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MOBILE APP STRATEGIES FOR CITIES: IDENTIFYING INHIBITING AND CONTRIBUTING FACTORS

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Abstract

In a changing global landscape in which more things than people are connected to the internet, more mobile than fixed broadband subscriptions are active and more than 50% of the world's population lives in cities, smartphones and the mobile services and apps that run on them are the predominant interface between citizens and the so-called "Smart City". This however, poses difficulties for cities and local governments that are faced with a plethora of new challenges in a changing public service context. This paper provides four different strategies local governments can take when it comes to thinking about mobile city services, as well as ten inhibiting and contributing factors that can be taken into account when considering an initiative in the volatile mobile sector. These strategies and factors are initial steps in re-thinking what cities should focus on in their efforts to becoming smarter, with mobile as a key starting point.

Keywords: Smart Cities, mobile services, mobile apps, urban strategy.

1 Introduction

The year 2008 signified a turning point in the field of Smart City and mobile research for three reasons. For the first time (1) there were more mobile than fixed broadband subscriptions active, (2) more “things” than people were connected to the internet, and (3) more than half of the world’s population lived in cities (Burger, 2012; EC Communications Committee, 2012; Evans, 2011; UNFPA, 2007). The first point shows the growing importance of mobile connectivity. As prices for smartphones decrease and their capabilities to run more advanced and appealing software increase, consumers are depending on these devices more and more when travelling in their own cities or other areas, using more services that can increase their productivity, efficiency, communication skills or create experiences that enhance their quality of life (Townsend, 2013).

The second turning point shows how intelligence and network connectivity is increasingly added to physical objects around us. From internet kiosks in the street and streetlights equipped with light sensors that tell them when to switch on or off, over household appliances like fridges and vacuums, to new implementations of home automation with connected thermostats and light fixtures: they are all becoming connected and allow for new services and applications to be built on top. Sensors are gaining importance in this respect, while the prices for simple and complex sensors are decreasing dramatically (Silicon Labs, 2013), making more and innovative applications and services based on (real-time) sensor data a reality. Rather than relying on static or out-of-date data, sensor networks allow us to gather accurate statistics on a whole range of variables that can impact urban quality of life, and as a consequence, act on these variables.

The final turning point indicates that since 2008, more than half of the global population lives in cities. The UN estimates this number will only grow, to a predicted 70% by 2050 (UN HABITAT, 2012). As more citizens (and thus consumers) move to urban areas, actors from the ICT and mobile telecommunications sector naturally become increasingly interested in offering services that are tailored to life in the urban environment. Cities and local governments are at the same time exploring the role that new ICT services and products can play in increasing the quality of life of their citizens. In recent years, this quest is often captured in the “Smart City” concept. The concept has become key in bridging the research, projects and initiatives exploring the role of technology in urban life (see for example Hall, 2000; Joroff, 2008; Campkin & Ross, 2013).

The three shifts introduced above point to the fact that the smartphone is - for now – turning out to be the predominant “interface object” that mediates a growing range of urban tasks and provides primary access to Smart City services (Townsend, 2013; Greenfield, 2013). Of course, the main layer between the end user – who we will mostly refer to as “citizens” from now on – and the smartphones they use are the applications and services running on these devices. They are the connection between the physical location someone is in and the virtual and social information that can be linked to it. As such, mobile services are a core part of moving towards “Smarter Cities”.

This concept however, poses significant challenges for local governments today. How do they respond to these trends and ensure citizens get access to efficient public services via these new, digital and mobile channels? This paper proposes a framework to think about different strategies city governments can take in developing a mobile perspective on public service provision and derives ten contributing and inhibiting factors to making that vision successful.

2 Methodology

In order to come to the development of both the strategies and the inhibiting & contributing factors to the creation, distribution and adoption of mobile services in an urban context, we base ourselves on the findings from ten thorough case studies of mobile city apps and services, carried out in 2013. The value network and cooperation model for each of these cases was analysed using the theoretical

framework presented in Walravens (2012). This article presented an analytical framework that can be used to analyse cooperation models in which public bodies become part of a mobile service value network and start generating value themselves. This framework is based on the analysis and weighing of a number of business model and public value parameters, briefly explained in the following table (see also Ballon, 2009).

