

Roundtable report

Smart Cities and Ultra-Connected Nations

Which policies and regulation
will unleash their potential?

Mobile World Congress 2015, Barcelona, March 4, 2015

Structure of the report

This Government Roundtable on Smart Cities and Ultra-Connected Nations was hosted by Alcatel-Lucent as part of the Mobile World Congress 2015, and took place on March 4, 2015 in Barcelona, Spain. It is structured according to the main topics of discussion:

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Roundtable participants



Andrea Faggiano (Moderator)
Associate Director, Arthur D. Little Global Management Consulting



Olivier Duroyon
Director, Public Affairs, Alcatel-Lucent



Josep Ramon Ferrer
Smart City Director and Deputy CIO, Barcelona City Council



Jordi Puignero
Director General for Telecommunications Information, Government of Catalonia



Paul Timmers
Director Sustainable & Secure Society, DG CONNECT, European Commission



Osman Sultan
CEO of Du, Dubai, United Arab Emirates



Arturo Muelle Kunigami
Senior ICT Policy Specialist at The World Bank



Martin Sabbagh
CEO of JCDecaux in the Middle East, and Managing Director of the Small Cell Department within JCDecaux

“The part of the world that adopts this technology first will have a structurally competitive advantage, offering benefits in the way we live, and will create a completely new class of citizen.”

Andrea Faggiano, Associate Director of Arthur D. Little Global Management Consulting



1. Introduction to the roundtable

In this new age of digitalization and globalization, national boundaries are becoming more permeable, their markets open to international economy, while citizens are moving from rural to urban environments at an unprecedented pace. Nations need to establish and maintain sustainable economic growth and prosperity, relying strongly on the urban dweller who accounts for 80 percent of global GDP. Their futures are intrinsically linked to smart cities— leveraging information and communications technologies (ICT) to proactively address the levels of economic competitiveness, the environmental sustainability, and the general livability of their communities.

At national level, the challenges of achieving the broadband goals necessary for smart cities range from choices of technology, to availability of spectrum and adaptation to economic, regulatory and policy environments. At the city level, the regulation and policies also cover essential aspects such as rights of way, infrastructure sharing, big data management, data protection, public-private partnerships and new business models.

Smart cities and ultra-connected nations are key strategic considerations of governments today. Since policies evolve at a slower pace than technology, players throughout the entire smart city ecosystem need to join forces now – defining the vision, then devising and supporting initiatives that will spur adoption of supportive regulations, the best-performing technologies and the most collaborative ways to use resources.

2. Opening remarks

Andrea Faggiano, Associate Director of Arthur D. Little Global Management Consulting, acted as moderator for the roundtable. In his opening remarks, he welcomed participants on behalf of Alcatel-Lucent. He observed that cities have challenges – competing interests, legacy issues and considerations – but also a wonderful opportunity embodied in a complex ecosystem that will change the way we all will live in these places every day. Cities’ resources are usually limited in nature, he noted, but these communities always they have big aspirations that can be addressed using hyper-technology and hyper-connectivity, otherwise known as smart technology.

Faggiano stated that the part of the world that adopts this technology first will have a structurally competitive advantage, offering benefits in the way we live, and will create a completely new class of citizen. He added that this topic is not limited to smart cities, but also extends to smart regions and ultra-connected nations, with the main questions being “how can we accelerate the advent of all this?” and “which complex ecosystem, policies and regulations can make this happen?”



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of Josep Ramon Ferrer,
Smart City Director and Deputy CIO,
Barcelona City Council

3. What is a Smart City?

Roundtable participants agreed that the smart city can be seen as a conglomerate of data flowing in all directions and helping the lives of their citizens. The panel discussed the many benefits that stem from smart cities, including enhanced and more affordable access to education and healthcare for all classes; new recreational activities; and increased innovation, as large R&D facilities will increasingly be supplemented by entrepreneurs “around the corner” and “in the garage” – all creating a significant impact on jobs and competitiveness.

