

Title: Smart Cities: Facts, Fictions and Strategic Choices

Antony Peloso, Ph.D.
Corporate Faculty
Graduate School of Business
Queensland University of Technology,
Brisbane QLD 4005
Australia
Antony Peloso a.peloso@qut.edu.au

Brook Dixon, Executive Director
DelosDelta
1/11 McKay Gardens
Canberra ACT 2612
Australia.
Brook Dixon brookdixon@delosdelta.com

Joshua Elston, Associate.
DelosDelta
1/11 McKay Gardens
Canberra ACT 2612
Australia.

Abstract

The purpose of this paper is to investigate evolving practices within the ‘smart city-smart citizen’ context. Depth interviews with smart city strategists, policy makers and city managers yielded insights into the current state of the smart city movement, as well as a potential ‘ideal’ state of smart city practices. Our findings suggest that despite significant focus on building the theory and practice of smart city enablement, many cities, despite good will and intention, struggle to foster the mandates and resources to effectively change and execute on the smart city promise. However, there are suggestions that a new language and also a way of conversing is emerging that may represent new options and possibilities to enable success.

Society and Smart City Thinking

“We seem divided between an urge to override our senses and numb ourselves to our settings and a contradictory impulse to acknowledge the extent to which our identities are indelibly connected to, and will shift with, our locations”. Alain de Botton, (2008). *The architecture of happiness*.

Whilst the engaging writer and philosopher de Botton refers more generally to architecture in his musings (De Botton, 2008), the insights remind us that whilst the language and imagery of ‘smart city’ infers a veneer of technology and tangibility, the notion of a smart city is constructed by people, with people and for people. As such, we must acknowledge the complexity, variability and contradictions that the human condition conveys.

Societies as a researchable construct have long held fascination for philosophers, leaders, city planners and the members of such societies (Venkataraman, 2020). Such research endeavours explore and extol shared values, wise practices and good governance guiding wise decisions. It is posited that these societies have populations that focus on and consciously advance their collective futures (Desouza et al., 2020).

The spirit of the current research is to advance the notion of a locality that enhances the lives of its citizens, visitors and stakeholders, within the evolving construct of ‘smart’, as it relates to the city itself, and those stakeholders it encapsulates, especially its citizens.

The current study

Previous research has explored the notion of smart cities and smart citizens as evolving and related concepts and constructs (Bisani & Choi, 2016; Cardullo & Kitchin, 2018a; Kummitha & Crutzen, 2019). Building on this research and other research, we conduct a comprehensive review of recent literature related to the meaning and application of smart city thinking and initiatives. The current study explores these concepts with a semi-structured interview schedule involving smart city protagonists at local and state government levels in the Australian context.

We test a set of strategic considerations that relate to policy makers, marketers, citizens and key stakeholders who are focused on tangible outcomes in the context of building, resourcing and aiming for sustainable and valuable smart city initiatives. Previous work informs the set of propositions that we test in this research (Barba-Sánchez et al., 2019; Dixon, 2018; Johnson et al., 2020; Manchester & Cope, 2019; Melo, 2019; Peloso et al., 2021).

We investigate perceptions of these protagonists to ascertain current and future state perceptions of the drivers of smart city interventions and smart city ‘thinking’ and culture in the Australian context, the perceived role and participation parameters and constraints of citizens, the viability and utility of smart city ‘branding’, and the role, nature and purpose of marketing endeavours in the smart city space, with a specific focus on citizens, vendors and other stakeholders in the smart city space.

The current state of smart city thinking

Despite evidence that theory and practice have evolved and matured since early work, especially that led by the Brookhaven National Laboratory in the US (Bowerman et al.,

2000), the somewhat chaotic and unruly nature of execution continues, even as the concepts and strategies of the smart city movement have become mainstream.