<p>Value network <i>The combination of assets:</i> anything tangible or intangible that could be used to help an organisation achieve its goals. <i>The level of vertical integration:</i> the level of ownership and control over successive stages of the value chain. <i>Customer ownership:</i> looks into the party maintaining the customer relationship and keeping the customer data. Related is the level of openness/lock-in of the case. <i>Good governance:</i> refers to a striving towards consensus and harmonization of interests (and related rhetoric), which is deemed essential in good governance. <i>Stakeholder management:</i> refers to the choices that are made related to which stakeholders (be they public, semi-public, non-governmental, private etc.) are involved or invited to participate in the process of bringing a service to end-users.</p>	<p>Financial model <i>Investment structure:</i> deals with the necessary investments (both capex and opex) and the parties making them. <i>Revenue model:</i> deals with the trade-off between direct/indirect revenue models as well as the trade-off between content-based and transport-based revenue models. <i>Revenue sharing model:</i> refers to agreements on whether and how to share revenues among the actors involved in the value network. <i>ROPI:</i> refers to the question whether the expected value generated by a public investment is purely financial, public, direct, indirect or combinations of these, and how a choice is justified. <i>Public partnership model:</i> explores how the financial relationships between the private and public participants in the value network are constructed.</p>
<p>Functional architecture <i>Modularity/integration:</i> refers to the design of systems and artefacts as sets of discrete modules that connect to each other via predetermined interfaces. <i>Distribution of intelligence:</i> refers to the particular distribution of computing power, control and functionality across the system in order to deliver a specific application or service. <i>Interoperability:</i> refers to the ability of systems to directly exchange information and services with other systems. <i>Technology governance:</i> highlights the importance of transparency, participation and emancipation in making technological choices and relates to the digital divide. <i>Public data ownership:</i> concerns the terms under which data is opened up and to which actors.</p>	<p>Value proposition <i>Positioning:</i> refers to marketing issues including branding, identifying market segments, establishing consumer trust, and identifying competing products or services. <i>User involvement:</i> refers to the degree in which users can contribute to the value network. <i>Intended value:</i> lists the basic attributes that the product or service possesses, or is intended to possess, and that together constitute the intended customer value. <i>Public value creation:</i> refers to the justification a government provides in taking the initiative to deliver a specific service, rather than leaving its deployment to the market. <i>Public value evaluation:</i> questions whether an evaluation of the generated public value takes place and if this occurs <i>ex-ante</i> or <i>ex-post</i>.</p>

Table 2. Parameters used to analyse the ten cases under discussion.

These parameters are discussed in detail for all cases, which allows them to be categorised under a certain type of strategy (see below). Based on this analysis (that is based in desk research and semi-structured expert interviews) we attribute a weight to a certain parameter, not unlike a qualitative interpretation of a multilevel homogeneity analysis (see for example Michailidis & de Leeuw, 2000). This type of analysis shows us in which quadrant the case is positioned (see the grid below). The cases were selected on a number of diverging factors e.g. the actors involved in the case, geographical distribution, platform type (if applicable), the financial architecture and the reach they have. A short overview is presented in the table below.

Service	Type	Location	Category	Reach
NYC 311	App, voice, SMS, web	NYC, US	Issue reporting	XL
FixMyStreet	App, website	UK	Issue reporting	L
Carambla	App	BE	Private parking	S
PulsePoint	App	SF, US	Emergency, CPR	XS
Stad Mechelen	App	Mechelen, BE	Local info	M
Iamsterdam QR Spots	App	A'dam, NL	Local & historical info	L
App van 't Stad	App	A'pen, BE	Check-in & deals service	M

London Bike App	App	London, UK	Public bike availability	L
Berlin Neighborhood	App	Berlin, DE	Socio-demo issues map	L
Ghendetta	Web	Ghent, BE	Check-in and city game	M

Table 1. List of analysed cases¹

The data serving as input for this process was document and policy analysis, desk research and 19 expert interviews. These experts are active on various levels of decision-making, city governments, interest groups or industry and in some cases provided very concrete information on a certain case, where in others they were asked about their general views on the evolutions in urban mobile apps. The interviews have been anonymised and will be referred to using the function and a description of the organisation of the interviewee. The inhibiting and contributing factors that follow can be seen as the “lessons learned” from the ten cases we analysed and the industry experts’ opinions.