Josep Ramon Ferrer, Smart City Director and Deputy CIO, Barcelona City Council, spoke about his city's 200 projects in 22 major programs such as smart parking, smart lighting and other initiatives. He noted that a smart city is a good opportunity to rethink the city and to transform it for the long term, working in a holistic vision of all services and sectors.

Osman Sultan, CEO of Du, the Dubai-based telecommunications company, offered that the ultimate purpose of the smart city – that of having happier people, stemming from a safer, more convenient, more efficient and more cost-effective way to conduct work and life itself.



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of Osman Sultan, CEO of Du

4. What trends are driving Smart Cities?

Olivier Duroyon, Director of Public Affairs for Alcatel-Lucent, observed that current trends are shaping the requirements for smarter, safer and greener cities, while putting pressures on municipalities and on local governments to invest in sustainable infrastructures. Major trends include:

- Rising population and urbanization: The 54 percent of the people who were living in urban centers in 2010-2012 is going to increase to 70 per cent of the population by 2025, meaning 6.2 billion people living in cities.
- Cities contribute the most to gross domestic product (GDP), with the world's top cities are likely to contribute more than 60 percent of global growth by 2025.
- Cities consume the most resources, while occupying only 2 percent of the global land. They account for 70 percent of the energy and a similar proportion in terms of greenhouse gas emissions.

All of these underline the fact that smart cities and regions are not only a transformative convenience for citizens, but an economic imperative for societies at all levels.

5. What is the technology framework for Smart Cities?

Faggiano pointed out that standardized technology is critical to successful smart cities, because if the infrastructure is not open, governments and their private partners will not be able to create a fertile environment for innovation. Paul Timmers, Director Sustainable & Secure Society, DG CONNECT, for the European Commission, agreed that open specifications will create many opportunities for smaller companies and entrepreneurs to also be active in this space, which can lead to very rich ecosystem.

Duroyon proposed a horizontal and transversal approach as the best way to overcome the two main challenges that will arise in the smart city context: scalability and cost optimization. He explained that Alcatel-Lucent's vision for the infrastructure entails six layers, with many players for each, creating an ecosystem of 50 to 100 stakeholders coordinating services simultaneously.

