SMARTENING UP: ONGOING CHALLENGES FOR AUSTRALIA'S OUTBACK

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ABSTRACT

As the international community moves inexorably towards a *smart* future, the position of Australia's non-urban areas in that future is less certain. The (re-elected) Australian federal government made a commitment to moving Australian cities forward as part of the international *smart city* movement. However, the effectiveness of this commitment in enabling non-urban areas to attain the same level of *smartness* is unclear. This is particularly so in view of the delayed roll out of the NBN. The research examines the *smart* discourse for Australia's non-urban areas in the context of the federal government's *Smart Cities Plan.* In doing so the research pinpoints a hole in that plan and identifies matters specifically requiring government attention.

KEYWORDS

Digital Divide, Digital Inclusion, NBN, Digital Economy, Smart City

1. INTRODUCTION

The international community is moving steadily towards a *smart* future (Ratti & Claudel, 2016). This is evidenced in the increasing support for the adoption of *smart city* frameworks (Edwards, 2016; Zubizarreta et al., 2016; Bakıer et al., 2013). Governments, policy makers and industry all have jumped on the bandwagon, as seen in the variety of initiatives designed to capture the hearts and minds (and wallets) of those seeking to capitalise on hopes for the future. Importantly, a necessity of any *smart* framework is that, in order for its component digital aspects to work successfully, there must be effective access to the internet. In the digital economy a city or country's *"digital competitiveness"* now depends upon it enabling access to the internet as a utility service (House of Lords, 2015). Within Australia, however, the ability of existing (or proposed) *public* policies to extend a *smart* framework into rural and regional areas is questionable.

Australia's needs must be considered in the context of its ever growing population and where this now is, and in the future will be, located. Expanding communities need appropriate infrastructure to support their residents in the digital economy. As the Australian National Broadband Network ('NBN') will enable residents to be able to telecommute and engage in on line education more effectively, its non-urban population bases will become more significant (Florida, 2006); and yet many of these areas, without the ability to attract commercial investment, have inconsistent internet access (Cradduck, 2015). Concurrently the better level of services within urban areas, which are more easily serviced by commercial interests, will see an expanding number of Australian *smart cities* able to provide better digital engagements for their residents. However, this will result in the widening of the divide between 'digital-haves' and 'have-notes'. In order to stem the growth of this divide, there is a need for a minimum level of access throughout Australia to the essential infrastructure found more commonly in urban settings. Achieving effective internet access is the first step towards *smartness* as well as vital for Australia's social and economic growth (Gregory, 2015).

The paper examines the *smart* discourse in the context of the federal government's *Smart Cities Plan* in order to identify the challenges for *rural* and *regional* Australia. In doing so, it contributes towards beginning to fill the knowledge gap regarding the impacts of this digital divide for Australia. The paper commences by explaining what is meant by *smart* before overviewing the Australian context. It then highlights insights from other jurisdictions before identifying matters for specific consideration by the Australian federal government. The paper then identifies matters requiring specific attention in order to overcome the challenges for Australia's rural and regional areas. It concludes by suggesting a process for public policy development to enable *all* of Australia to work towards their collective *smart* future.

2. EXPLAINING *SMART*

The *smart* discourse has moved beyond mere characterisation (Giffinger et al., 2007), to consider what is necessary for *smart* creation. However, while the *"strategic planning for smart city development"* tends to involve *"largely unexplored and interdisciplinary fields"* (Angelidou, 2014, p.S3), the discourse occurs more commonly only from a discipline specific perspective (i.e. town planning) (Hawkins, 2014), and thus often without reference to all relevant issues (Edwards, 2016; Cocchia, 2014; Cavada et al., 2014). It also has as its focus urban areas rather than non-urban environments.