3 High-level models and strategies for mobile city services

Based on the work done on the cases, we see a number of general strategies or models possible for cities interested in the creation and distribution of mobile city services. These four strategies vary on two parameters: the level of city government involvement and the type of public value that is being generated. A city government can be very closely involved with a mobile initiative or only to a very limited extent, and the type of public value that is created can differ: a direct public value is one that is created in the short-term, for an individual and points to “what the public values”, while and indirect public value show an initiative over the long term, is aimed at the collective and points more to “what adds value to the public sphere” (Benington & Moore, 2011).

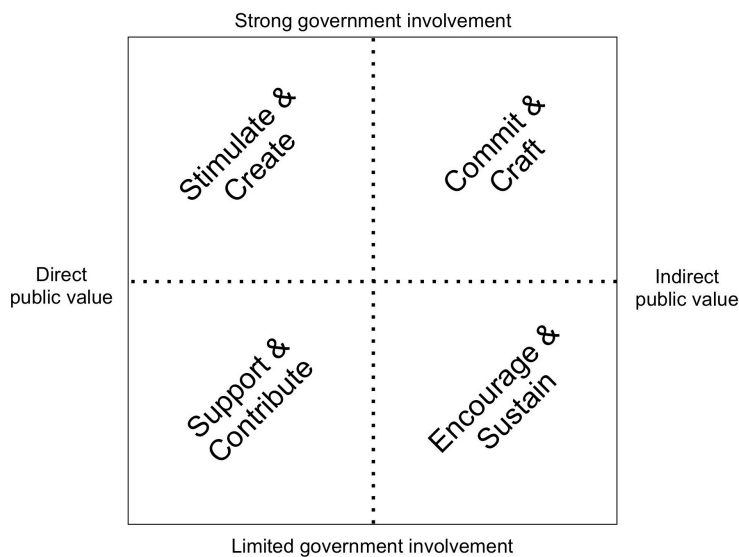


Figure 1. Possible action for cities in each mobile strategy

The four strategies presented here are not clear-cut or black and white, and can in some cases overlap. Or, depending on the specific case, the desired end result or the city organisation taking the initiative, different strategies and approaches can be combined or pursued at the same time. The four generic strategies or operational models we see for cities are represented in Figure 1. The following sections

¹ Links to the cases, in the order presented: www1.nyc.gov/311/, www.fixmystreet.com, www.carambla.be, www.pulsepoint.com, <http://www.mechelen.be/content/12199/download-en-ontdek-de-mechelse-smartphone-en-tablet-apps.html>, <http://www.edenspiekermann.com/blog/explore-a-different-amsterdam>, <http://www.gva.be/nieuws/interactief/aid1053460/app-van-t-stad-adresjes-vrienden-en-evenementen-op-je-smartphone.aspx>, www.fastchicken.co.nz, <https://play.google.com/store/apps/details?id=com.berlinerluftapp.android.berlinerluft>, ghendetta be

will briefly take a closer look at these four potential strategies for cities in mobile service creation, distribution and adoption.

