

Connecting the dots

Telecommunication providers as enablers for Smart Cities



Smart Cities are evolving around the globe – each distinct from the others, which implies that these ecosystems are driven by various stakeholders with different ambitions. Arthur D. Little has supported cities (e.g. Vienna and Stuttgart) as well as telecom operators in CEE to increase the level of “smartness” in cities and answer key questions on how to position a telecom player in this space to create significant value for citizens, the city and the business. Uncertainties about Smart Cities exist, and our Viewpoint aims to connect the dots.

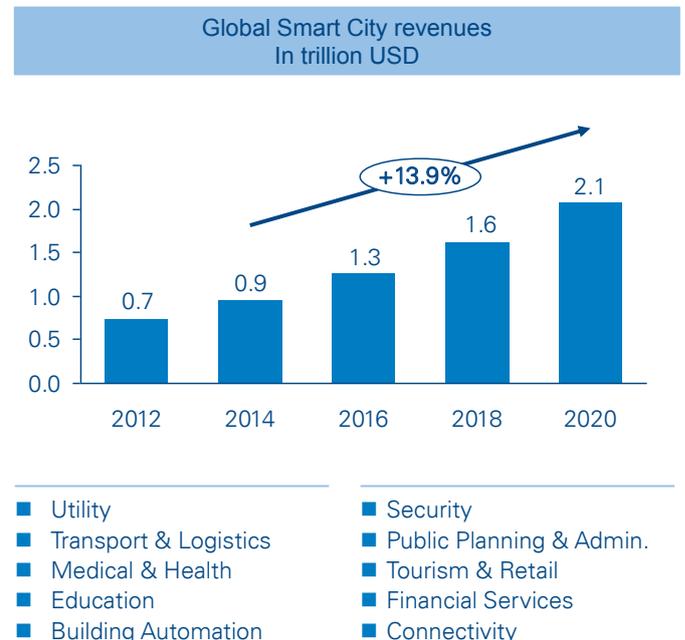
Smart City initiatives are evolving – global Smart City market revenues will increase to USD 2.1 trillion by 2020

At present, more than 100 cities are implementing some kind of smart solution within their ecosystems. As of today, Europe, North America and Asia play pioneering roles in Smart City concept adoption by, for example, investing in Big Data-enabled services or providing information to the private sector to develop “open” Smart City services.

Governments in developing regions such as Latin America and Africa, rather, invest in the modernization of residential and social infrastructure (e.g. housing and schools).

The majority of Smart City investments today flow into Smart Grids, reduction of carbon emissions, public broadband (e.g. free Wi-Fi) and Building Automation. During the coming years, we expect a shift in focus towards more complex solutions such as Smart Transportation-, Smart Health- and Smart Governance systems, which will drive the overall market potential. We predict that the global Smart City market will increase from USD 0.95 trillion in 2014 to USD 2.1 trillion in 2020 (13.9% CAGR). The potential for telcos is huge (up to 50% of the overall market) since 10 vertical industry segments can be targeted with business models ranging from connectivity provisioning to managed services and vertical-specific solutions.

Figure 1: Smart City revenues



Smart City projects are often driven by fragmented pilots rather than integrated strategies (which would maximize GDP return). A significant marketing campaign is often followed by very selective “pilots” that cover only one or two vertical segments with very limited scope and are extended over time.

