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Enhancing Life

SELECTING THE RIGHT SMART SERVICES FOR A CITY

**A WHITE PAPER BY THE SMART CITIES – OPERATIONS AND
APPLICATIONS COMMITTEE**

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OVERVIEW

The services needed for a smart city are not simple to select. Even when the correct ones are identified, the order in which they are deployed can still make a difference in the success of a smart city.

This paper reflects the FTTH Council MENA's understanding around some of these different attributes, while also describing a methodology to capture what residents in the city consider most important services to select. This approach then allows comparison of services against these different characteristics such as difficulty, attractiveness to citizens, time to deploy and cost to deploy.

In greenfield deployments, creation of a fibre infrastructure to provide high speed communications for residential and business services is pretty much mandatory. In brownfield situations, the challenge of deploying fast fibre networks might be significantly harder but with several solutions and innovations now in the market will make it easier and the most attractive service for residents.

Each service has a number of attributes that will influence whether it will be added into a smart city's offering. The local context will also impact on this decision making – meaning that cities will prioritise services differently due to localised problems with security, water, energy etc.

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INTRODUCTION

When considering a smart city development, there are an increasing number of experts who can provide input on choices about services. What is less than perfect is that this advice is often about applying what has happened in another country and so it may be completely inappropriate.

Norway has an increasing noise pollution problem and so changing to electric council vehicles (as has happened in Amsterdam) would make sense. However, if they adopted some cities' approaches to waste management, they might actually be going backwards as Norway is already very advanced in how it manages waste and recycling.

THE ELEMENTS OF DECISION MAKING

There are several elements to the choices that will be made and some pragmatic questions to consider. These will be described below.

Question 1 - What is the city's real ambition?

The first is the genuine level of ambition of a city to be truly smart.

We have seen examples where cities wish to call themselves smart only for marketing purposes. This is as misleading as so called 'fibre' broadband in some countries where the fibre is not actually in the access network.

At the other extreme, cities such as Dubai, with their 'Smart Nation' initiative, have put enormous energy into really driving towards being smart. This is even in the face of issues such as Dubai already built, meaning any initiatives are harder than when you are building a greenfield city from the ground up. They are showing real ambition and a determination to deliver against this.

The range of services you will integrate into the smart city/development is therefore a symbol of this level of ambition, as you really need to be determined to tackle some of the more challenging services to integrate. The rational decision maker will look at their current situation and identify parameters to help make choices. Greenfield or brownfield are obviously different in how hard certain services will be to deploy. However, a country short on power generation (e.g. South Africa or Rwanda) will prioritise energy saving in comparison to countries that are self-sufficient in energy generation. The Kingdom of Saudi Arabia will view water conservation in the central provinces differently to a country with high rainfall.

It seems easy in the initial development plan to select and integrate the right services but this is not the case due to the difficulties in the delivery and integration of each service.

Question 2 – How Easy will it be to Integrate the Service?

This is a different point from the ambition discussed in question 1. The level of ambition is about how far the city pushes towards a fully integrated set of smart services within a city. That is not the same as how hard they are to deliver. Some of the less well known or visible services for inhabitants may



only be considered in the case of a full smart integration. Some of these may be very difficult. Some may be easy. But either way, some services will not be considered without real ambition.

The second element to consider at the same time as this ambition is how difficult a service is to deploy.

Question 3 – How Attractive are the Services?

The third element is how attractive are the services to the citizens and how excited and ready they can be about it. There is a serious difference between a real-estate style development and a city council’s plans. The first has the natural priority to promote a high standard of living leading to higher rental and sale values for property while the second more broadly prioritises the well-being of inhabitants.

A STRUCTURED APPROACH TO DEFINING SERVICES

Selecting services is not easy as there has to be a trade-off the different factors.

In the diagram below we place the desirability of a particular service against the difficulty to integrate in a particular city.

