Reimagining the role of citizens in Smart City projects

Conference or Workshop Item

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Abstract
The technological focus of many Smart City projects relies on top-down innovations, ignoring the role that citizens can play in improving their local communities. In this paper we outline our approach to supporting citizens in playing an active role in urban innovation, from the crowdsourcing of initial ideas through to facilitating citizen involvement in the realization of community projects. This extends previous work in the field by exploring how to go beyond identifying issues and ideas to securing a commitment from citizens to assisting a project intended to address an identified issue.

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Introduction
More people than ever before are living in urbanized areas [10] with 66% of the world's population projected to be living in urban areas by 2050. This dramatic shift in our living patterns coincides with an increasing awareness of sustainability; of how our energy, water,

transport and environment will be managed over the long term as resources become ever more scarce.

One approach to addressing this challenge is through the creation of Smart Cities. While definitions of Smart Cities vary (see [7]) they tend to coalesce around the key ideas of supporting infrastructure through the use of data and the importance of deploying processes that respond to that data.

While Smart Cities aim to improve the places that people live, all too often this comes in the form of top-down innovation that either fails to capture the public imagination or leads to citizens rejecting the innovations. While top-down innovation is important, it often fails to take into account citizen needs and so may not serve their best interests.

For example, many companies and commercial set-ups see citizens as living within Smart Cities but having little control over them. Many technology providers such as Microsoft[1], Siemens[2] and Hitachi[3] all highlight how important citizens are to their smart city visions. However, in reading their materials it becomes clear that they envision citizens without agency, citizens as passive consumers of city services and as generators of data. This vision has no place for citizens taking control of their own communities.

Some researchers have recognized the shortcomings of the technological-focus of these Smart City initiatives.

[1] http://www.microsoft.com/en-us/citynext/

[2] http://www.siemens.com/digitalization/smart-city.html

[3] http://www.hitachi.com/products/smartcity/

Nam and Pardo ([7]) argue that innovative policy is a key component to the success of Smart City initiatives: "Since the wicked and tangled problems of urbanization are social, political and organizational, smart city strategies for innovation must reflect consideration of management and policy as well as technology… so far the literature has viewed a smart city as a manifestation of innovative ideas, mostly neglecting considerations of the policy and managerial side of innovation". One of the key policy features is in redesigning the relationship between citizens and city officials ([4][7]).

First and foremost, smart cities must start with people rather than believing that technology alone can improve cities. Some have argued that this involvement can take the form of a mechanism for involving citizens in the co-creation process of products or services [1][8]. This concept goes beyond thinking of the citizen as a source of data but utilizing them as a source for ideas. After all, who knows more about a local community than the people who live there?

However, it is difficult to find examples of how researchers and projects have achieved the goal of involving citizens in the process of innovation. As others have noted, empirical research into the nature and characteristics of involving citizens in Smart City projects remains scarce [9]. For example, while Desouza & Bhagwatwar, [3], found 20 "citizen apps" to review, all of these were created by developers. While many of these developers see social improvements as their ultimate aim, app development necessitates a level of technical skill that is beyond the average citizen. These "citizen apps" were developed with

citizens in mind but not necessarily with their involvement.

Schuurman et al., 2012, [9], present an analysis of their attempt to use a crowdsourcing platform to better understand the process of generating, evaluating and selecting innovative ideas for Smart City innovation. Based around a project in the Belgian city of Ghent, citizens could submit and evaluate ideas for smart city innovations. Representatives of the city itself evaluated all of these crowd-sourced ideas on three criteria: innovativeness, feasibility and user benefit. In general, all of the ideas scored relatively low on innovativeness, but they offered significantly more user benefit than the ideas created by a selection of Smart City professionals. This indicates that while ideation through crowdsourcing does not yield radical, breakthrough ideas, users seem better able to create ideas that provide solutions to their problems compared to experts.

There are challenges to this approach, particularly the "digital divide", the fact that those who we most want to involve in the decision making process to improve their communities lack the ICT skills or technologies, mitigating against citizen empowerment ([8]). Furthermore, turning these ideas into citizen-led action is a complicated procedure.

In the remainder of this paper we outline how we have taken the premise of citizen crowdsourcing and embedded it within our approach to facilitating citizen action from within our Smart Cities project.

MK:Smart

Milton Keynes is one of the fastest growing cities in the UK. Its population is expected to grow from around 230,000 today to over 300,000 by 2026. This is going to impact on our water usage, the transport network and energy capacity.