3.1 Stimulate & create

This first strategy is linked to the top-left quadrant of the governance and public value grid and in our case analysis listed cases such as Stad Mechelen, I Amsterdam QR Spots and the London Bike App. This strategy refers to a stronger involvement of local government and a more direct type of public value generated, meaning that the resulting applications and services are more aimed at the short-term and serving the interest or needs of individual citizens at a fixed moment in time. A city can play these roles by for example creating their own applications or directly commissioning one (Local government webmaster, ICT-department, 2013). It does not mean that the development of the app itself is necessarily short term or that the time between ideation and execution is short, but rather that the goals that the app is trying to meet are more immediate. The idea of stimulation is illustrated by thought-out open data initiatives that stimulate the creation of application by developers based on a city's datasets. The London Bike app is an example of such a strategy in which a city or government organisation does not simply open up datasets, but also provides active support and clear documentation and instructions for developers. Hosting a hackathon can also be a form of stimulating development in this case, although we like to argue simply organizing such an event is not sanctifying: more promotion and support both before, during and after hackathons leads to better apps and services that can actually meet needs and wishes of citizens in a successful way (Local government representative, Digital Strategy department, 2013). In this sense, this quadrant is also linked to the enabling platform role a city can play: while it may not always control the service offering that comes out of an initiative, it is closely involved and can put all the data, tools, contacts and information together that developers need to create good and useful apps.

3.2 Commit & craft

The second strategy is more focused on the long term and looks to generate more indirect public value, through strong involvement of the local government. This type of strategy could be labelled as more visionary and aimed at tackling some long-term challenges in the urban domain. This does not mean these challenges are necessarily ill-defined or vaguer than in the previous case; they can be very clear-cut and outlined, but stretch over a longer period of time and – perhaps more importantly – matter more to “what adds value to the public sphere”, meaning they serve some greater goal. The most prominent example from our cases is perhaps NYC311. Although on the side of the citizen the service offering might appear mostly direct (i.e. answering a question or reporting an issue), the way the city operates the service at the same time provides more insight into various aspects of life in the city and potential structural issues that need to be tackled (Local city government CTO, Mayor's Office, 2013). If continuous reports come in on trash in a specific street or neighbourhood for example, the trash pick-up routes can be changed or the number of pick-ups increased, reducing the amount of litter in the street and increasing quality of life in a particular area. But also the case of PulsePoint shows a commitment by a local government (even though the investment is perhaps different in nature than in the case of NYC311) to a longer-term goal of reducing deaths as a consequence of sudden cardiac arrest. Finally, the cases of FixMyStreet and Ghendetta also fall in this quadrant of the grid, but it becomes clearer here that they are more in a grey zone, with a more limited involvement of the local government. However, also here we still argue that successfully implementing a service like FixMyStreet certainly requires an important level of commitment, similar to setting up a well-performing open data initiative that lies at the basis of a service like Ghendetta (App developer, SME, 2013). Although in most cases the investment will be higher (not necessarily only financially), as far as we have data for them, the urban mobile services that are the result of this approach are very well appreciated with citizens as well.

3.3 Support & contribute

In the third model the city takes more of a backseat position when it comes to its involvement in mobile service creation, distribution or promotion. The city is less (to not) involved and the public values that are targeted are more direct in nature, meaning they add to “what the public values” in the shorter term. This translates to a more ad hoc support depending on the case. An open data initiative can still be part of this strategy, but it means the surrounding aspects are less focused on: perhaps the data that is being opened is not 4 or 5 star quality (see Summers, 2010), there are limited support documents available for developers and little promotion is made. This is not necessarily a bad approach in a time of economic downturn and stressed budgets, as the city does not need to invest a great deal to arrive at - at least - some potentially interesting mobile services (Local government representative, Digital Strategy department, 2013). It can also be a way of testing the waters and gauging whether there is some interest from local developers or none at all. But kickstarting something that will have some staying power will prove more difficult under this model. This model is exemplified in the case of the Berlin Neighborhood app: the city of Berlin took a limited initiative in the open data area, but the datasets were not based on very current numbers and only available as PDFs, making them not machine-readable. This led the creator of the app to cease development and leave the app as is, meaning it is not updated with more recent material. So although interesting and sometimes innovative ideas surfaced and apps were developed, there was not enough attention or investment from the city to give them a longer life. Another approach is to take a more ad hoc support role as a city, based on specific projects or cases that come along. This could have been the case in the App van ‘t Stad example: although the app was commercially developed, it could have been potentially interesting to involve the city in a later stage, even if only to support the app publicly as an interesting tool. Development on App van ‘t Stad was also stopped after disappointing return for the group that launched it.