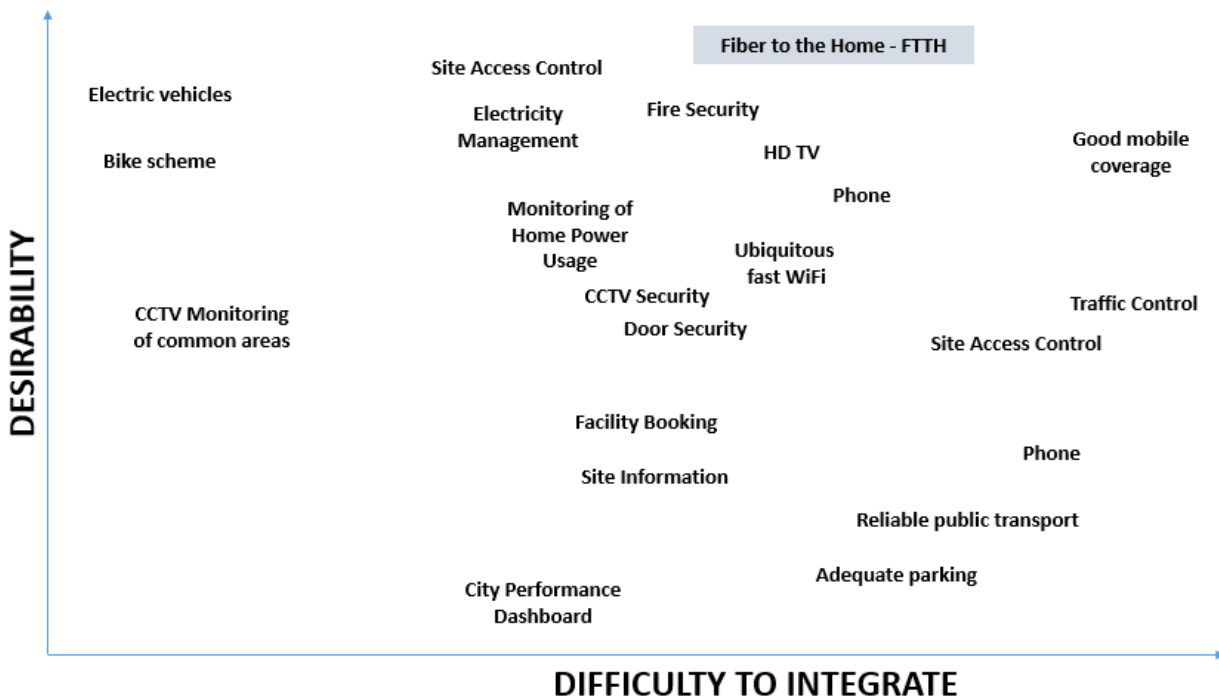


Figure 1 Desirability vs Difficulty to Integrate Particular Services

The main thing to note in figure 1 is that not every deployment will look the same or have the same challenges. This grid will look different for every location. For example, good broadband coverage is always important but in this particular case, circumstances mean fast and mobile broadband are difficult to deliver.



HOW TO SELECT SERVICES

To really understand how to prioritise what to do in a smart city, then definitely market research is needed with marketing focused on understanding the needs and desires of customers. Henry Ford might have thought it over-rated - “if I’d have asked people what they wanted, they’d have said a faster horse (rather than the Model T Ford), but it’s invaluable here.

If the importance/usefulness (what we call utility) of different services can be defined in the opinion of residents, then that can be factored into decision making. The utility should reflect not just an ordering of services (1,2,3,4 etc.), but a relative importance or weighting between the different services. The top service requirement is fast broadband which may for example, have a 15% weighting. That means that if everyone was allowed to put scores against different services, when these are added up, fast broadband had 15% of the total score. If there are ten options, then everyone might have 150 votes to distribute across all the service choices. A maximum score per service of 25 would be useful in this case – to stop someone giving all their votes to one service and skewing the results.

In every development, there is a weighted list of services according to their importance to citizens.

It’s then necessary to understand the challenges to deliver each of these services. This will be dependent on particular circumstances in the city and cannot be generalised. However, with commitment and severe actions, it is possible to identify a prioritised list of services from simple through to very difficult.