MK:Smart (www.mksmart.org) is a Smart City project which is developing innovative solutions to support growth in Milton Keynes. Central to the project is the creation of a 'Data Hub' that supports the acquisition and management of data including data about energy and water consumption, transport data, data acquired through satellite technology and social and economic datasets. Building on the capability provided by the Data Hub, the project will create innovative solutions to managing transport, energy and water management issues.

In addition to these technological solutions, MK:Smart has also put community engagement activities at the heart of its strategy. These engagement activities are designed to involve citizens in the innovation process, not only through an outreach programme, but also by engaging the community in innovation-centric decision-making processes through the establishment of a Citizen Lab.

MK:Smart Citizen Lab

The Citizen Lab is a multi-stage approach to engage with communities and develop citizen-led projects that improve those communities. We see the process of addressing community issues as progressing through a series of stages, each of which requires a greater level of commitment from citizens. This is shown in Figure 1.

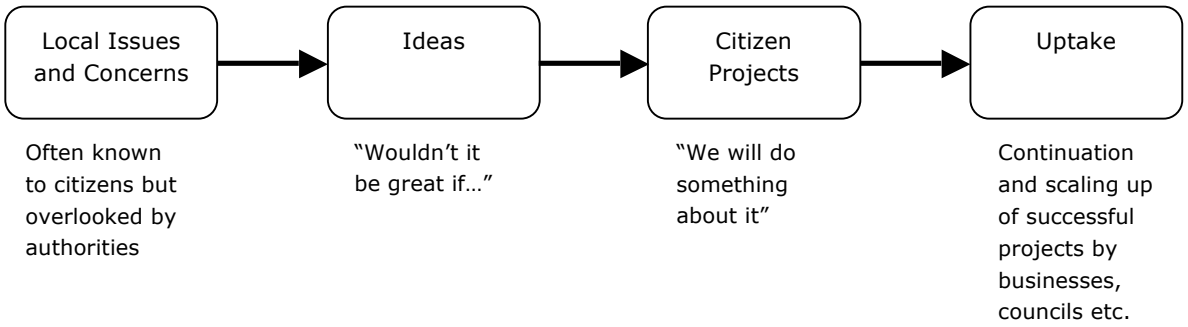

Figure 1. The various stages of addressing local issues

Progressing from one stage to the next requires a greater level of commitment from citizens. It is fairly low-cost and straightforward to identify issues and ideas; it is more costly to commit to assisting a project intended to address that issue. This is the main shortcoming of the crowdsourcing approach outlined by Schuurman et al. [9]. While generating ideas is a positive first step, unless those ideas are developed into actions, nothing will change within local communities.

Various methods of engaging with "the crowd" have been used. Within the science community, the idea of "citizen scientists" has become popular - such projects rely on volunteers to collect data about particular phenomenon. One of the major weaknesses of this approach is that while citizen science encourages engagement with science projects, it involves little analysis or interpretation from citizens [2]. This makes the citizens more a measuring instrument than a true scientific collaborator. While other successful platforms exist they tend to also involve the production of data (e.g. Wikipedia) or some form of financial incentive (e.g. Amazon Mechanical Turk). While a variety of civic-centric crowdsourcing platforms exist (e.g. Citizinvestor, Commonplace), we are aware of no crowdsourcing platform that has been used in a Smart City project to facilitate the progression of ideas from identifying local issues and concerns through to large-scale uptake.

We have identified a multi-stage strategy for engaging with citizens and progressing citizen-led innovation from ideas to citizen-led action (see Figure 2). Communication with and between citizens and other stakeholders occurs through a range of face-to-face and on-line interactions, which aim to move citizens from some initial ideas to the stage where a group of citizens collaboratively enact a community project. In the final stage, projects become fully sustainable. At the time of writing, the MK:Smart Citizen lab is at the start of the process of eliciting ideas and forming groups of citizens to enact change.