3.4 Encourage & sustain

This fourth and final approach imagines a limited role for a city that is still aiming to tackle more long-term urban challenges. The case we came across that is positioned in this quadrant is Carambla that operates a parking platform without the required involvement of the city. But one could imagine roles for the city related to promotion, providing information to the developers of the service, adding city-owned potentially available parking spaces and so on (App developer, SME, 2013). In this way, the city does not need to be directly involved, but can show its support and encourage developers of the services. A strategy aimed at creating a lively developer economy in a city could also be part of this approach, or for example setting up encounters between developers that can work on longer-term urban challenges: this way, the city does not need to be directly involved, but can play a sort of brokering role in bringing together all the relevant stakeholders to generate a more indirect public value (Regional government representative, ICT-department, 2013).

The following table provides an overview of the four strategies described above and makes some suggestions as to concrete action local governments can undertake towards different stakeholder groups.

	Stimulate & Create	Commit & Craft	Support & Contribute	Encourage & Sustain
For the city	- Medium investment to achieve some goals quickly - Allow and foster experiments	- Long-term investment required - Develop and execute a vision	- Lower investment - Project-based, ad hoc - Allow experiments	- Lower investment - Aim for long-term challenges
Towards developers	- Commission well-defined apps	- Create a central contact point, e.g. a	- Set up a limited open data initiative,	- Contribute information or

	<ul style="list-style-type: none"> - Provide open data and clear rules and guidelines - Host a promoted and well-organized hackathon 	<ul style="list-style-type: none"> city CTO or CIO to communicate long term vision - Communicate long-term goals 	<ul style="list-style-type: none"> providing minimal support to developers - Support and contribute to individual projects 	<ul style="list-style-type: none"> content to external developers on an ad hoc basis, as part of a long-term goal - Link this to a limited open data initiative
Towards companies	<ul style="list-style-type: none"> - Stimulate the creation of apps - Stimulate participation to open data event 	<ul style="list-style-type: none"> - Provide options for private players to participate in long-term vision 	<ul style="list-style-type: none"> - Support and contribute to individual or ad hoc projects - Support and allow easy PPPP cooperation 	<ul style="list-style-type: none"> - Communicate long-term goals and challenges - Encourage PPPP models aimed at tackling long-term issues
Towards citizens	<ul style="list-style-type: none"> - Provide government-branded apps that provide short-term impact and have individual relevance - Provide an overview of quality-checked city apps (e.g. based on open city data) 	<ul style="list-style-type: none"> - Provide government-branded apps that commit to tackle (parts of) urban challenges - Provide an overview of quality-checked city apps (e.g. based on open city data) 	<ul style="list-style-type: none"> - Provide an overview of potentially relevant and quality-checked city apps (e.g. based on open city data) 	<ul style="list-style-type: none"> - Provide an overview of potentially relevant and quality-checked city apps (e.g. based on open city data) - Communicate long-term goals

Table 3. Possible action for cities in each mobile strategy

These are examples of some actions a city can undertake towards different stakeholder groups. It should be clear that more and different operationalisations of each strategy are possible and the ones provided here serve as illustrations. In further research, we aim to make these strategies more clearly defined and more concrete, so that they can translate even further into possible actions cities can undertake. The next section takes a closer look at the inhibiting and contributing factors we have identified so far, based on the case analyses and expert interviews.

4 Inhibiting and contributing factors

This section will begin developing the inhibiting and contributing factors when it comes to the successful creation, distribution and/or adoption of mobile services in an urban context. These factors are mainly derived from the conclusions of the ten cases we very briefly described above and are guided by the parameters of the extended business model matrix in Walravens (2012). The interviews we carried out also served as direct input towards the development of these indicators. We have decided not to make a stark distinction between inhibiting and contributing factors, but rather describe how certain factors under different given circumstances can play to the advantage or disadvantage of a successful mobile vision for a city or local government organisation.