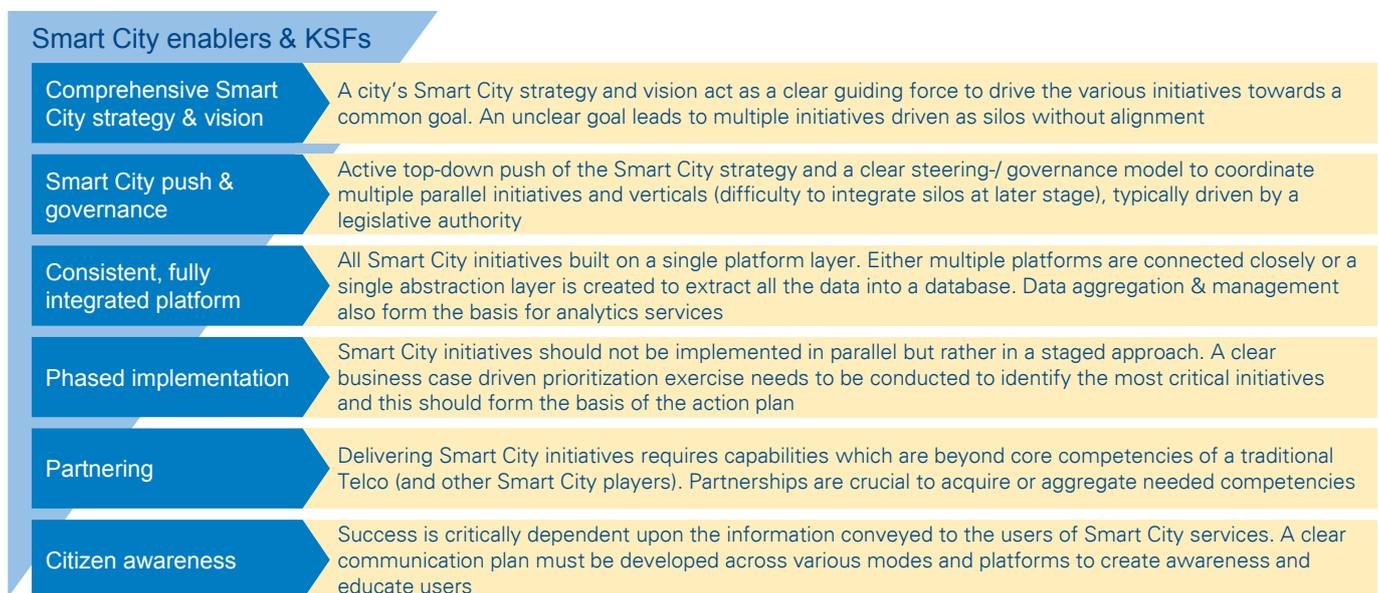
A fully integrated Smart City strategy ensures up to 15% additional GDP contribution

This evolutionary approach, however, leads to a vertically driven, non-integrated service concept that lacks cross-vertical use cases (e.g. multi-modal mobility) and the ability to understand and gather customer requirements from an end-to-end perspective. This reduces the effectiveness of the overall Smart City concept.

To avoid this shortcoming, cities should ensure that critical enablers are in place. A “horizontal” service platform that

aggregates and shares information and services across the various verticals is particularly needed. This, however, becomes a difficult task once a significant number of independent vertical initiatives are already established. Arthur D. Little therefore recommends a more strategic approach for cities to allow the Smart City to unleash its full potential. A common framework and dedicated “aggregation” on a centralized platform (e.g. established in Nanjing and Valencia) ensures a high degree of usability and allows significant GDP improvement (up to 15% GDP contribution).

Figure 2: Smart City Key Success Factors



Source: Arthur D. Little

Arthur D. Little has enabled Telcos to answer key questions and to successfully position in the highly complex Smart City eco-system

Telcos across the globe are engaging in the Smart City context, but mostly as pure “connectivity providers” rather than positioning themselves as significant drivers of the initiative. Still, we see very successful telco engagement in cities such as Valencia (Telefonica) and Nanjing (China Comservice), where operators are playing a significant role in enabling the Smart City platforms. Telefonica, for instance, is one of only a few operators that have adopted holistic approaches, typically playing the role as “project leader” in Smart City projects. Telcos therefore should assess the possibility of positioning themselves more strongly within the enablement space, focusing more on (managed) services than pure connectivity provisioning.

In recent projects, Arthur D. Little helped telcos answer key questions and identify “playing areas” in the highly complex Smart City eco-system.