We define both acknowledged and aspiring smart cities as urban environments that consciously seek through various means to embrace technology to enable service solutions and encourage its citizens to recognise and enable actions in relation to the development of mechanisms and systems so that such technology and citizen and stakeholder engagement ideally realise consequent benefits (Bisani & Choi, 2016; Cardullo & Kitchin, 2018a; Desouza et al., 2020).

Our review suggests that theoreticians and practitioners in the smart city space ponder, among other factors, four specific strategic considerations. A fundamental question addresses the evolving sense of ‘what is a smart city’. We explore and identify the purpose, the ‘why’ of its smart city journey. We note that success stories in the smart city space tend to focus on three distinct elements of execution: enabling, disrupting and unknowns (Bisani & Choi, 2016; Johnson et al., 2020; Kummitha & Crutzen, 2019).

Enabling purposes centre around using technology and smart city thinking to enact existing services and city functions in a more convenient and efficient manner. This includes city functions such as payments, inquires and digitisation of development and tax collection processes such as development approvals and record management. Disruption purposes focus on technology-based solutions for efficient energy waste and energy management, movement and logistics management and citizen participation that were not previously or feasibly possible.

The possibilities of unknowns for users can result in unexpected and previously unimagined solutions to create value for those users and more broadly the community.

A second strategic factor addresses the role of citizens within an identified urban setting. A citizen-centric continuum might range from ‘citizens as service recipients’ to ‘citizens as participants in the problem-solution process (Barba-Sánchez et al., 2019; Johnson et al., 2020).

A third strategic factor involves the explicit and implicit branding and positioning of a city and its citizens as ‘smart’, and to what degree of ‘smartness’ (Cardullo & Kitchin, 2018a, 2018b). Smart city endeavours that are ill conceived can foster perceptions of hype and lack of substance with limited public value as the outcomes (Dixon, 2018).

A final strategic factor, related to the branding and positioning of a city as ‘smart’, encompasses the conscious marketing of the city and benefits and rationale that may accrue as a result of such conscious marketing. Entwined with this factor is the nature of the citizen participation ‘scaffold’ and the citizen interaction models (Bisani & Choi, 2016; Cardullo & Kitchin, 2018a, 2018b; Manchester & Cope, 2019).

Methodology

Using government reports, industry analyses, other published sources and recommendations from noted smart city protagonists we identified specific categories of knowledge repositories which we believed would provide suitable insights for our research. We attempted to invite a suite of potential respondents to balance city size, regional versus major city locations, smart

city professions versus city managers, and also input from state and local smart city policy professionals.

Six respondents were selected from our search, all of whom participated in the depth interview process. Table 1 provides a brief overview of the respondents, with care taken to ensure that no interviewee would be identifiable in the reporting that relates to this conference submission.

Table 1: Overview of Respondents’ Role and Expertise.

Subject A	Smart city officer at a large Australian city, specialising in communications and engagement
Subject B	Smart city policy director at a medium sized Australian city, an expert strategic business-technology leadership
Subject C	General Manager at a large Australian City, portfolio includes innovation, smart cities and economic development
Subject D	Service Manager at a small Australian City, portfolio includes business and innovation
Subject E	Executive Director in a state government department concerned with planning, the environment and industry, transport and infrastructure policy
Subject F	General Manager at a medium sized Australian city, portfolio includes planning and regulatory services

We developed an interview protocol based on subsets of the four strategic factors identified previously in this paper: the ‘why’ of the respondent’s identified smart city within enabling, disrupting and unknowns; the role of the citizen as recipients or participants within the system; the nature of branding of the city balancing smart city versus smart citizens; and the efforts and impacts of implicit or explicit marketing strategies.

Each interviewee was provided with an overview of the purpose of the research and also an overview of the four strategic factors to be explored. The interviews lasted 45 minutes each and were each conducted by two of the researchers on our team. Each interview followed the same protocol.

We scribed the interviewees’ responses, shared and compared notes following each meeting, and highlighted insights from the collated notes, under the themes of the four factors we identified previously in this paper. A third researcher who did not participate in the interviews reviewed our insights in the context of our provided notes as a control.