4.1 Functionality – user (demand) research

The role of the user in the mobile services ecosystem appears to be changing, among other things under the influence of social media (Dörk & Molteyne, 2011). Apart from having more and more immediate communications resources, the user is increasingly approached earlier in the design process of new services, using innovative methods, e.g. in a Living Lab setting or open innovation context (Schuurman et al, 2012). This is of particular relevance in mobile service development. Although an argument is sometimes made for soft launches of mobile services, end users' patience with mobile apps is very short: app developers basically have only one chance to engage users, since apps are very easily downloaded and then forgotten if they add no real value or are not attractive enough

(Commercial app developer, communications company, 2013). Given this very brief window, it is in first instance very important to field test the application and experience before launch, to ensure that the app at least works without issue and needs to be modified to engage users more. Next to the actual use of the app, its usefulness should also be evaluated in the ideation and development process. This is a relatively new way of working and can be a daunting task for cities venturing into mobile for the first time. In this case, universities and the research community can certainly play a role and provide assistance where needed, to make sure that investments are not made in vain.

4.2 Internal change agents

A second important factor in the potential success of mobile city services is the role of internal change agents. This term comes from change management and organisational literature and usually refers to managers' role in the restructuring of organisations (Pathak, 2010). Given the fact that the person is already part of the organisation undergoing change or restructuring, preference is given to internal change agents, rather than external ones (e.g. consultants) since they know and understand the organisation better and what consequences changing certain aspects or *modi operandi* can have for the organisation (see Pathak, 2010; Hartley et al, 1997). In our operationalization of this factor, we do not necessarily refer to an organisational change or restructuring, but in most cases mean a shift in culture or mind set when it comes to digital or mobile services and initiatives, and carrying out or promoting this message. This is of particular importance in public service settings where the goals are more comprehensive (holistic), qualitative and more political than in others and the role of internal change agents can be seen slightly differently than in commercial operations (Hartley et al, 1997; Local government representative, Digital Strategy department, 2013). Apart from a vision on mobile services at the city management or political level, there is a large potential for the right, enthusiastic people in the right places. This is for example the case for the city of Ghent, Belgium, where the team in the e-strategy cell of the city is for the largest part responsible for the success of Ghent in participating to innovative projects and becoming a frontrunner and example for Flanders when it comes to open data (Urban app developer, SME, 2013). Leveraging strong internal change agents can thus be a powerful contributing factor, but one that is not easy to generate or foster.

4.3 Political vision

Next to having the right people in the right parts of the organisation, a political vision that is followed-up on in its execution is an important contributing factor to a successful mobile strategy. Particularly in the case of mobile, it is important that such a plan brings all the required stakeholders and pieces together, to avoid splintered initiatives that do not communicate with one another or take an entirely different approach to the topic. This can be a particular problem in cities with many different levels of government or distributed competences. Although aspects related to mobile may be included in policy plans, if a unified vision or the goals that mobile applications and services should be targeting, as well as the challenges mobile investment could (partly) tackle is missing, effecting change becomes problematic. Not having these principles or general targets defined, makes it very difficult for the different administrations or local departments to act in concrete and communal ways (Regional government representative, ICT-department, 2013). The lack of a clear vision or political support for certain goals in mobile communications can be a strong inhibiting factor.

4.4 Organisation

The organisational structure of a local government and the different governing levels it is composed of can both be a contributing or inhibiting element. Having many levels of decision-making can make it very difficult to successfully initiate holistic projects related to digital or mobile services. A distributed organisation structure (or rather combination of different centralised structures) can however also have some benefits: it allows the individual departments for example to take their own initiatives, without potentially lengthier processes to get something approved. In a less hierarchal model this can be an

advantage. Existing structures also clearly have an impact, as well as their flexibility and the possibility of adapting to changes in the surrounding value network or ecosystem. In a bureaucratic environment, acting quickly and experimentation are not a given and concepts like innovation and agile design and development need to be actively stimulated, before the organisational structure of a local government can be seen as a contributing factor in mobile.