The same thing can be done with the level of ambition within the city and hence start to produce more diagrams to visualise better some of the trade-offs in the selection of services.

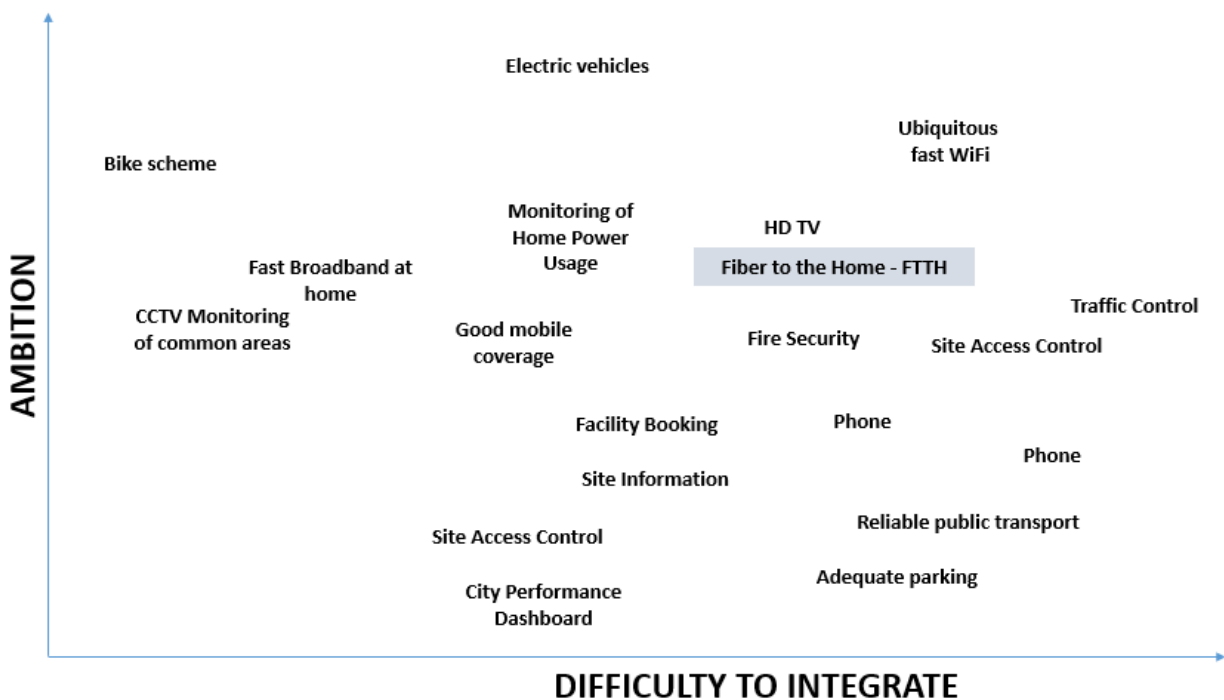


Figure 2 Ambition vs Difficulty to Integrate Different Services



Figure 2 shows the level of ambition for a service against the challenge to integrate it within a given city. Again, each development within the city will have different challenges.

At a simple level, these types of diagram can add intelligence about the city into the selection process. What will be hard? What will be easy? What will be valued by residents? What will be invisible to them?

