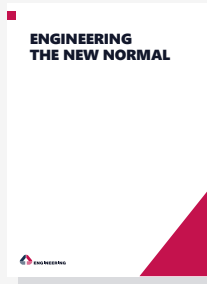
## THE WORLD WE WORK IN

-  **DIGITAL INDUSTRY**
-  **DIGITAL FINANCE**
-  **DIGITAL RETAIL & FASHION**
-  **SMART AGRICULTURE**

## THE WORLD THAT LOOKS AFTER US

-  **SMART GOVERNMENT**
-  **E-HEALTH**
-  **DIGITAL DEFENSE, AEROSPACE & HOMELAND SECURITY**


Our point  
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