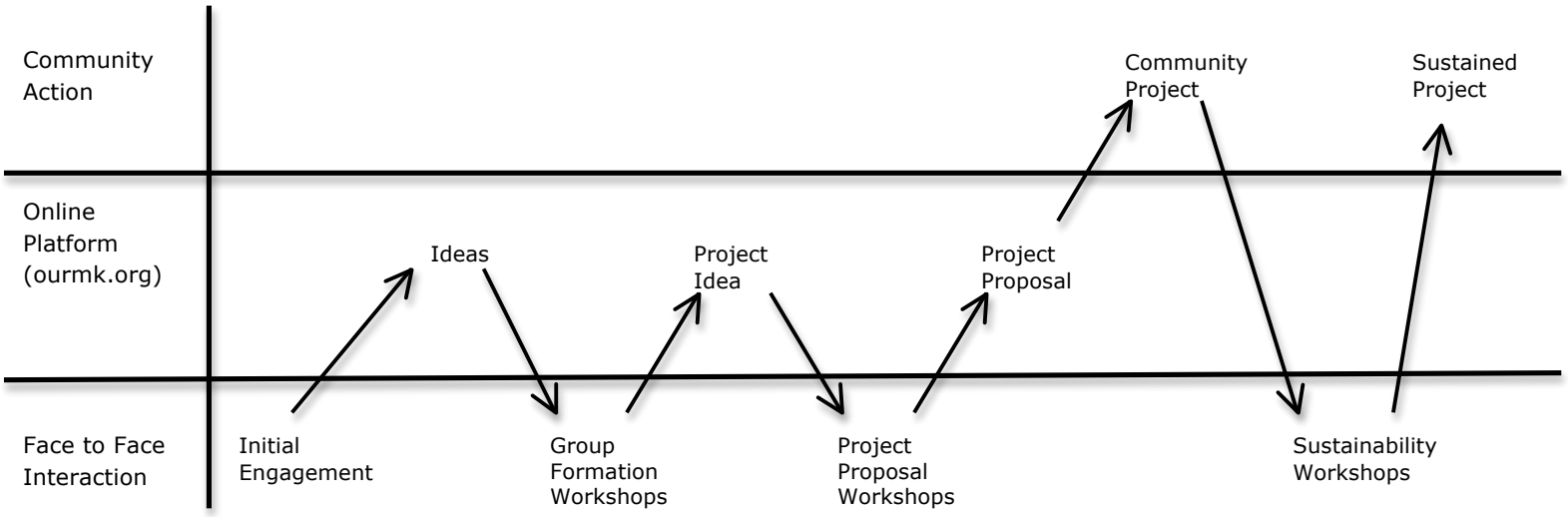

Figure 2. The MK:Smart citizen-led project process

Over the next three sections we discuss the details of each stage of our process and why it is of use to the Smart City project as a whole.

Fostering the Generation of Ideas

Milton Keynes, similar to most other cities, has a pre-existing volunteer infrastructure – with around 250,000 citizens in MK there are 1,100 volunteer community groups with 68,000 volunteers. Additionally there are 324 volunteer community engagement workers and 58 Police Community Support Officers. Rather than attempting to create our own network of volunteers to generate ideas, we wanted to tap into this pre-existing set of engaged citizens.

One of the MK:Smart partners – Community Action:MK (CA:MK) – is an organization whose purpose is to foster the voluntary and community sector in Milton Keynes. CA:MK employ 10 Community Mobilisers who support people to have a voice in their community. The Community Mobiliser approach is based upon the premise that residents are the experts about what they need and want and should be supported to play an active role in decision-making. Mobilisers visit key areas within Milton Keynes that are identified by the council as being most in need of community support and engage with citizens through a range of one to one conversations, group discussion or hosting stands as part of community events. Mobilisers have expertise in engaging citizens and eliciting their issues and concerns, which are recorded, actioned and followed-up.

One of the first tasks completed by the MK:Smart project was the development of the Community Engagement app, which Community Mobilisers now use for recording their conversations with citizens. Through the App, mobilisers collect information on issues, concerns, opinions, feedback, complaints, suggestions and ideas about local communities. The Community

Mobilisers process this information and use it to empower people to make changes themselves, taking a 'moan' about a local service and helping citizens to find a resolution. Throughout this process the mobilisers encourage citizens to log-on to our online crowdsourcing platform (ourmk.org) in order to share their issues and ideas.

In addition to the work of the Community Mobilisers, we have also been engaging citizens through targeted workshops and roadshow events. Six workshops were conducted between April and September 2014, attended by a total of 104 Milton Keynes citizens (with 33 citizens attending multiple workshops). All of the attendees had an interest in sustainability but were diverse in terms of their age and background. From these workshops we collected 198 dialogues related to sustainability concerns in Milton Keynes. Subsequent dialogues have been collected as part of on-going roadshows which started in October 2014 and have visited 22 locations so far, with many more planned in the coming months. This process has so far elicited 591 dialogues. These can be loosely categorised according to the main Smart City topic they address. 43.6% of conversations related to transport issues, 34.1% to energy and 22% to water.

