SMART CITY STRATEGIC GROWTH MAP

Asset management

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Physical Assets

As diverse as cities, as complex is the ownership and management of physical assets within the city such as public spaces, underground assets, roads, buildings, etc. As you know, supporting the smooth and effective running of these assets – including their resilience – is far from simple.

Integrating new technologies and services within its legacy infrastructure is an important ability cities need to fulfil. You will understand how important it is to not only to know who owns and/or manages those assets, but also how these assets work together and impact on one another.

Mapping assets will put you at a comparative advantage when managing urban change and developing city infrastructure. In the context of data, investor confidence is based on knowledge. Standards and data provide this expertise.

Digital Assets

For digital technology to support the smart city strategy the following requirements need to be met:

- Next generation wired and wireless connectivity infrastructure;

- Citywide sensor network;

- Data security and privacy methods;

- Bringing together data and information from smart appliances; and

- Breaking down digital exclusion.

Data Strategy

Many cities have fragmented, siloed operations and generally lack cooperation within their own municipality. This long-established behaviour inhibits the sharing of data and creates a barrier to smart city development. Frontline services are mostly provided by the individual districts, who have their own approach to collecting and sharing data. In addition, sector specific terminology and models used when data is first collected that is understood within that sector alone, prohibits interoperability and sharing with other sectors. If the city is to benefit from a municipal data science capability the individual districts, departments and data providers are essential, in order to bring data sets together.

Interoperability

Data Management → **Intelligence Collection** → **Decision Making**

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Data management incorporates the harvesting, cleansing, and structuring of data. Think of data and information coming from sensors, social media, satellite imagery, etc. Value is being added by making sense of this raw data by turning it into intelligence through data analytics, data mining, or similar methods. This intelligence in turn can be used by the local authority to inform decision making. Value is being added by optimising the performance of assets and service efficiencies. All three elements are connected to one another by interoperability. This covers communication between devices, systems, technologies, or city actors.

Exploiting the power of data is crucial. Data can be used to understand more about the needs of individuals or trends in the population. As a result actions can be tailored to specific segments of the city population including customized services.

This needs to develop into three directions:

- Data analysis and data modelling;
- Simulation for predictions; and
- Optimisation of problem solving.

Digital modelling can help the planning and developing process of space within the city environment. It identifies the way people behave, how they move and interact within a space. Visualising data through GIS systems or digital platforms adds further usefulness to the data. In addition, it provides information about what is happening in the city. This enables decision makers to identify several trends:

1. Movement patterns of people based on the where, when, how and why.
2. Efficient use of space to locate infrastructure where it is needed.
3. Performance of assets, people and the environment can be improved.

The use of sensors and new technology generates new types of data about issues relevant to the city. Making the performance data of physical, digital and spatial assets available in real-time supports integrated service delivery and near real-time feedback to unpredictable events.

Displaying real-time data using dashboards and Geographical Information Systems (GIS) improve decision-making. GIS is increasingly used by city authorities as it allows data from a range of sources to interact providing more insight into what is happening in different locations within the city. The British Standards Institute (BSI) highlights that 'this ability to pinpoint a geographical reference, enable access and link data underpins the compelling case to share it between different departments, agencies, industry and research organisations.'

The knowledge about the city that is created through those simple steps can help decision makers to achieve the city vision, while enabling real-time decision making about unforeseen events that cannot be predicted through predictive methods.

Information and/or data gathered through the city's infrastructure for one service is, in many cases, relevant to another service further down the supply chain. Too often collected data is being used in silos – with one type of data and one type of data analytics addressing one problem. Sharing data and information from different sources is likely to provide not only efficiency savings but will also improve services delivered to citizens and businesses.

The sharing of data provides a number of benefits to the city and the stakeholder as it develops a long term plan to improve the wellbeing of the city's citizens and businesses. The value of data is based on its content, its quality, accuracy, integrity, availability and interoperability. If facilitated through a common language and a consistent use of identifiers and classifications, the following benefits can be experienced:

- collection and verification of data is optimised;
- common understanding of needs of city-users;
- objectives are shared and evidenced with data;
- integrated systems and services;
- engaged and enabled citizens;
- transparent decision-making;
- partnership models emerge; and
- creation of innovation eco-system.