Findings and Discussion

The paper reports key insights from each of the four factors.

The vision of smart cities that emerged over a decade ago is slowly coming into fruition around the globe. Some researchers trace some of the enduring themes and practices within smart city concepts and discussions to the mid-1990s collaborative research initiative led by the US-based Brookhaven National Laboratory (Bowerman et al., 2000).

Regardless, the desire to create smart cities is not a new one and communities by their nature tend to adopt and enhance the technology of the day to protect themselves and better the lives of their inhabitants almost by instinct (Peloso et al, 2020). Theory and practice of smart cities and smart citizenry continues to mature, albeit with at times complex and confusing discourse. Importantly, the concepts and strategies of the smart city movement are enduring and somewhat mainstream.

To this end with this research, we contribute to additional nature of the current state of the 'smart city, smart citizen' discourse, and to future strategic thinking and tactical execution options. Based on a series of depth interviews with policy advisors, city managers, and smart city protagonists, we have explored current and future state initiatives. These interviews align with a comprehensive literature review in the domains of public policy, smart city development, citizen and consumer centricity, and the psychology of engagement.

Of particular interest to us in our research, is the notion that inherently, the process of developing a smart city is not just technical but strategic and political (Meijer, 2018). At this stage, however, it is unclear what forces influence the various strategic decision cities make and how this influences their policy agenda (Clement & Crutzen, 2021).

It appears that in an ad hoc fashion, each country is developing towards its own vision of cities intertwined with technology (Matta et al., 2020). Our research focuses on the current and future state of the smart city movement in Australia, a country which has had a significant impact and successes in the smart city development trajectory.

Clearly, governments have a central role in the development of legitimacy for smart cities and the rules and decision (Meijer, 2018). Our research aims to explore how local governments market their smart city agenda and how this interacts with the following strategic decisions.

The first is the 'why' behind smart cities: what do policy makers consider as the drive behind the adoption of smart cities.

Next, what is the scope of smart cities. Are cities focused on enabling better services and service provision alone, are they intent on enabling disruption and creation, or is there an alternate model or nexus in terms of scope.

Lastly, what is the role of the citizen in a smart city: are and should smart cities be technology-centred, citizen-centred, or both?

Intertwined with these questions is the imperative of gaining public and financial support, within the frame of legitimacy, resources and public value (Moore, 2013). To do so cities must market themselves to the public, officials, investors and disparate stakeholders. An important question that has emerged in this research and in the literature is the nature and value of specific 'smart' branding elements. Should a city be explicitly branded as a smart city or is the 'smart' implicit in the services models and overall branding and positioning?

Does ‘smart’ mean digitally enabled, convenient or are there other aspects and features of ‘smart’ that are salient to the complex set of stakeholders in a smart city landscape?

Broadly speaking, citizens in a smart city are both consumers and key inputs into smart services and other offerings. When cities design policy and projects the process often pivots around considering citizens as recipients of a service or other offering to be customised for, or as participants in the problem-solution process.

Our hypothesis was that the cities would, explicitly or otherwise, make choices that push them along the decision tree. A smart city driven by technology opportunities would likely focus on enabling greater efficiency through technology focused projects (Kummitha & Crutzen, 2019).

Contrary to expectations, the participants did not engage with the static choices presented. Rather they understood them as progressive or cumulative. For example, enabling was the initial focus of many of the smart city programs. However, participants flagged that this was a necessary and restricted choice. After developing capability, trust and internal support the focus is expected to shift to disruption and creation. Similarly, participants flagged the importance and overall goal of citizen centricity. However, due to political constraints, projects were often technology focused.

The matrix below captures the nature of this trajectory (Matrix 1). The schema highlights increasing maturity from bottom left to top right. In the bottom left the focus was on smart projects, rather than smart cities. Smart projects are focused on specific and tangible outcomes, rather than the innovative process and technology that enables these and other outcomes. They are driven by a single or small number of technical solutions, rather than created and designed by citizens.

