Smart Cities and Community-led Data Management

Are ‘smart city’ approaches appropriate to the challenges of urban resilience and liveability? Lessons from pilot experiences in Medellin, Colombia

Project Summary
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Introduction

In different cities around the world, smart city initiatives have been promoted with a tendency to be top-down, technocentric, expensive and promoted by large technology-based companies. This type of initiative has been applied in the Global North and South in a similar way, losing sight of the particularities of each context, such as the accelerated and unplanned growth that is evident in Latin American cities, ranging from large megalopolis such as São Paulo to medium-sized cities such as Medellín. Structural issues such as poverty and inequality are seen as problems that could perhaps be solved with the adoption of a smart city approach. However, this approach risks widening inequality, due to differences between socioeconomic groups in access to technology, as well as in the generation and management of data.

The idealised discourse and the concept of "smart city" must be analysed in depth, and its real impacts on vulnerable and marginalized populations assessed. This project explored these issues focusing on a case study of Medellín, Colombia, a city that has had international recognition for its social innovations and was the subject of a study by the Inter-American Development Bank (IDB) and the Korean Institute of Research for Human Settlements (KRIHS) as a smart city.

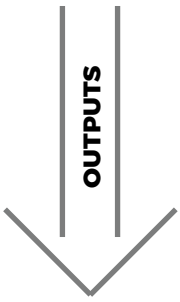
This brief document summarizes the findings from a review of international and national (Colombian) literature, interviews conducted with key stakeholders in Medellín and a workshop held at the Universidad Nacional de Colombia Sede Medellin in May 2019, which brought together local and international academics, local government representatives and citizen-centred initiatives. This exploratory project opened up and defined a new research agenda in which citizen participation, community-led data management and its articulation with academic and government institutions are the main research themes.

Methodology

Focusing on the city of Medellín as a case study, this study explored the scope for the use of complementary top-down and bottom-up data generation and management as a basis for joint decision-making in urban management. It analysed four issues: 1) smart city concepts and narratives; 2) data generation, use and management and access to information technologies; 3) co-creation and citizen participation methodologies; and 4) impacts of identified citizen-focused initiatives. The key methodological steps to explore these issues were:

1. Review of international, national (Colombian) and local (Medellín) literature;
2. Field work: twelve semi structured interviews with key local actors and stakeholders (government agencies, community organisations, NGOs and academics);
3. International workshop on smart cities and community data in Medellín.

CONTEXT	FIELD WORK	
International literature review Latin America and Colombian context literature review	Semi-structured interviews	International workshop on Smart Cities and Community Data



ACADEMIC PAPER

RESEARCH PROPOSALS

CREATION OF INTERNATIONAL RESEARCH NETWORK

Results

The issues of urban sprawl, the emerging problems of accelerated growth, and the concentration of more than 55% of the world population and 85% of economic activity (as measured by GDP) in urban areas, highlight the complexity of urban management (and of understanding it through research), especially with technology being a tool that progressively and almost "naturally" is incorporated into the logic of urban efficiency. New urban development approaches and 'models' are developed which supposedly respond to urban management problems through the application of new technologies. This is accompanied by the establishment of rankings based on implementation indicators (for example, number of sensors, cameras, smart traffic lights, etc.), which indirectly increases competition between cities and drives the consumption of further urban technologies.

There is no single universally accepted definition for the concept of smart city. According to Matus and Ramirez (2016), the definition depends on the perspective from which it is analysed (economic, technological, social or general). However, the first approaches were developed by technology-based companies and international organisations that promote corporatist development models. Subsequently, these approaches have become intertwined with the perspectives of agencies within and linked to local government, which are increasingly seeing these as framework solutions to urban problems. Key approaches to the definition of smart cities that are relevant to the focus of our research include that taken by the International Telecommunication Union (ITU) (2015), which articulates the smart city with sustainability, using ICT and other means to improve the quality of life, efficiency in urban services and competitiveness; and Bouskela et al's (2016) notion that a smart city city promotes integrated and sustainable development, and becomes more innovative, competitive, attractive and resilient, with citizens and ICT tools at the centre.