Although not uniformly defined (Edwards, 2016) a *smart* framework is one that is established by implementing an ICT structure, which enables the population to be engaged *and* which supports the effective delivery of essential services to them (Caragliu et al., 2009). An effective *smart* framework is one that provides a range of financial, environmental, (Cavada et al., 2015) and health (Newman et al., 2014) benefits; as well as addressing complex transportation issues. Core to this is the need for effective access to the internet. The internet enables the integration of the ICT networks needed (Neirotti et al., 2014; Popescu, 2015; Lee et al., 2014); as well as enabling individuals (Cradduck, 2015; Kariyawasm, 2007). Simply, a *smart* framework is one in which your use of technologies and services is integrated in such a manner that both enables and supports your existence. Digitally skilled citizens will be crucial to the ongoing effectiveness of the digital economy (Belanche et al., 2016), however, they can be supported by ICT only if they are enabled to engage with it – for this appropriate access to the internet is required (Cradduck, 2015).

The desire, need and opportunities for seamless integration of ICT and service delivery are growing (Kariyawasm, 2007). A primary driver of ICT implementation is commercial entities, which often seek to capture market share in closed, contractually driven, relationships founded on a perceived ability to gain a financial reward. Various private, as opposed to public, interests have played (and still have) significant roles in the development of existing and emerging *smart* frameworks and their governance (Zubizarreta et al., 2016; Angelidou, 2014; Bakıer et al., 2013; Lombardi et al., 2012; Bouteligier, 2011). In this context the term *smart city* also is used as a *"branding and marketing concept",* although this is done more often without consideration of the need to ensure the actual interoperability of individuals with the technology available for their use (Vestergaard et al., 2016, p.39). In response, commentators and scholars are becoming increasingly critical of industry-lead visions as to what *smart* should be (Foth et al., 2016). Criticisms arise separately where significant portions of the population, i.e. those in non-urban areas or with other access constraints, remain unsupported by effective public policy (Gregory, 2015).

3. THE AUSTRALIAN CONTEXT

Data creation, use and sharing by means of use of ICT, plays a vital role in digital engagements. Issues of access to necessary infrastructure, or rather lack of access, can have serious impacts for non-urban areas and for Australia as a whole. Expanding communities will require appropriate frameworks to be established, in new areas and retrofitted in existing areas, to support their residents in the digital economy. These are required to be provided in rural and regional areas at the same time as in urban areas. However, in comparison to urban areas, research indicates the *smartness* of rural areas is declining (Repko and DeBroux, 2012). In Australia the cost of infrastructure provision in non-urban areas (exacerbated by Australia's dispersed population bases and vastness) in combination with an aging population base, lower incomes and other issues of social exclusion is creating a new digital divide (Park, 2016). This digital divide requires specific attention as a government priority if Australia's dispersed regional and rural areas are to achieve equivalent digital engagement with their urban cousins (Park, 2016; Cradduck, 2016).

Noting the particular difficulties facing rural and regional Australia, urban areas are presented with their own problems. ICT infrastructure is more effectively established within a considered urban planning environment (Bakıer et al., 2013); however, it will be necessary both to manage and use existing infrastructures; and support individuals in their use (Cradduck, 2015). Successful implementation of any framework will be achieved more easily in a greenfield area, without the constraints of dealing with existing infrastructure and systems (Angelidou, 2014). Nonetheless, by necessity, in order to implement any framework new infrastructure will need to be retrofitted into established areas (Edwards, 2016). This requires government-community coordination supported by appropriate regulation.

While noting the valuable lessons that may be provided from the experiences of oversees jurisdictions, some examples should be approached with caution. It is a geographic and economic reality that, as regards internet access provision, there is in fact not one jurisdiction that replicates the Australian conditions as to smallness of its total population; its dispersed population bases and focus on coastal fringes; or its other geographic extremes. Importantly, this is likely to mean that the appropriate infrastructure provider of the future will be one entity – or the government itself – in order to ensure the economies of scale necessary for this utility service provision. Notably, Western European jurisdictions, while providing useful comparisons generally, have issues arising under land use or competition laws that tend to be peculiar to the jurisdiction; with some land use laws having an even narrower regional focus (Zweigert & Kötz, 1998; Watson, 1974).