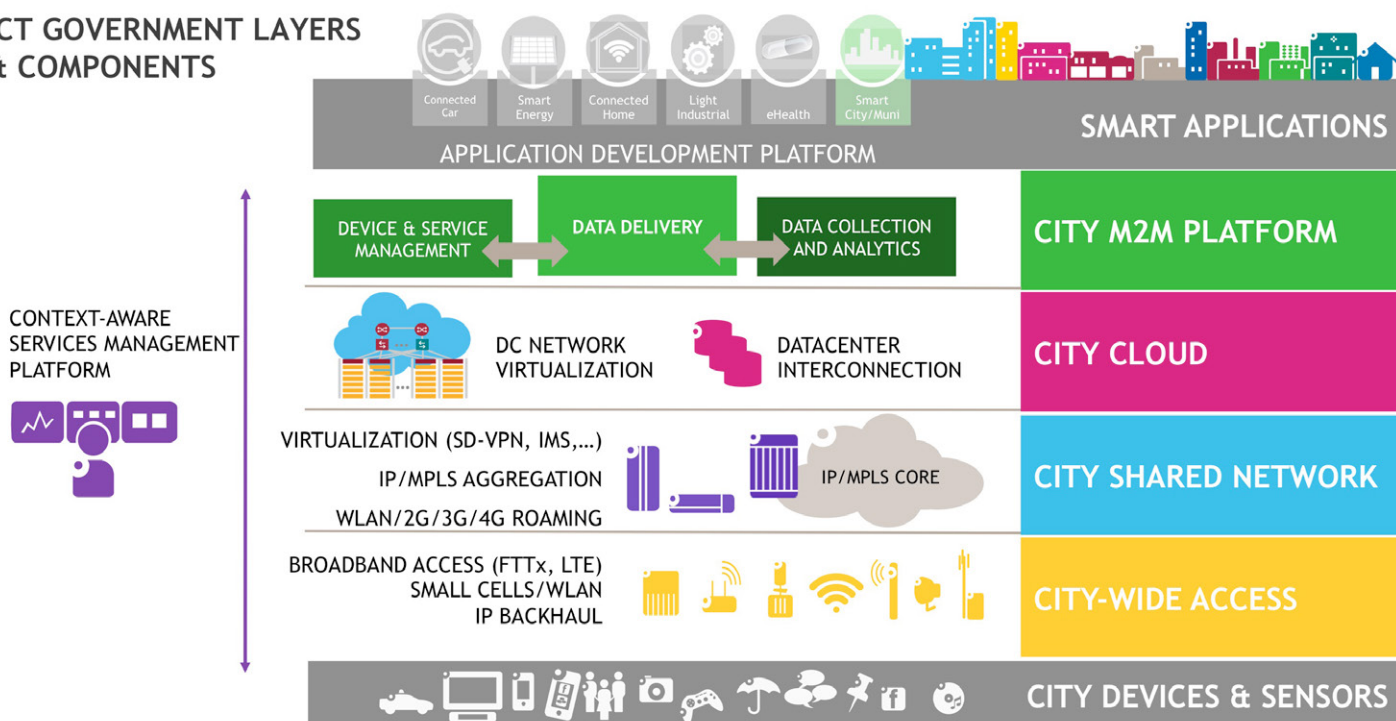
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- The lowest layer is thousands of sensors distributed around the city, with a broad range of requirements in terms of communications. Some of those devices will have to be owned, and even controlled by the municipality, but many others will be brought by service providers and third-parties.
- Two communications layers above that are comprised of city-wide access and the multi-service city shared network – the critical infrastructure that can support all operations from multiple stakeholders.
- The next layer up is a for data and software, built on the cloud architecture with a standard API and providing a real-time processing pipeline from the sensors of about ten milliseconds. Public and private applications here can be very diverse and highly distributed.
- The top two layers are for applications and analytics developed by the network's operators and administrators, and by the citizens of the community.

Each layer requires a sort of point-of-reference, a political responsibility, a technical responsibility and a commercial responsibility.

ICT GOVERNMENT LAYERS & COMPONENTS





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6. What business models support Smart Cities?

The extensive buildout for a smart city/smart region project requires a very large budget that alone would be beyond the means of many areas. Martin Sabbagh, CEO of JCDecaux in the Middle East, emphasized the importance of working with private companies which are going to push and contribute to their initiatives, based on a master plan.

Barcelona's Ramon Ferrer explained that all of his city's projects use the public-private partnership (PPP) model, with the administration contributing the vision, the political leverage and the facilities that will allow industry to invest. He noted that Barcelona now boasts 500 kilometers of fiber, mixed with 700 Wi-Fi® hot spots, thanks to a commercial operators managing the network and investing to deploy the solution.

Jordi Puignero, Director General for Telecommunications Information, Government of Catalonia, recommended open ICT and business model ecosystems – a principle that will allow as many industries as possible to plug in. This will foster best-of-breed solutions in varied specializations as needed, which will be much easier than having a single player.

7. How do Smart Cities relate to Smart Regions and Ultra-Connected Nations?

Cities should be supported by their surrounding regions in order to implement smart solutions, with special attention paid to collaboration and compatibility. Puignero explained that Spain's Catalonia region has 7.5 million inhabitants. 4.5 million of whom live in the metropolitan Barcelona area. That means that Barcelona, has the power to develop its own specific strategy for a smart city, but also needs to consider the rest of the territory. One of the main goals of the Catalan government is that smaller cities also develop their own specific projects. To that end, in November 2014 the Catalan government approved a groundbreaking Smart Vision Strategy.

Regional compatibility is important. A regional government should help to integrate and inter-operate smart cities solutions, whether they are for services, health, education or security. As an example, Puignero offered that those who live outside Barcelona but work in the city should be able to depend on using the same smart parking solution in either place. Doing this means defining a mobile digital identity for all citizens.