The dialogues have been processed (as some contain multiple ideas and many ideas appear in multiple dialogues) into 101 ideas around improving the local community. These range from Segway hire schemes to heated bus shelters, from better lighting on the cycle network to community funded water butts. None of these ideas match initiatives within the MK:Smart project, highlighting how bottom-up processes result in very different ideas to top-down programs.

This process of engagement has highlighted a number of issues related to communicating with citizens around smart city topics and in eliciting ideas for projects. The first problem identified by CA:MK is that the extent of each citizen's background knowledge is variable. Much of the initial communication occurs in a very short time-frame and it is difficult to communicate the idea of Smart Cities in such a way that the interest and commitment of the citizen is maintained.

Additionally citizens tend to focus on the things that they experience day-to-day. Transport was the easiest topic to engage people on as all citizens have experience of different types of transport. Engaging citizens on energy and water use is more challenging as the priority for many was on the cost to the consumer - people largely reduce their use because it saves them money rather than because of the environmental impact. This was particularly the case with water-usage as many citizens view water as an infinite resource and as it is cheaper than energy many people struggled to think of ways to improve the use of this.

The main benefit of this stage of the MK:Smart citizen-led project process is the generation of ideas which will directly benefit local communities. Once the online platform (ourmk.org) is live, the 101 generated ideas will be added and CA:MK will continue to engage with the community to encourage citizens to submit ideas about how to improve their local community and to comment/vote on the ideas of the others.

Turning Ideas into Projects

Ideas alone are interesting but where we deviate from previous crowdsourcing approaches (e.g. [9]) is that these ideas can be refined into viable projects that

have both a strong plan of action and a team of volunteers to carry them out.

There are two main barriers in turning ideas into action; creating a group around a specific topic and then helping those groups to take an idea and turn it into action.

Having submitted an idea on the ourmk.org platform, we will run a series of workshops intended to facilitate the forming of groups around specific ideas. These workshops will mainly involve citizens who have expressed an interest in the idea on the ourmk.org although CA:MK will advertise them to the community as a whole. The result will be the posting of a "project" on ourmk.org which is an idea coupled with a project team and a plan of action.

Posting the project ideas back onto the online platform allows other members of the community, beyond participants at the workshops, to comment on and improve the concept. Progressing these citizen projects further takes both funding and support. As such, the MK:Smart project has set aside a budget of both time and money to help community groups set-up and run their projects. This will help validate our approach to citizen crowdsourcing through to project realization. In doing so, we hope to develop an understanding of how community projects might be funded in the future, beyond MK:Smart.

Project authors will be encouraged to write a project proposal, explaining what they plan to do, how they would spend the grant money and what support they require from the multiple stakeholders in the MK:Smart project. A further set of workshops will help citizens in constructing these proposals which will also involve participants from other MK:Smart project partners[4]. Around 5-10 citizen projects will be funded.

We anticipate that our bottom-up approach to innovation will result in a series of projects that will affect change on local communities. We also hope that the openness of the project to citizen ideas should help people feel like the MK:Smart project is about them and their local community, creating a sense of ownership over the top-down initiatives from the wider MK:Smart project.

Making Projects Sustainable

Our last barrier to long-term change is making the citizen-led projects sustainable once the MK:Smart project has ended. The aim is to use our contacts with the business community and CA:MK's experience of creating charities, co-operatives and community enterprises to ensure that any project which has had a positive impact can continue to benefit the local community.

Research Goals

Our first research goal is to examine whether a crowdsourcing platform such as ourmk.org is helpful in generating ideas that are of use to a Smart City project. While our approach extends the use of crowdsourcing to go beyond ideas to projects and actions, it is also limited – taking an approach based on workshops is simply not scalable. However, based on our experiences, we hope to generate insights as to how similar approaches could be developed in a more scalable fashion.

[4] http://www.mksmart.org/organisations/

The second research question revolves around what it means for an idea to be "valid". Schuurman et al., [9], evaluated each of their crowd-sourced idea on three scales by four experts. These seven point scales measured the extent to which an idea was perceived as innovative, as having a benefit for the users and as being feasible within a city context. What this assessment fails to establish is how many people would commit to joining a project based on that idea. Innovation is not the sole preserve of "experts" (who are likely to know less about a local community than the people who live there). In the same way that we need to ensure that innovation is both bottom-up and top-down, perhaps we need to ensure that validation comes not only from top-down expert assessment, but also bottom-up from the local community.

By the time of the workshop we will have initial findings on how successful the crowdsourcing platform is in gathering ideas and facilitating projects. Additionally, some of the citizen projects will have started and we can report on how well they are creating impact in their local communities.

Acknowledgements

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