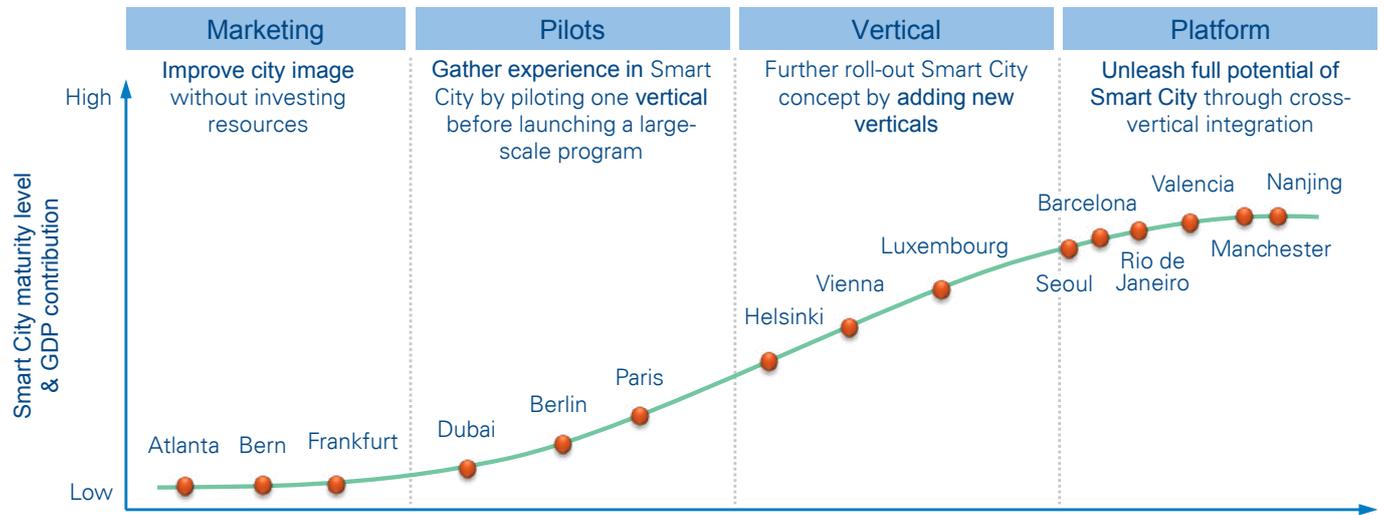
1. Vertical or horizontal service offering?

Selective vertical activities often seem to be attractive opportunities for operators, as the complexity is relatively low and short implementation time results in fast, albeit limited, revenue potential. Arthur D. Little recommends not focusing on individual verticals without keeping the “horizontal” service enablement in scope, using capabilities across verticals. As an example, the enablement of Smart Metering solutions (energy/utility driven) will allow a direct transfer of capabilities for the Smart Building service space.

2. Which business model to adopt?

Within the Smart City environment, Telcos primarily act as connectivity providers today, only offering wireless broadband access in support of Smart City services. However, this positioning is not only jeopardizing classical mobile broadband revenues from classical data tariffs, but also confining telcos to the smallest part of the overall Smart City market value.

Figure 3: Smart City maturity level



Note: Illustrative positioning of Smart Cities on maturity curve

Source: Arthur D. Little

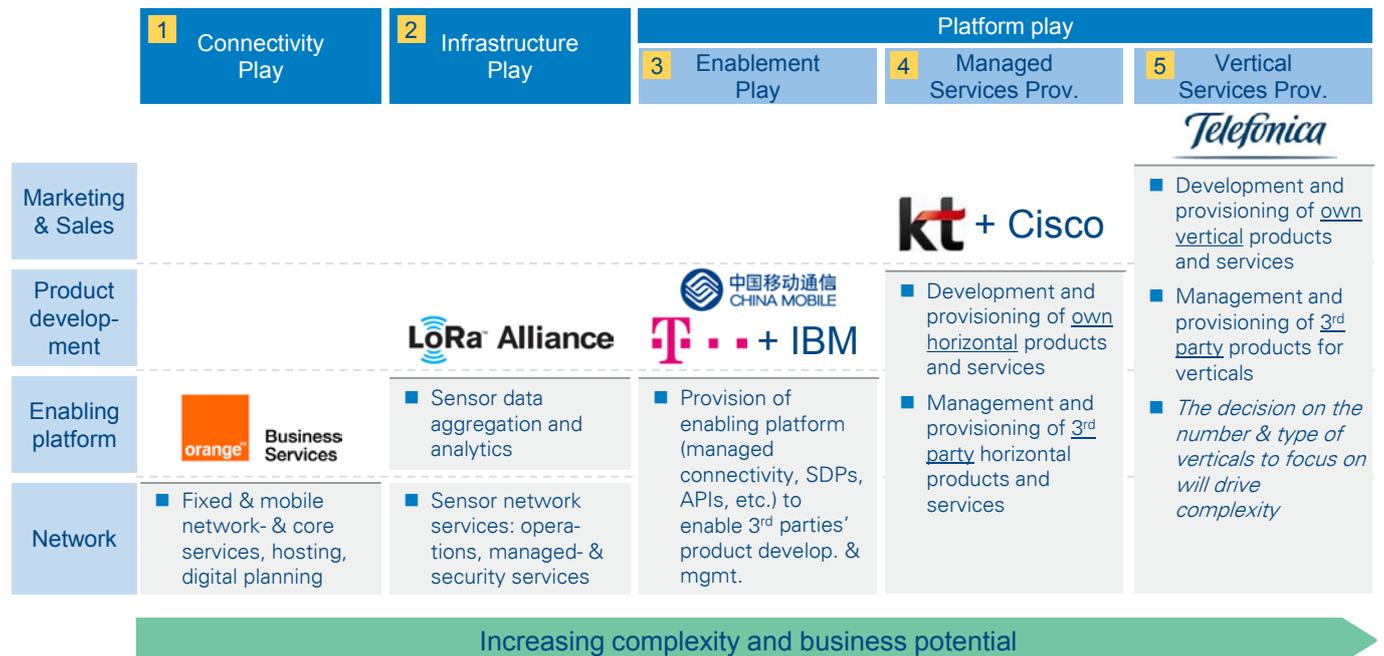
Telcos need to consider adopting new business models. For instance, sensor networks management (network operations, managed and security services, sensor data aggregation, and analytics) lie at the heart of every Smart City, capturing a variety of measurement types and process data. As telcos traditionally operate networks, management of sensor networks is naturally an option for every telco.