From an academic point of view, the urban studies literature has analysed how smart city concepts have developed and been applied. Although there are no definitive conclusions, it is clear that in a large part of the approaches implemented in different cities around the world ranging from Singapore, Amsterdam and Barcelona to Rio de Janeiro, technology is at the centre of urban solutions or improvements, only in some cases being used to enable citizen co-creation platforms where data is a fundamental intermediate product. In other words, the smart city has focused on tangible assets (for example, transport infrastructure, energy distribution networks, etc.), leaving intangible assets aside (for example, human capital) (Neirotti, De Marco, Corinna, Mangano, and Scorrano, 2014). Another view reflected in the literature is that the smart city is simply a label that is used in city marketing and internationalisation drives.

In the interviews carried out in the city of Medellín, we found a lack of consensus among the interviewees on the concept of smart cities, and that their approaches depended on the type of stakeholder. For instance, government institutions linked to the

municipality saw the concept of the smart city in the light of economic development and quality of life improvement. The interviewed academics focused on the citizen, their role and their real needs. From this citizen-centred view, concepts such as smart territories or the digital capital of the communities emerged, which stem from a diagnosis of the conditions of the territories and how technology is slowly being incorporated into daily life.

On the other hand, the management of open data as a central element for the generation of new values and urban innovation, has been a technocratic process that has required a process of organisational and cultural transformation, which in the particular case of Medellín is proving difficult and slow. However, it also requires a deep ethical debate relating to access to private information and data security on behalf of government and other public or private entities. In contrast, when data generation and management systems emerge consciously from processes that are socially- and community-based and are managed and understood by, and at the service of the citizen, the results may be different, as highlighted in some processes established by the Early Warning System of the Valley of Aburrá (SIATA) and the Public Library System of the city of Medellín.

This process of organisational and cultural transformation, as well as its articulation with the real needs of citizens and communities is not yet widely evident. In fact, in the narrative of some interviewees, it seems that the smart city was perceived as being relevant only to the formal areas of the city, those that have been planned and developed within existing legal frameworks. In this type of criticism from the academic sector and citizen groups, the role of the citizens and their level of participation is also emphasized, with citizens being seen as potential co-creator of solutions rather than political subjects.

In summary, in Medellín the "smart city" label has permeated part of the organisational structure of the municipal administration as part of the internationalisation discourse of the city, but also its realisation requires transformations towards a culture that is based on new digital economies. However, as a strategy that contributes to the improvement of the quality of life, at the moment it has not properly reached the more vulnerable and marginalised populations.

International Workshop

The international workshop on smart cities and community data management held on 29th and 30th May 2019 aimed to gather different points of view regarding the understanding of the "smart city" in the Latin American context, giving special emphasis to its relevance to low-income communities. This workshop was a one and a half day event, held at the National University of Colombia in Medellín.

The event had two parts: (1) a full day dedicated to presentations from a range of invited speakers presenting academic, institutional and community perspectives on smart city approaches and their relevance to low-income communities in Colombia and Latin America – which was open to students and staff at the Faculty of Architecture, other departments of the Universidad Nacional de Colombia Sede Medellín as well as other stakeholders in the city; and (2) an additional half day working meeting for the invited speakers and the research team where the research team presented initial points for reflection arising from the literature review and the interviews conducted in Medellín, and opened a discussion for ways forward to jointly develop a research agenda. A key aim of the event was to establish the basis to generate new joint research proposals on this subject.

This meeting confirmed the following questions as drivers for a research agenda towards more community-driven data management:

1. Are smart urban planning approaches focused on technology and run by municipalities aimed at addressing the key problems (such as resilience and quality of life) faced by citizens in poor, peripheral and vulnerable urban communities? If so, in what ways and to what extent are they successful? How are these groups and spaces framed in the narratives and practices of smart cities?

2. If this is not the case, why not? Is this by design, or because of how smart urban planning frames urban management issues (and certain population groups) in general? What does this tell us about the smart city initiatives currently being implemented (globally and specifically in Latin America)? In other words, are smart city approaches essentially elitist and business driven, and unable to anticipate the needs of peripheral groups and spaces? Or can they be adjusted to better address local needs, as well as the broad range of capabilities among the different stakeholders?

3. On the contrary, how effective are community urban management approaches in addressing essential issues, such as vulnerability and socio-spatial and environmental resilience, or quality of life? If community-based approaches seem more effective in terms of their results, what contributes to this greater effectiveness?