Matrix 1: The Trajectory of Smart City Programs

Citizen Centred				
Technology Centred				
	Traditional	Enabling	Disrupting	Creating

An instructive insight for policy makers is that participants from more mature or successful smart cities programs indicated that past successes enabled marketing of smart cities that was less specific and more focused on future possibilities. Without dedicated resources it is hard to develop and market policy that includes disruption and creation. Additionally, a lack of long-term resourcing can force a smart cities team to prioritise popular projects to increase internal support and push for permeance rather than transfer power to citizens. It has been noted however that platforms that enable citizens to participate with the urban transformation conversation tend to result in greater buy-in from the public, which has been described as a pathway towards more complex engagement and participation (Desouza & Bhagwatwar, 2014; Desouza et al., 2020).

Komninos, et al. (2021) highlight that smart cities are often hampered by compartmentation and a focus on efficiency (Komninos, Kakderi, Collado, et al., 2021; Komninos, Kakderi, Mora, et al., 2021). Our results suggest that without exogenous forces, this may be a necessary first step. There is a tug-of-war between what 'best practice' is for smart cities and what smart city policy makers can 'sell' to citizens, leaders and investors. As Subject E noted, smart places in Australia are about becoming more effective and efficient, but the biggest promise comes from unknowns: "In Australia we've let ourselves down, due to our focus on cost reduction, not doing enough to create an innovation ecosystem".

Discussion

Setting up our hypothesis about the strategic decision factors, contrary to our expectations, the participants did not engage with the static choices presented. Rather they understood them as progressive or cumulative. For example, enabling was the initial focus of many of the smart city programs, but after developing capability, trust and internal support the focus is expected to mature, or has matured in some cases, to encompass disrupting and unknowns. As most participants were still in the early phases, this raises the issues of interpreting their response to how to market smart cities.

The majority highlighted the importance of marketing smart projects, rather than smart cities, and tangible outcomes, rather than the innovative process and technology that make them and other outcomes possible. However, participants from more mature or successful smart cities programs, did indicate that past successes enabled marketing of smart cities that was less specific and more focused on future possibilities.

In terms of effects on practitioners, we believe the insights enable the work of smart city protagonists. They highlight a tug-of-war between where 'best practice' is for a smart city and what smart city policy makers can 'sell' to citizens, leaders and investors. As Simon Hunter pointed out, smart places are about becoming more effective and efficient, but the biggest promise comes from unknowns: in Australia we've let ourselves down, due to our focus on cost reduction, not doing enough to create an innovation ecosystem.

In terms of theoretical and managerial implications, from a marketing perspective the insights of Subject A are instructive. This participant noted that without dedicated resources it is challenging to develop and market policy that includes unknowns. After the respondent's city employed a dedicated communications and engagement professional, indicative of committing more resources to smart cities, the city's marketing and policy developed to have a more citizen centric, perhaps best practice, focus. A lack of long-term resourcing has since forced the team to prioritise popular projects to increase internal support and push for permeance, again highlighting this internal tug-of-war.

Next steps will focus on how to cross this boundary between the focus and marketing of specifics to the promises of unknowns.

Marketing insights and implications

An important emerging theme, from a marketing perspective, is that the development of a smart city persona as a potential branding and positioning strategy, was not supported by the insights from the expert pane of participants. Interviewees suggested that smart cities as a conceptual entity follow a more linear progression. Immature 'smart cities', that are

struggling to establish permanent governance, funding and adequate resourcing, focus on specific ‘enabling’ projects. We found that as cities mature their capability expands to focus on disruption and unknowns. The marketing of smart cities is similarly project specific. Interestingly, it is also outcome specific. Participants stressed advertising tangible outcomes, eschewing the marketing of process, technology and citizen centricity.

The following interviewee observations helped us to reach our proposition regarding this potential emerging theme. All participants highlighted that ‘smart cities’ tended to be a product of timing and context, in response to salient pressures, such as climate change, budget constraints and service demands. These pressures precipitated the use of tech-based tools, processes and solutions, which are often proposed by tech-focused suppliers and infrastructure proponents.