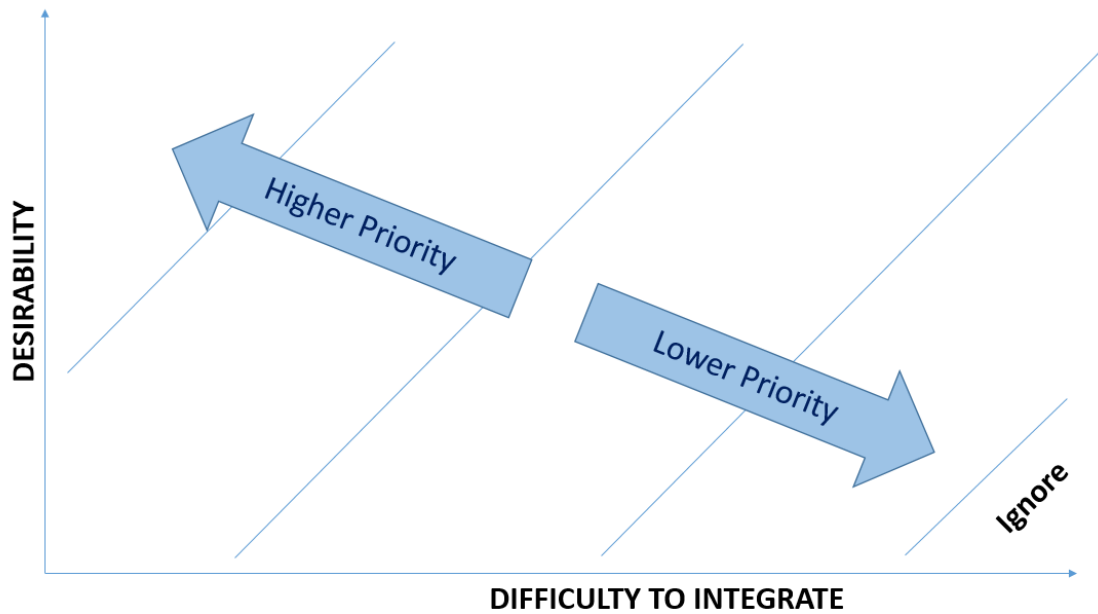


Figure 3 Prioritising Services Considering Trade-off between Desirability and Difficulty to Integrate

Figure 3 shows some of the thinking on prioritisation. It's obvious that the priority should be for services that are both highly desirable and easy to integrate first. If they are also important, then services that have low desirability while being very difficult to implement, should only be considered last.

From priorities to timelines

This approach can help prioritise which services to select but also can provide a timeline on which ones to do early. To make an impact in a smart city then the visible and highly desirable things should be done first. Not all are equally simple to deploy launch with the simpler ones first and then create a rollout timeline for the others. The level of capital and ambition should dictate how far down this timeline a city chooses to go. For a really ambitious smart city, almost all services would appear on this timeline but the advantage of this approach is that it suggests the best order of the phases in which to roll them out.

Extending this approach

Other approaches can be used to help in decision making and might include using the cost to integrate a service (per citizen) as an axis on one of these diagrams. Desirable (to people in the city) and cheap should be a very attractive combination for a service.



THE ROLE OF FIBRE

Fibre is important within this framework.

In a greenfield smart city, digging and ducting costs will be low and new buildings can be designed to include connectivity points during the build (rather than after). The network itself is critical to connecting sensors, traffic lights, control systems etc., but in this case is relatively low cost to deploy.

Ambition – fibre should be number one on any list for a smart city as it supports both communications and also connection and coordination of different city elements. So fibre should be a part of even the least ambitious of smart city developments.

Desirability – fast, symmetric broadband is enabled by fibre and this is the most desirable of Internet connections – powering gigabit services, IPTV etc. This is a major selling point for homes and in Sweden, is reported to add as much as 5% to home prices. The teams managing city services are equally keen to have fibre to transport the high volume of real time control signals in the city.

Challenge to Integrate – will be the differentiator between a greenfield and brownfield deployment. Fibre in greenfield deployments is simple and low cost, presenting no challenge for developers. In brownfield the challenges can be significant where the population densities are low and/or it is difficult and expensive to put fibre into streets.

SUMMARY

In the middle of thinking about all the things that can be done in a smart city, it's very easy to become confused. The approach outlined above is one way to help decide and prioritise on which services to deploy and in which order to ensure a successful smart city deployment.

One size does not fit all and each smart city will need to face and resolve these questions.

This thinking does show why fibre is important as it is highly desirable for both residents and also city service managers. In greenfield in particular it is not hard to integrate and should be a 'must have' for even the least ambitious smart city.

*Source Boston Consulting Group

<http://www.djsresearch.co.uk/InformationTechnologyMarketResearchInsightsAndFindings/article/People-would-rather-give-up-alcohol-than-the-internet-survey-finds-01931>