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Access to Data

Across the world many cities have made increasing volumes of data available. Accessible data is an essential part of the smart city development. It enables more transparent and accountable government by allowing for better decision quality, improving operational efficiency, and offering opportunities for innovation, services, and business models to be developed.

Most challenges faced relate to data privacy, cyber security, and protecting intellectual property. Managing these challenges asks for refined standards, technologies, and working practices that protect, not only, private data but also sensitive business and government data. Data privacy has been named as a major barrier to making data available. Personal information is one of the main reasons why many datasets are not made available by private and/ or public sector organisations. Publishing data by excluding personal information can bridge this issue.

Most open data agendas are driven by a number of different factors including government transparency, sustainable economic growth, improved public services, R&D excellence and societal benefits. Yet, making data openly available is only the first step. Establishing an open data platform for city data is as much dependant on the willingness of the public sector to provide data into the platform, as it is for the private and voluntary sector to follow the example. Most importantly, any platform will need to be user-friendly if it is to be used.

Despite the value that open data has created, it is time to move on and talk about city data. It has become more important to look at utility providers or building companies as providers of valuable city data. Various private sector companies are not yet bought into the data sharing mentality and are only willing to provide information at a premium price.

With national policies impacting on the type of data sets that can be made available for free, there is significant value in the development of a City Data Exchange. This service brings together existing open data, private sector data, and data from city projects to make it readily available for consumption. While the platform would bring together public and private bodies to improve the efficiency and effectiveness of city solutions, it would also include a commercial edge to allow the sale, purchase and sharing of data from these sources for all city users including citizens, business, and city authority.

Bringing data suppliers and data consumers together in this digital marketplace will create savings in infrastructure investment and data gathering due to improved operations and services.

Open Data + City Data

City Data Exchange
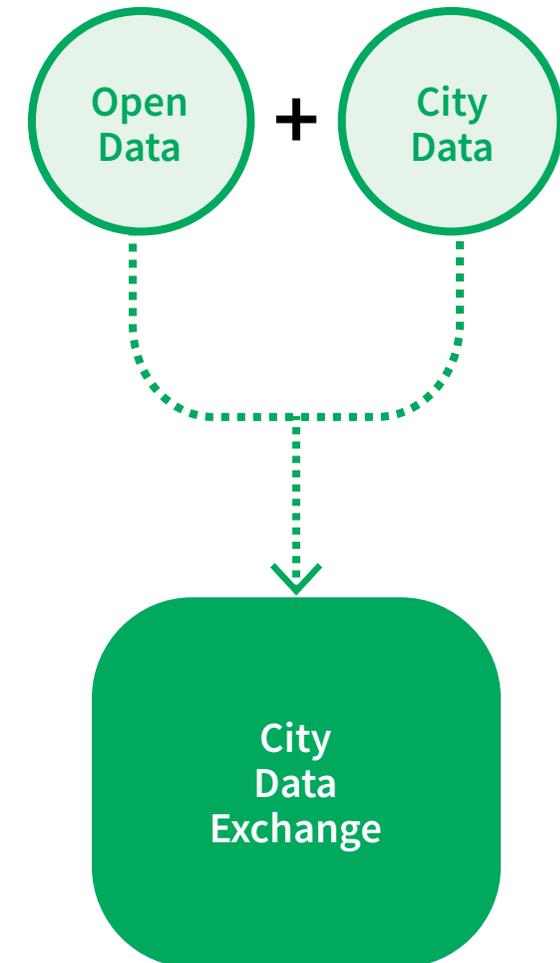
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ICT Plan

A number of different sources have named the ICT infrastructure as a prerequisite for the take-off of smart cities. Collecting large amounts of information data from all connected devices and analysing the results of the data – increasingly through advanced data analytics – can only happen if a reliable and resilient ICT system provides the connectivity needed for a smart city.

How can you develop your ICT & systems intelligence?

Stage 1 **Launch**	Stage 2 **First Achievements**	Stage 3 **Unify Initiatives**	Stage 4 **Key Actions**
• access to telecom and digital services that can be affordable and does not exclude parts of society • ideally geospatial • real time access to services	• resource monitoring and efficiency analysis • scenario testing through integrated data platforms	• availability of open data to enable service innovation • introduction of predictive system mechaisms, such as predictive resource load management, or predictive risk management	• technology enabled optimisation of resource efficiency and service delivery • city performance management • immediate response mechanism to system failure

High urban resilience