4. INTERNATIONAL OBSERVATIONS

International cases can provide useful information of the issues that may arise. As these examples grow it will be important to consider new developments as Australia progresses its policies in order to address its specific issues (Althaus et al., 2013; Gerrand, 2006; Charlesworth, 2006). The starting point it is suggested is to take the initiative to recognise and treat access to the internet the same as any other utility service (House of Lords, 2015). Several countries have done this by effectively making access to the internet a right. Finland has done this specifically, while others either have extended their universal service obligation (USO) to the internet (i.e. Brazil) (Rauen et al., 2011). Others have implemented separate broadband USO policies, for example Chile and India (Prasad, 2013); Jordan, Malaysia and Pakistan (ITU, 2012); the United States (Kruger & Gilroy, 2013) and Spain (Síndic de Greuges de Catalunya, 2013).

The rights of individuals to self-determination and participation in social, political and economic life, including participating in both the 'real world' economy and the digital economy, are fundamental.[1] In order to be able to exercise these rights individuals must be able to access the internet, which requires direct State recognition *and* support in order to enable effective access (Cradduck, 2015). The need to ensure access the internet by all individuals therefore is not one that can be delegated to commercial parties. Appropriate public policy development is fundamental. The policy development process is informed both by government policy makers and industry consultations (Angelidou, 2014; Bridgman & Davis, 2003).

As Howkins (2009) reinforced:

> Successful policies can only grow out of collaboration between government and business to ensure that, when they are implemented, they are appropriate and that, as new situations arise, so new regulations are prepared. (p.119)

The role of citizens in this process also is crucial in ensuring the effectiveness of the framework from both national and international perspectives (Cornwall & Gaventa, 2001).

As law is the only system by which enforceable rights can be protected and penalties imposed; the appropriate governance of the digital economy and its component parts, remains the role of government (Cradduck, 2015). A reconsideration of the role of public policy thus is vital, noting, however, there is not *one* solution as to what is an appropriate policy framework (Zubizarreta et al., 2016). As international experience reflects, if a policy is too broad it is unlikely to be successful (Shapiro, 2009). Most importantly therefore, any policy framework must work in practice (Angelidou, 2014; Edwards, 2001).

5. MATTERS REQUIRING AUSTRALIA'S ATTENTION

In its most recent report on the status of the digital economy, *The Global Information Technology Report 2016*, the World Economic Forum urges *"*[p]*olicymakers ...* to *…work with other stakeholders to swiftly adopt holistic long-term strategies for ICT development and lead in adapting government and leadership behaviors to ensure that ICTs deliver maxim benefits"* (World Economic Forum, 2016, p.v.). Regretfully, Australia's *Networked Readiness* has declined in the last 12 months as now it is ranked only 18th overall out

[1] *International Covenant on Civil and Political Rights 1966* Articles 1, 3 and 25*; and* Human Rights Council's *Resolution on the Promotion and Protection of Human Rights on the Internet* of July 2012, Articles 1 and 3.

of 139 countries, which is a drop from 16th in 2015. Worse still, it is submitted, it has an inexcusable ranking of 57th for *Affordability* and 13th for its *Political and regulatory environment* (p.60). In comparison, Finland (while having its own issues to address (p.22)) currently is ranked 2nd overall maintaining its 2015 position; and ranking 13th for *Affordability* and 4th for its *Political and regulatory environment* (p.95). Clearly there is much for Australia to learn.

As it has committed to doing (DPMC, 2016) the federal government needs to ensure it in fact continues to actively work with and across all levels of government; and with all stakeholders to find a solution, or solutions, that work for all (Helsper, 2008). Most importantly it will need to ensure that any policy it seeks to introduce will work in practice (Angelidou, 2014) and will properly support all citizens and residents irrespective of their location as the ability to innovate is inextricably linked both to the requirement for appropriate infrastructure (World Economic Forum, 2016) and the capacity to access that infrastructure (Cradduck, 2015).

