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FIGURES

SMART PARKING

Building *TOWARDS* *Smarter* Cities

Cities have existed for millennia, even before the establishment of nation states. Today cities remain centres of business and industry, produce wealth and innovation, and compete with one another as they have always done.

City authorities are therefore concentrating on projects that will make their cities work better in a number of ways through the use of modern communications and information technologies. Whilst transit systems are a vital part of city business and activities; parking is a major problem for cities of all sizes. Vehicles circulating looking for a parking space are a source of needless congestion, time wastage, petrol use and exhaust emissions.

Alleviating parking congestion in the immediate term would therefore:

- Reduce air pollution – which is recognised as being a leading cause of asthma

- Reduce congestion

- Reduce frustration for motorists and loss of working time

- Increase business turnover for merchants in congested urban areas

- Increase parking revenue yields

- Augment or reduce enforcement personnel as needed.

A mixture of the right data and the right policies and interventions could make traffic run more smoothly. In the longer term, information gleaned from smart parking projects would help cities optimise their parking pricing and policies. This has already happened in some US cities which have been successful in matching parking fees to demand patterns.

A smart metering implementation is an example of a wireless machine to machine implementation, whose technologies have been tried and tested in many industries. Sensors are installed into the street in selected areas of the City, where congestion is heaviest, e.g. shopping streets, business districts and touristy areas. Various technologies link the sensors in the street with central IT systems, whilst navigation technologies lead motorists to the target space.

Specially designed IT systems then use the data collected to provide specific information according to the needs of the City[1]. For some cities, keeping traffic moving and avoiding congestion so customers can park, spend money and do business will be the main aim, whilst for others, maximising the amount of revenues collected from parking will be a priority. This information may be analysed in conjunction with other information gathered from various sources, to gain a multidimensional view of how the City operates and how people move about.

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[1] When the word City is capitalised, we refer to a specific instance of a City even if this is not named.

The list of participants necessary to deliver a smart parking solution is long. In addition to the technology providers - sensor makers, wireless network designers and operators, IT systems developers - essential additional players are needed to complete the delivery chain. These are the City authorities, funding bodies, concession owners, building contractors, not forgetting the motorists who will use and pay for their parking spaces. In our report we highlight the dual challenges in:

- Fine tuning the M2M chain components to work well at lowest cost

- Enabling small companies offering state of the art technologies to negotiate with large traditional entities such as City departments and public services providers. Specialised skills are needed to enable these partners to work together. The larger partner can offer the know-how to understand the City's political processes and handle the inevitable long, drawn out negotiations, whilst the smaller partner brings new ideas, agility and state of the art technologies.

We also explain the stages in deploying smart parking projects and the multidimensional factors leading to their success.