Ramon Ferrer pointed out that cities themselves will need to collaborate in order to share the vision and goals, and to attract and engage industry to collaborate on solutions, and noted that if a city such as Barcelona can successfully deploy a smart initiative, then it will likely be good for Dubai, Paris, or any other large population center.

▶ [Listen the audio podcast of Jordi Puignero, Director General for Telecommunications Information, Government of Catalonia](#)





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of Arturo Miente Kunigami,
Senior ICT Policy Specialist
at The World Bank

8. What is the political component of Smart Cities?

Regulations need to get ahead of the technology curve, providing a clear path and incentives for smart city development. Timmers noted that the smart city is dependent to a large extent on broadband investment, and that governments need to create legislation and policy that will make it cheaper to roll out that capability and share infrastructure with utilities and telecoms as the cost reduction initiative.

Arturo Miente Kunigami, Senior ICT Policy Specialist at The World Bank, noted that just as mobile is the platform for the delivery of services, government becomes the platform in terms of enabling citizens innovate and help improve the quality of services. He stated that many regulations are inhibiting innovation, and need to be made more flexible. Sabbagh observed that regulation needs to enable business models to happen, and added that collaboration needs to be emphasized first and foremost, even more than confronting such issues as licensed spectrum versus unlicensed spectrum, or public transportation versus private transportation.

Timmers discussed the European Innovation Partnership on Smart Cities and Communities, which he described as a model for learning from others. That program attracted 370 smart city initiatives, about half of which were strongly based around ICT and digital technologies. These included an initiative of about 20 cities that is committed to introduce, by 2017, one million smart lampposts that monitor only light, but also noise, pollution, traffic density, security and safety – all while saving electricity. Timmers believes that collaborative programs such as these create greater political momentum.

9. What is the role of the citizen in Smart Cities?

Faggiano noted that his hybridization between the old way we lived with the digital future will create a completely new class of citizen. The panel agreed that mobile communications gives citizens a key role in assuring the success of smart cities and hyper-connected nations. Puignero noted that empowerment of the citizen is a very important smart regions strategy, explaining that features of a smart city combined with personal mobile devices create what he calls “Mass Creation Weapons” for providing essential feedback to governments. This necessitates a specific smart citizen strategy.

Timmers made the point that people move not only from one city to another, but between countries, making issues such as authentication and security global issues that need to be addressed by international bodies, noting the individual and entrepreneurship that will drive this ecosystem.



To learn more about Alcatel-Lucent
Smart City Network solution,
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10. In summary, what is the opportunity in Smart Cities?

Kunigami observed that there is a sense of urgency that is not really sinking in in many of our countries. He noted that in an increasingly competitive and complex world, the “dream” of a smart city could turn into a “nightmare” if the current opportunities are not recognized and seized. He recommended that cities and regions develop a set of best practices by create networks of practitioners who can openly exchange experiences, then start learning by doing through experimentation in collaboration with industry through private/public partnerships.

Alcatel-Lucent’s Duroyon noted that just as a city has urban planning, it requires a digital architect behind its smart city initiative. This will help ensure that it fully leverages ICT to proactively address economic competitiveness, environmental sustainability, and general livability. The panel agreed that such a plan should include a rationale for the deployment and harmonization of all elements of the infrastructure, as well as their use and governance. What types of data will be generated? Who will be able to access it?

Sultan suggested that making sure all of those considerations are clearly defined is the real challenge. The utility company, the transportation company, immigration, police and other public and private stakeholders will need to have their needs met in one system. That vision, he said, is what the city has to define and impose.

Ramon Ferrer summed up the smart city opportunity in terms of his own city’s history. “Barcelona has had a lot of big transformations. Barcelona 1.0 is the Roman village, 2.0 is the medieval city, 3.0 is the industrial revolution, 4.0 is when it hosted the Olympic games in 1992, which transformed the city and put it on the world map. For us, the smart city concept is Barcelona 5.0 – the next revolution to transform the holistic vision of the city.”