4.5 Path dependence (and technological choices)

Related to the previous point are the choices that have been made by the local organisation in the past and determine the path it is on, particularly when it comes to technological choices and how easily a mobile perspective can be fitted in those choices. This might occur with relation to infrastructure for example, when choices have been made for technologies that do not easily lend themselves to a mobile interface or when an existing content management system (CMS) needs to be adapted to be accessed from mobile devices (Local government webmaster, ICT-department, 2013). Additionally, an important potential inhibitor is how high the cost of switching to a different technology is. Liebowitz and Margolis (2000) cite Mark Roe who identifies three types of path dependence based on how difficult it can be to overcome. They say path dependence “can be weak (the efficiency of the chosen path is tied with some alternatives), semi-strong (the chosen path is not the best but not worth fixing) or strong (the chosen path is highly inefficient, but we are unable to correct it)” (Liebowitz & Margolis, 2000: p. 985). A local government might have a great vision and plan for mobile services to tackle parts of urban challenges, but be restricted or inhibited by decisions that were made in the past and are too difficult to overcome. In that case, the local government will need to take extra measures to be able to operate within the confines dictated by path dependence and find pragmatic solutions to reaching the goals they want to achieve (Local government webmaster, ICT-department, 2013).

4.6 Opening up

This paper has already in several instances pointed at the potential importance of open data and providing support to developers creating apps and services for the city. It is becoming more commonplace and accepted that it will be very important to open up data for a city’s digital strategy in the coming years, with “open by default” becoming the moniker. Still, this is not yet a given today, with many distributed and disparate initiatives across regions, countries, Europe and the world. Recent data from the Open Knowledge Foundation show that there are vast differences between countries around the world and how they score when it comes to open data (OKFN Country Index, 2014). Especially the way in which datasets are opened up and how developers are encouraged and supported in the process appears to be a determinant factor in the success of open data initiatives. The data needs to be of high quality, machine-readable and in the best case adhere to the five-star principle described earlier in this paper (Summers, 2010), as well as be presented in a clear and well-documented way, so that the threshold for interested developers is as low as possible. We also refer to the five stars of open data platforms (Colpaert, 2013) for cities to take as a set of guiding rules for the way in which they offer their data to developers. The licenses that are created and determine what developers can and cannot do with the data provided by the city also play an important part in this: getting legal advice from other cities, universities, advocacy groups and specialised lawyers comes highly recommended. Opening data can thus be a very powerful contributing factor to a flourishing app economy in a city, but it needs to be handled, promoted and supported very well to generate actual return for the city (Local government representative, Digital Strategy department, 2013).

4.7 Cooperation model

The way in which the cooperation between the different stakeholders in a mobile service initiative is set up, formalised and executed can also play an inhibiting or contributing role. Depending on the type of service that needs to be developed or the goals that a local government wants to achieve (perhaps linked to the type of public value it wants to generate), different legal forms of cooperation can be

imagined that can impact the process or results of a mobile service initiative. Public-private partnerships are a typical example of such a cooperation model. In light of the changing role of the user – the citizen in this case – as was discussed a few paragraphs above, the term PPPP has also been introduced to refer to public-private-people partnerships, giving a more prominent role of the user. In cases where such cooperation with citizens is formalised and their input is an integral part of the ideation, creation, launch and promotion of a mobile city service initiative, the chances of success can be higher and the cooperation model could be seen as a contributing factor. When the formulation and formalisation of the cooperation hinder making certain decisions or moving a process forward, the model can be an inhibiting factor as well. This means that local governments should be particularly careful and critical in public procurement processes and deciding which companies to develop relations with, and specifically under what terms (e.g. who becomes owner of gathered data, can it be commercially exploited or openly reused and so on).

4.8 Promotion

It should be clear that an essential part of seeing adoption for a new mobile service is promotion and communication towards citizens. The adage of “build it and they will come” has already been disproven on many occasions and clearly communicating about what a particular service can contribute to citizens is crucial in this case. It is important however that cities also not fall in the trap of “overmarketing” an initiative: at the core should be an urban challenge that can be (partially) tackled with a qualitative mobile service, rather than a marketing trick that can display how “smart” a city is for example. A particular case however could be city marketing, where gathering attention and promoting a city is the most important goal: an example could be the I Amsterdam QR Spots. The specific goal of the app is providing historical information on different Amsterdam buildings, but the main target of the group behind the app – Amsterdam Partners – is promoting the city through an integrated city marketing strategy. Having something of a “gimmick” as an addition to an app like this (i.e. scanning the QR codes to get access to the information) can be useful in attracting some media attention and more downloads of the app as a result, but one needs to be careful not to simply tack on features because they are possible and keep focus on their utility in reaching the goals set forth. In the case of I Amsterdam QR spots, the main goal is promoting the city and in that sense, this feature can be a plus, but the promotional aspects of mobile city apps need to be closely explored on a per project basis, finding a good balance between clear communication, functionality and pure marketing (Commercial app developer, communications company, 2013). So the factor of promotion can, like several others, play both an inhibiting and contributing role in bringing a mobile city service to citizens.