4. Is there any potential for complementarity and mutual learning between top-down and community-based smart city approaches? Can we imagine developing hybrid models of smart urban planning that facilitate a dialogue between different levels of urban governance and participation?

ACADEMIC PERSPECTIVES	INSTITUTIONAL PERSPECTIVES	COMMUNITY PERSPECTIVES
Prof. Rob Kitchin Smart cities, citizenship, and social justice and ethics' Social Sciences Institute – Maynooth University, Irlanda	José Antonio Pinzón 'Modern Cities Index: Holistic approach to the definition of Smart City' Deputy Director of Housing and Urban Development, Housing and Urban Development Directorate of the National Planning Department (DNP), Bogotá, Colombia	Daniela Garcés 'ICTs and inclusive cities: the experience of the Diverciudades project in Ecuador' Kirú Foundation, Ecuador
Dr. Paolo Cardullo 'The smart city in common: towards a public internet infrastructure' Social Sciences Institute – Maynooth University, Irlanda		Natalia da Silveira Arruda 'Methodology for collaborative mapping of slums using Openstreetmap' Universidad de Antioquia, Colombia Merlys Valdez Empowering territory Commnity leader -Cartagena de Indias, Colombia
Prof. Fabián Beethoven Zuleta Smart city research lab network Escuela del Hábitat – Universidad Nacional de Colombia Sede Medellín, Colombia		Lina Mejía Community perspective on smart cities from the concepts of 'Buen Vivir' and 'Buen Conocer' Corporación Platohedro, Colombia

CIUDADES INTELIGENTES
y Gestión de Datos Comunitarios

Fecha:
29 de mayo de 2019

Lugar:
Auditorio Samuel Melguizo (24-307)

Hora:
8:00 a.m. a 1:00 p.m.

Entrada libre

PROGRAMACIÓN

8:10-8:20 Bienvenida – Facultad de Arquitectura, Universidad Nacional de Colombia

8:20-8:30 Breve introducción al proyecto de investigación sobre ciudades inteligentes y datos comunitarios (Heriot-Watt University, Reino Unido) y resumen del evento

PERSPECTIVAS ACADÉMICAS

8:30-9:15 Profesor Rob Kitchin – "Ciudades inteligentes, ciudadanía, justicia social y ética" & Dr. Paolo Cardullo – "La ciudad inteligente en común: por una infraestructura pública de internet" / Social Sciences Institute – Maynooth University, Irlanda

9:15-9:45 Profesor Fabián Beethoven Zuleta - Desafíos institucionales en la transición tecnológica. La brecha de la cultura tecnoburocráticay la transducción digital en la acción pública / Escuela del Hábitat U.N. Sede Medellín

PERSPECTIVAS INSTITUCIONALES

10:00-10:30 José Antonio Pinzón – "Índice de Ciudades Modernas: Aproximación holística para la definición de Ciudad Inteligente" / Subdirector de Vivienda y Desarrollo Urbano / Dirección de Vivienda y Desarrollo Urbano – Departamento Nacional de Planeación (DNP)

10:30-11:00 Carlos Rozo – "Hacia un modelo aplicado de Ciudades y Territorios inteligentes" / Director de Gobierno Digital, Ministerio de Tecnologías de la Información y las Comunicaciones de Colombia (MinTIC)

PERSPECTIVAS COMUNITARIAS

11:00-11:30 Daniela Garcés – "Cartografía social, mapeo colaborativo, tecnología y la promoción de datos abiertos" / Fundación Kirú, Ecuador

11:30-12:00 Natalia da Silveira Arruda – "Metodología para el mapeo colaborativo de asentamientos precarios usando Openstreetmap" / Universidad de Antioquia

12:00-12:30 Lina Mejía - "Perspectiva comunitaria sobre ciudades inteligentes desde el Buen Vivir y el Buen Conocer"Corporación Platohedro

12:30-1:00 Conclusiones, aportes y cierre del evento

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Neirotti, P., De Marco, A., Cagliano, A.C., Mangano, G. & Scorrano, F. (2014). Current trends in Smart City initiatives: Some stylised facts. Cities. 38. 25–36. DOI: 10.1016/j.cities.2013.12.010.

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Finally, we wish to acknowledge the intellectual input to the project from our former colleague Dr Fionn Mackillop.