Figure ES Ishikawa Diagram
**Cause and Effect Diagram – Multidimensional factors leading
to success of smart parking projects**
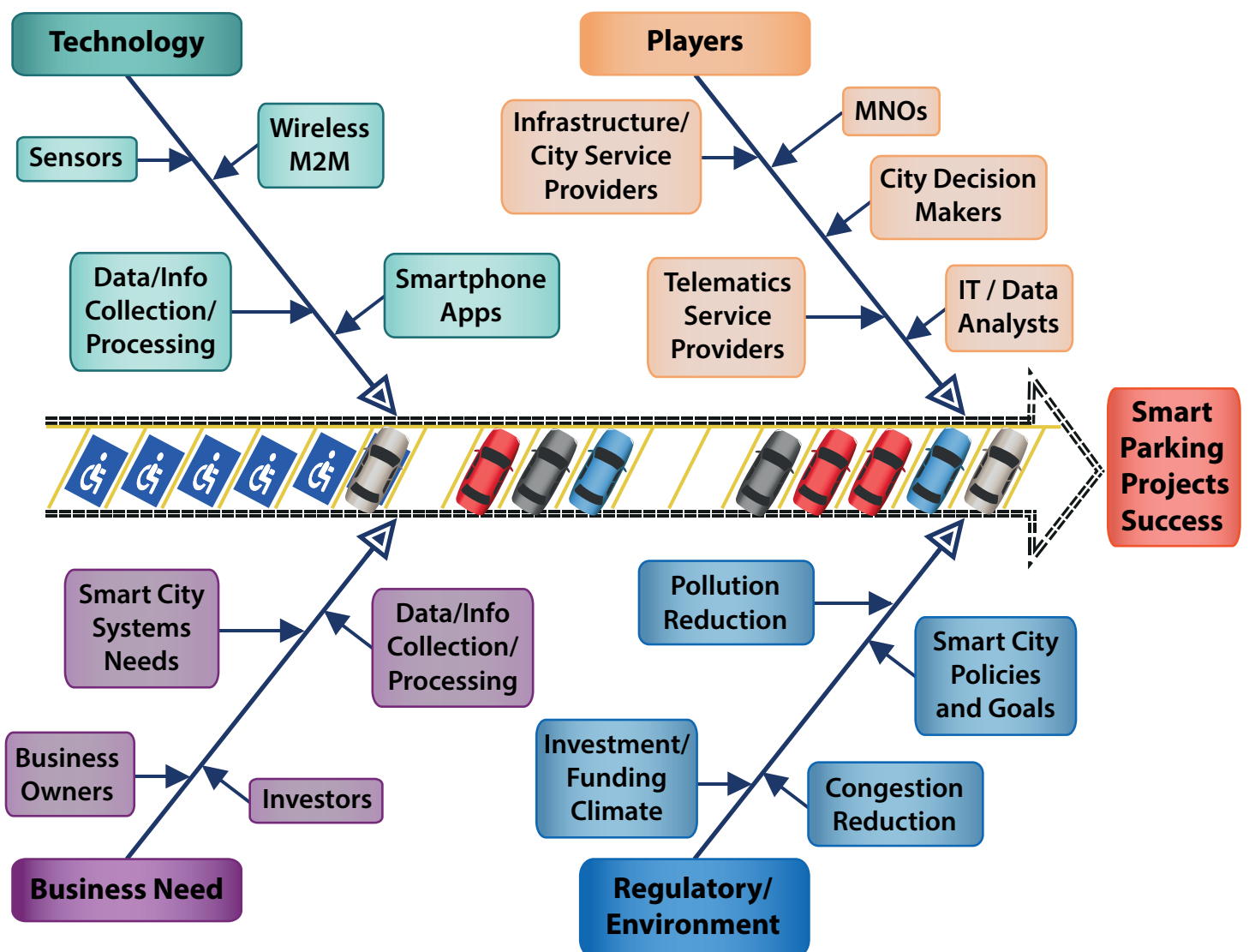
Whilst it is still early days for most of the European city trials, some noteworthy results have been gained so far:

- There has been improvement in payment enforcement and increased revenue collection. In Moscow, where parking evasions are most serious, it was found that 55 percent of motorists had not been paying for their parking, allowing this money to be recovered

- Early analysis has been bringing up interesting data on parking availability. Some spaces have been found to be over subscribed for demand, while others nearby are underused. Interesting information is also coming to light on how long people stop at different times of the day, suggesting ideas for more appropriate regimes for charging.

In the end, it is for the City and its stakeholders to decide:

- Whether or not to roll out smart parking deployments commercially

- How to fund these in a sustainable manner

- What type of new smart city systems may be created using the data.

The deployments afford new opportunities for revenue generation to a number of parties including specialist sensor makers, wireless network operators, IT systems developers and systems integrators. New categories of supplier include smart parking service providers offering an end to end hosted service, and partnerships between sensor makers and MNOs.

Smart Parking is only one of the first of the so-called smart cities applications. Other projects based on M2M technology that could eventually benefit from incorporating smart parking data include pollution monitoring and road user charging.

Not only will new partnerships be forged and new IT systems developed, but new skills will be learned. These skills will enable successful co-operations between stakeholders as never before. Such skills will include overcoming barriers across previously divided organisations, and finding a common language for negotiation based on shared goals.

The full report on Smart Parking will be released end Q1 2014

Visit **www.beechamresearch.com** or contact **info@beechamresearch.com** for more information.

Beecham Research Ltd. is an internationally recognized thought leader in the M2M/Internet of Things market. Based in Cambridge UK and Boston, MA, USA, it is a leading technology market research, analysis and consulting firm specializing in the worldwide M2M/Internet of Things market. Our clients include major network operators, hardware/software and infrastructure vendors, distributors/resellers, solution providers and technology adopters. This has now extended into consumer markets with development of the Internet of Things, in particular including Beecham's new report on Wearable Technology published recently. Our research methods include extensive survey work worldwide in multiple languages, based on deep technical knowledge combined with fresh market insight in both business and consumer markets. Recent research has included two market-leading studies on M2M Cloud-based platforms and a worldwide study of the Satellite M2M market for the European Space Agency.