4.9 Return

An ever-returning question cities raise – particularly in times of economic downturn and seeking efficiency – is what the return on investment is for them, whether that return be financial or otherwise. Being unsure of return is an argument that cities often employ as an excuse to not invest in a digital or mobile initiative at all. Related, the return of opening up data is also often questioned and research is only beginning to explore the potential value that open data can yield. Most recently, Transport for London performed an evaluation of their open data project, following the same protocols they use for evaluating transport projects and found that around 500 apps were developed using their real-time open data, 5000 people were indirectly employed as a consequence and the project saw a return of 58:1, meaning that for each British Pound the organisation put in, it saw a return of £58 (causing the researchers to double check the numbers, as a minimal expected return is 1.4:1) (Stott, 2014). Perhaps most importantly; as a consequence Transport for London stopped developing their own apps.

It is important with this factor that it is not used as a false argument founded in populism or as a way to justify doing nothing, meaning one that is not based on thorough study of the field and the potential impact of the mobile service initiative. There are several goals for which quantifiable KPIs can be

decided upon, that are described before an app or service is launched and that can be measured afterwards. In other cases and for example in light of experimentation and serving hard-to-quantify goals, no immediate return can nor needs to be defined. The most important lessons in whether the return on public investment is viewed as a contributing or inhibiting factor is to discuss it during the ideation phase of a mobile service initiative and to consider other effects that direct financial return as relevant in some cases as well.

4.10 Context

As a final factor and perhaps a summarising one, we would like to highlight the importance of contextual factors that are also not always expected. The app industry remains highly volatile and the success of apps and services can be unpredictable. Contextual factors like timing, unexpected competition, being featured by app stores, getting positive media coverage and so on can all inhibit or contribute to the successful adoption of a mobile app or service. Some of these factors can be mediated or taken into account, but others will remain elusive (Representative of a local ICT-sector organisation, 2013). In that latter case, it is important the organisational structure or the responsible for the initiative is flexible and able to quickly adapt and formulate a response to the unforeseen circumstance.

5 Discussion and conclusion

The goal of this paper was to develop generic strategies for mobile city service creation and distribution, and to describe inhibiting and contributing factors to the success of mobile initiatives. Based on what we learned from the cases and expert interviews, we arrive at four models for strategies that cities can undertake, depending on their level of involvement and the goals they want to achieve related to public value. The first strategy is referred to as “Stimulate & Create” and mainly points to a strategy that allows a local government to make quick impact in a certain area; the second is called “Commit & Craft” and aims at the development of a long-term vision for a city when it comes to mobile; the third is “Support & Contribute”, take a more per-project approach and supporting mobile initiatives where desirable related to the city’s own short-term goals; and the last one is “Encourage & Sustain”, referring to a long-term strategy that does not require a large involvement of the local government. Next, we proposed ten factors that can play an inhibiting or contributing role to a successful mobile service initiative by a local government. These factors are functionality, internal change agents, political vision, organisation, path dependence, opening up, cooperation model, promotion, return and context. For each of these factors we briefly describe how they may play an inhibiting or contributing role and in some cases illustrate what this may look like, based on material from our case studies. Future work will need to include closer integration with existing literature on strategies for cities and perhaps take a broader perspective and explore what lessons can be learned from corporate strategies in entering new fields. More cases would also need to be explored to ensure their inherent differences do not skew results. For now however, these inhibiting and contributing factors can serve as a very practical inspiration for local governments that are concerned about becoming active in mobile service development, distribution or promotion and are an initial step in this field.

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