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## GOVERNMENT'S ROLE IN GROWING A SMART CITY

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Our planet is urbanising at a staggering rate: today, more than half the human population lives in cities, and the number is growing. Today's urban space is changing rapidly, as digital technologies and pervasive networks integrate with physical space. 'Ubiquitous computing' will be the third wave in computing, just now beginning,' Xerox Parc pioneer **Mark Weiser** once noted.

First were mainframes, each shared by lots of people. Now we are in the personal computing era, person and machine staring uneasily at each other across the desktop.

Next comes ubiquitous computing, or the age of calm technology, when technology recedes into the background of our lives. 'Ubiquitous computing', with its 'Internet of Everything' corollary, is creating a new urban condition: the so-called 'smart city'.

It is widely thought that smart cities have the capacity to respond better to their inhabitants and their environment, becoming efficient, sustainable and livable ecosystems. To this end, a broad spectrum of implementation models are emerging in different parts of the world.

But what is the role of government in the process of implementing smart city developments? How can smart city funding be used most effectively, specifically to promote innovation? And are huge sums of public money the right stimulant of smart cities after all?

Diametrically opposed approaches are appearing across different parts of the world; in South America, Asia, and Europe, all levels of government are quickly identifying the potential latent in smart cities, and are working to channel significant investment in that direction. Rio de Janeiro is building capacity at its 'Smart Operations' centre while Singapore is poised to embark on an ambitious 'Smart Nation' project.

The **European Union's Horizon 2020** program has earmarked €15 billion in 2014-2016 – an investment that represents a significant commitment of European resources to the idea of smart cities, especially at a time of severe fiscal constraints.

The context of Europe, a continent largely comprised of small to medium sized cities, is sparking a characteristic approach hinging on research; Amsterdam, for example, recently channeled €60 million (\$81 million) into a new urban innovation centre called **Amsterdam Metropolitan Solutions** that they hope will have an impact on many dimensions of the city as it becomes 'smart'.

"We are continually looking for opportunities to attract and retain talent, knowledge and businesses for the city of Amsterdam and to ensure connections to other cities," stated Alderman Carolien Gehrels (Economic Affairs) at the announcement of the institute. "This allows for economic growth and creates valuable jobs. In this respect, the technical institute can play an important role."

In the United States, however, there is little public sector funding, yet the general idea of smart urban space has

been central to the current generation of successful start-ups. One of the latest examples is Uber: a smartphone app that lets anyone call a cab or be a driver. The company's operations are polarising – Uber has been the subject of protests and strikes around the world (mainly in Europe), yet it was recently valued at a stratospheric \$18 billion.

Beyond Uber, the learning thermostat Nest, the apartment-sharing website Airbnb, and the just-announced 'home operating system' by Apple, to name a few, attest to the new frontiers of digital information when it inhabits physical space. Similar approaches now promise to revolutionise most aspects of urban life – from commuting to energy consumption to personal health – and as such, they are receiving eager support from venture capital funds.

That isn't to say that government should take a hands-off approach to urban development – it certainly has an important role to play. This includes **supporting academic research and promoting applications** in fields that might be less appealing to venture capital – unglamorous but nonetheless crucial domains such as municipal waste or water services.

The public sector can also promote the use of open platforms and standards in such projects, which would speed up adoption in cities worldwide. The city of Barcelona has made a step in this direction with its 'city protocol' initiative that brings together cities, commercial and non-profit organisations, universities and research institutions to develop a shared and interoperable set of guidelines for city transformation and solution. Most importantly, these protocols will be multi-city, multi-culture, multi-partner and scale-free.

But all of this is working towards less top-down determinism; governments should use their funds to develop an organic innovation ecosystem geared toward smart cities, similar to the one that is growing in the US. It is more about bottom-up innovation than top-down schemas.

This must go beyond supporting traditional incubators, and aim to produce and nurture the regulatory frameworks that allow innovations to thrive. Considering the legal hurdles that continuously plague applications like Uber or Airbnb, this level of support is sorely needed.

Regulation is still vitally important, but in a more responsive way – government can take the pulse of innovation and its impact on society, without creating unnecessary legislative constraints. Governments will have to be nimble on their feet, responding to technologies as they emerge. In this manner, new developments will have room to grow, but their rise will be within the bounds of equitable operations.

There seems to be a fine line for governments to walk as they implement smart city strategies: they should, at all costs, steer away from the temptation to play a deterministic and top-down role. It is not their prerogative to decide what the next smart-city solution should be – or, worse, to use their citizens' money to bolster the position of the technology multinationals that are now marketing themselves in this field. Conversely, they should create all the conditions – economical or normative – to grow an innovation ecosystem.

And here might lie another delicate balance: between smart city efficiency and innovation. In some cases the latter will also need a good dose of chaos – the opposite of maximum optimisation, as the Singapore case study suggests. The most creative solutions often emerge and thrive in less regulated and 'messy' environments. In other words, at times we might want 'less smart' – if 'smart' is to be more than an empty label.

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