Although “connectivity play” and “infrastructure play” (sensor networks) are relatively easy to realize for telcos, additional business potential is limited. Telcos should therefore aim at “moving up” the value chain towards more “solution-oriented”

services with clear differentiation and up to three-times-higher revenue potential.

Telcos should assume a platform/ aggregator role, moving from “passive” operators towards active “managed services” providers, offering their own (horizontal) services to the various vertical segments. However, to achieve this strategic position, telcos need to have a clear mandate from Smart City governing entities (e.g. on the basis of a Smart City services RFP process), as the telco effectively becomes the “hub” for the Smart City environment.

Figure 4: For each vertical segment, Telcos have to decide on the right business model



Source: Arthur D. Little

Telcos need to consider to “moving up” the value chain towards more solution-oriented services & to position as an aggregator/enabler in Smart Cities

As a further enhancement of this positioning, telcos could eventually move into the enablement of specific vertical services.

Arthur D. Little identified three main revenue generation models for a telco Smart City platform targeting consumers, enterprises or public entities, as well as end users:

- Monetizing and extracting value from the data aggregated through the Smart City platform
- Selling smart applications or dashboards built on the Smart City services or use cases deployed
- Providing an integrated Unified Control Center service to municipalities or public entities

Telcos should integrate all revenue generation models in the platform design phase to ensure that the environment and all required functionalities are available from the beginning.

3. Which partnering approach to choose?

As within the overall “IoT” value chain, the breadth of capabilities required within the Smart City context is huge, and no player currently has the ability to cover all areas at once. Hence, the need to team up with partners is paramount to a successful engagement within this ecosystem.

Traditionally, telcos have strong capabilities in connectivity and service provisioning. However, most lack capabilities particularly within the platform, application and system integration space.

Telcos should carefully select key partners and join forces through dedicated partner management. Orange and BT, for example, extensively enter into partnerships to gain capabilities outside their core competency areas and offer vertical end-to-end solutions.

The ability to effectively manage partners (20 to 30 in large rollouts) becomes even more imminent when third-party enablement is part of the overall Smart City concept (e.g. city of Manchester: “open innovation platform”), resulting in “developer gardens” that require clear standards, commercial models and lifecycle management capabilities.

Consequently, the organizational setup of such a Smart City service provider significantly differs from the classical telco organization – it might therefore require structural separation of the “Smart City enabler”, or even the setup of a dedicated company or a joint venture with the most relevant partners.

Conclusion

Telecom operators can significantly benefit from the increasing “smartization” of cities across the globe. However, the market is still in its infancy and driven by small “pilots” in individual verticals as of today. In order to fully exploit the benefits of a Smart City and realize powerful cross-vertical use cases, governments and councils will need to look increasingly for smart “enablers.” Telcos should consider stepping into this “horizontal” service space by offering not only connectivity, but also managed platform services and horizontal capabilities. In order to accomplish this quickly, telcos need to team up with partners that have the ability to replicate enablement services across cities and regions.

Arthur D. Little has gained significant experience within the Smart City context through working for governments and cities, as well as service providers and telcos in this field.

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