

# SMARTNESS FOR PROSPERITY: UK AND BRAZIL



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Research Topic – Smart Infrastructure

Report commissioned by Future Cities Catapult and MACI Innovations Limited

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# EXECUTIVE SUMMARY

This report has been commissioned by the Future Cities Catapult as a collaborative undertaking with MACI Innovations to research the topic of Smart Infrastructure in nominated Cities in both the UK and Brazil.

Future Cities Catapult is a global centre of excellence for urban innovation and as part of this Collaborative Approach Research & Development work is being delivered to support the UK government Prosperity Fund.

The smart city landscape is broad and complex in nature. And even though there's an unmistakable need to make urban environments smarter and more liveable, the great majority of cities have to deal with a history of 'siloe'd' approaches, blocking a more integrated and holistic way of approaching urban challenges.

The study commences an explanation and demonstration of the approach taken on how to structure the study and case studies themselves and proceeds to an in-depth review on how both the UK and Brazilian cities such as Bristol, Manchester, Newcastle, Leeds, Belfast, Sao Paulo, Brasilia and Belo Horizonte have been addressing the smart city theme, by looking into the way they approached the challenge locally.

This research is supported by expert contrast accounts and targeted interviews with key stakeholders in the smart cities arena, to gather insights on methodologies, current practices, and the impact of these approaches in the urban environment.

The final section of the policy explores a fresh new concept of how UK approaches can be applied to Brazilian Cities and develops a methodology for approaching change.

Successful smart city change programmes must first look to the nature of the recipient city or urban environment to understand the need, issues and opportunities. These are often found in the very essence of the place; its urban culture, nation tradition, heritage, and political landscape as well as any economic drivers/ aspirations, technological capabilities and the dynamics of society itself.

The emphasis on smart cities and technology must be firmly set in the context of the "place". With this in mind, very rarely will single solutions be found and or developed that can deliver effective change that is applicable to all environments nationally or regionally and therefore a city approach must be adopted.

Smartness must first start with the city not the "smart" and the key objective of smartness must be to foster prosperity. Throughout this policy document these concepts have been critically assessed and developed from first principles into models that define the nature of the thinking and structuring of a successful approach.

The core principles are based on viewing these concepts as "sustainable economic hardware" and "sustainable social software" as often opposing yet critically linked drivers.

The defining output of combining these core principles is that "smartness and prosperity" should be the desired outcome of developing and implementing smart infrastructure strategies not only in Brazil, but here in the UK.



# INTRODUCTION

This policy report aims to show the uniqueness behind the so-called 'smart' strategy in five British and three Brazilian cities primarily. Albeit it should be argued that care should be taken when going beyond the standard understanding and conceptualisation of 'smartness,' from the beginning is underlined the added value in unpacking how urban transformations should be analysed by adding a particular significance to 'the place'. Shall we contrast and compare Brazilian and British cities regarding the way their smart city strategies are implemented without considering any other inner factor? Likewise, does urban smartness only mean to achieve the most efficient technical system? Are we just referring to the way technology is designed in eight cities, or by contrast, are we interested in examining the interface between the hardware and the software of the intertwined urban life?

As such, smartness in cities cannot be designed in this day and age without considering prosperity, well-being and universal access for their citizens. In this regard, in an article published in *The Economist*, Benjamin Barber stated: 'Above all, we need Smart Mayors and Smart Citizens, not Smart Cities'. In this same direction, in the last five years (see the graph of Evolution of the 'Smart City' term), there is a significant consensus among academics about two main ideas that are unpacking the understanding of the mainstream 'smart city':

1. 'Smart City' has already become a 'fetish' term to simplify complex urban debates in an uneven, technodeterministically-driven society.
2. However, insofar as some transitions could be identified in the real urban arena, some could argue that the 'smart city' exists (or is already happening around us), but not in the way we anticipated.

## • Smartness in Brazilian and British Cities?

Thus, how will this report address such a challenge in capturing the smartness in incredibly diverse geographic global contexts? It should be pointed out that the prestigious *Nature* journal of science dedicates a section advocating that 'amid the scientific and social priorities for the coming years, the study and design of cities must be right at the top'. And, in particular, urban health and well-being are the drivers of the urban transformations. So then, any comparative study about smartness in urban context should deliberately begin with the composition and indicators of prosperity in the particular contexts. In this rationale, the report presents some data collected by the OECD.

In summary, smartness approaches for spurring urban transformation have been differentiated from each other by the interaction, interdependencies and power relations between stakeholders (See WEF 2016: 50). In this present report, there is an attempt to show for each case the smart governance composition by mapping stakeholders (Section 5). This unique form is due to the 'essence of the place', understood as an inner explanation of what the place branding (Cleave et al. 2016) produces in the real symbolic and material interactions in cities (Section 4).

However, as it is shown in the report, Brazilian city cases (Belo Horizonte, Brasilia and Sao Paulo) and British city cases (Newcastle, Manchester, Leeds, Belfast and Bristol) share the same kind of principle even if they follow different urban patterns. Rather than constructed on tabula rasa according to the centralised plans of multinational technology corporations, smart city interventions are always the outcomes of, and awkwardly integrated into, existing social and spatial constellations of urban governance and the built environment and infrastructure. (Shelton et al. 2015: 14)

## • A comparative overview from the prosperity perspective

Despite the fact that the European H2020 has contributed to focus the attention on three sectors, mobility/transport, energy and ICTs (Section 2), very little has been analysed on the smartness and prosperity interactive loop so far (Section 6).

In fact, some of the current smart city implementations require an in-depth policy contextualisation to avoid the roots and the dramatic consequences of the 2008 financial crisis (Calzada 2013). In this sense, prosperity represents the necessary counterpart of the some apologetic and hegemonic concept of smart cities that has been rapidly prominent within the policy and governance agendas of urban development and is on its way to becoming the leading driver of urban sustainability and regeneration initiatives.

Nevertheless, the closer analyses of prosperity indicators depict entirely rather a different picture in Brazilian and British cities. As such, we should ask ourselves whether or not the cities this report covers, present themselves among their citizens this paradox: This is the story about us being persuaded to spend money we do not have, on things we do not need, to create impressions that will not last, on people we do not care about'.

Is the smart implementation in the presented cities, aware of this paradox? And, lately, are infrastructures in these cities designed to overcome such a socially (software) and economically (hardware) unsustainable gap? (Final Remarks: Smart Infrastructure section).

## • Human-scale smart infrastructure and urbanism

To sum up, this report makes an effort to give a step back into the 'essence' of the 'place' as Jane Jacobs' brilliantly described as urban settlements embedded in human-scale infrastructures. These days, though, there is a risk of a smart city model that potentially delimits urban citizenship to a series of actions focused on monitoring and managing data recasting who or what counts as a citizen. And as we are going to see in this report, regardless of whether it is British or Brazilian cities, the challenge for us remains the same: We have to be willing and able to get in, roll up our sleeves and discover how new applications and technologies can be used to improve the quality of urban life genuinely. Otherwise, we can't complain we were locked out of this moment. (Glasmeier & Christopherson 2015: 11).



# CASE STUDY CONTEXT

These case studies look to examine the best practice, successes and challenges across targeted UK Cities today, with a view to assessing their suitability and transferability to the context of comparative Brazilian cities, not in population size.

The case study research exercise also examined three targeted Brazilian Cities.

# BRITISH & BRAZILIAN CITIES

Newcastle

Manchester

Leeds

Bristol

Belfast

Sau Paulo

Brasilia

Belo Horizonte