These tools included insights from data, and processes that were aimed at promoting efficiencies. Our supposition is that these ‘project-oriented’ approaches tend to align with and be adopted by cities that have a tactical and immature mindset in relation to ‘smart city’ thinking. As cities mature, respondents suggested that these cities begin to create an ‘innovation ecosystem’. Such an ecosystem then helps to create a shared language that supports a city’s community members who are enabled to ask more and better questions of their government.

At this point, the role of citizen, or from a marketing mindset, customers and co-creators, are engaged in a marketing-oriented relationship with their communities. For some respondents, the citizen role is to ask questions of government, to disrupt old practices and direct government focus to new areas or approaches. To take this role concept further, it is citizens’ responsibility and right to set expectations and then hold government to account.

Interestingly, despite the often-stated goal of engaging with citizens in what marketing might consider a market and customer-oriented relationship, some respondents, particularly those we considered less-mature on the smart city continuum, pushed back against or tended to shy away from the idea of giving citizens ‘control’ and a strong voice in the potential directions and decision-models in the progression to ‘smart’. An emphasis was on developing processes to be more deliberative and to gain input on a small scale, such as designing the implementation of a solution already decided and shaped by a local body.

As marketers, many of us hold the concept of customer centricity as a core tenet. However, in the city space, we note that marketing tends to be based on marketing smart cities to citizens in terms of tangible results to specific problems related to particular projects and initiatives. Of course, the relationship with citizens by city politicians and bureaucrats is not always one that can be directly compared to that of customer-provider. Gaining crucial internal support and political support is not the same as coaxing customers to purchase. Voters and citizens have a very different choice set to buyers of cars and groceries.

Overall, we conclude that ‘marketing’ in the context of smart city branding and relationship-building relates more to trust building and managing perceptions such as privacy concerns and other fears.

Managerial implications and final observations

From a practitioner's perspective, perhaps one of the most interesting insights from the interviews was from Subject C, encouraging smart cities to create a new 'language' as a new way of communicating. The subsequent proposal suggests a government to citizen, citizen to government, government to the world approach.

This is an insightful observation. Digital technology is indeed fundamentally changing the how we talk about, plan, and create our cities and communities.

Big data is the most obvious expression of this linguistic evolution. We can now have more conversations about city challenges, aspirations, and priorities that are based on actual evidence, rather than traditions, anecdotes and fears. Quite literally, we speak a different language when conversations are rooted in data.

Equally, the advent of 'digital democracy' represents a distinct change in how governments and citizens can and perhaps should converse and interact.

Given the emergence of this new language, cities need to give greater attention to how they adapt to this new linguistic environment. To continue the analogy, they need to build proficiency, both within government and externally. Formalised language definitions and conventions are key. City professional should determine who they want to converse with, and when. As in other endeavours, practice is key.

This means, in reality, building bureaucratic and citizen data and digital literacy, constructing holistic smart city communications strategies, designing and embedding digital democracy tools into governance, and modernising city branding.

Revisiting the purpose of our paper, based on the interviews, we conclude that many cities are still struggling with the imperative and opportunity to understand and wield the new language(s) of a smart city. They see the change and the need, but are not sure how to best respond, and/or do not have the mandate and resources to respond.

That is to say, the language of smart cities and citizen-centricity is still more theorised than practiced, at this stage. We are still, in a very real sense, trying to find the right words.

References

- Barba-Sánchez, V., Arias-Antúnez, E., & Orozco-Barbosa, L. (2019). Smart cities as a source for entrepreneurial opportunities: Evidence for Spain. *Technological Forecasting and Social Change*, 148. <https://doi.org/10.1016/j.techfore.2019.119713>
- Bisani, S., & Choi, Y. (2016). Strategic design to foster City-Citizen Interactions. *Strategic Design Research Journal*, 9(3). <https://doi.org/10.4013/sdrj.2016.93.05>
- Bowerman, B., Braverman, J., Taylor, J., Todosow, H., & von Wimmersperg, U. (2000). The vision of a smart city. 2nd International Life Extension Technology Workshop Paris.
- Cardullo, P., & Kitchin, R. (2018a). Being a 'citizen' in the smart city: up and down the scaffold of smart citizen participation in Dublin, Ireland. *GeoJournal*, 84(1), 1-13. <https://doi.org/10.1007/s10708-018-9845-8>
- Cardullo, P., & Kitchin, R. (2018b). Smart urbanism and smart citizenship: The neoliberal logic of 'citizen-focused' smart cities in Europe. *Environment and Planning C: Politics and Space*, 37(5), 813-830. <https://doi.org/10.1177/0263774x18806508>

- Clement, J., & Crutzen, N. (2021). How Local Policy Priorities Set the Smart City Agenda. *Technological Forecasting and Social Change*, 171, 120985.
- De Botton, A. (2008). *The architecture of happiness*. Vintage Series. Knopf Doubleday Publishing Group.
- Desouza, K. C., & Bhagwatwar, A. (2014). Technology-Enabled Participatory Platforms for Civic Engagement: The Case of U.S. Cities. *Journal of Urban Technology*, 21(4), 25-50. <https://doi.org/10.1080/10630732.2014.954898>
- Desouza, K. C., Hunter, M., Jacob, B., & Yigitcanlar, T. (2020). Pathways to the Making of Prosperous Smart Cities: An Exploratory Study on the Best Practice. *Journal of Urban Technology*, 1-30.
- Dixon, B. (2018). *The Smart Meter Revolution: How Australia Fell Behind, and How We Can Get Back On Track*.
- Johnson, P. A., Robinson, P. J., & Philpot, S. (2020). Type, tweet, tap, and pass: How smart city technology is creating a transactional citizen. *Government Information Quarterly*, 37(1). <https://doi.org/10.1016/j.giq.2019.101414>
- Komninos, N., Kakderi, C., Collado, A., Papadaki, I., & Panori, A. (2021). Digital Transformation of City Ecosystems: Platforms Shaping Engagement and Externalities across Vertical Markets. *Journal of Urban Technology*, 28(1-2), 93-114.
- Komninos, N., Kakderi, C., Mora, L., Panori, A., & Sefertzi, E. (2021). Towards High Impact Smart Cities: A Universal Architecture Based on Connected Intelligence Spaces. *Journal of the Knowledge Economy*, 1-29.
- Kummitha, R. K. R., & Crutzen, N. (2019). Smart cities and the citizen-driven internet of things: A qualitative inquiry into an emerging smart city. *Technological Forecasting and Social Change*, 140, 44-53. <https://doi.org/10.1016/j.techfore.2018.12.001>
- Manchester, H., & Cope, G. (2019). Learning to be a smart citizen. *Oxford Review of Education*, 45(2), 224-241. <https://doi.org/10.1080/03054985.2018.1552582>
- Matta, A., Fritz, K., & Kim, B. (2020). *Smart Cities and Inclusive Growth* (OECD Policy Paper: Smart Cities and Inclusive Growth, Issue).
- Meijer, A. (2018). Datapolis: a public governance perspective on “smart cities”. *Perspectives on Public Management and Governance*, 1(3), 195-206.
- Melo, A. D. (2019). City Rankings and the Citizens: Exposing Representational and Participatory Gaps. International Conference on Society with Future: Smart and Liveable Cities,
- Moore, M. H. (2013). *Recognizing public value*. Harvard University Press.
- Peloso, A., Dixon, B., & Elston, J. (2021). ‘Smart’ Does Not Make It So: *The Facts and Fictions of Smart Cities* International Marketing Trends Conference, Venice, Italy.
- Venkataraman, B. (2020). *The Optimist's Telescope: Thinking Ahead in a Reckless Age*. Riverhead Books.