The *smart city* discourse, in addition to having as its focus urban environments and residents, presumes a level of access to services and infrastructure, including the ability to use those services (Foth et al., 2016). As the NBN continues to be rolled out, however, many Australia regions including some urban areas continue to be without access. To develop Australia in the digital economy requires enabling all its human capital (Belanche et al., 2016). Ensuring digital inclusion thus is a necessary aspect requiring consideration in order to ensure *smart* intra-operability. The starting premise for Australia is that the conversation should be about what is necessary to enable access to *internet* services *per se.* In order to achieve appropriate access, the requisite mindset is one that, similarly to electricity and water provision, treats the provision of access to the internet as access to a *utility service* (House of Lords, 2015).

As significant areas of the rest of the world continue to surpass Australia in terms of internet access and digital engagement, the need to ensure appropriate internet access for all now in Australia is vital. Although the intention is for the NBN to be the *"broadband infrastructure provider of last resort"* (Bureau of Communications Research, 2015, p.33) it will be many years until *"NBN deployment has reached maturity"* (Bureau of Communications Research, 2015, p.75). Therefore to delay consideration of relevant issues merely disadvantages individuals specifically and Australia as a whole (Cradduck, 2015). The extension of the USO to internet access *per se* will mean that individuals, irrespective of location, will be able to attain and maintain an appropriate level of physical access to the internet and lack of financial capacity will not constrain their engagement in the digital economy. Such action also would *"promote the regional spread of Internet services and stimulate the demand for broadband"* (Prasad, 2013).

Smartening the Outback will require support from regional and local government authorities and officials; community and industry stakeholders; and the various regulatory bodies. Conversely, Australia's top down approach to its telecommunications regime, where oversight is a power vested in the federal level of government to the exclusion of the States/territories and local government authorities, means that those with the closest connection to the impacts of a digital divide have reduced capacity to improve their regions. Nevertheless, as Australia has progressed beyond the minimum level of infrastructure to enable internet access, it now must look to adopt *"policies and strategies ... which make the Internet widely available, accessible and affordable for all"* (Tully, 2014, p.185). Enabling digital skills acquisition, particularly by those living in remote Indigenous communities (Telstra Foundation, 2014) and recent migrants (Alam and Imran, 2015), as well as those who otherwise elect not to engage (Calzada & Cobo, 2015), will be essential.

Current regulation is unsettled as Australian ICT requirements, NBN and telecommunications provision is subject to various and ongoing governmental reviews. These include the review of the federal government's proposed *Smart Cities Plan,* for which submissions closed on 24 June 2016. As at 22 September 2016 submissions to that review have not been made public nor has the federal government provided any indication of its likely response or when that can be expected. Separately, in its response to the Regional Telecommunications Independent Review Committee's Report on *The Regional Telecommunications' Review 2015*, which was tabled in federal Parliament on 22nd October 2015, the federal government highlighted it proposed reforms for the NBN in order to develop *"legislation to introduce a statutory infrastructure provider of last resort regime"* (Cth, 2016, p.4). More recently the Productivity Commission commenced a review into the adequacy of the current USO (Productivity Commission, 2016). However, this review has only just commenced with submissions closing on 21 July 2016. While the final report is not expected until April 2017, a draft report is projected for December 2016.

Ensuring the *smartness* of rural and regional areas cannot, nor should it, be solely the responsibility of the federal government. Similarly to overseas jurisidicitons, various private interests, notably the ICT industry,

continue to play significant roles in existing frameworks and their governance (Zubizarreta, et al., 2016). However, while industry has a policy development role (Howkins, 2009; Bridgman & Davis, 2003) the creation of public policy is a function of government, in this instance the federal government, and it is not a role that is appropriate for delegation. In addition to industry, local governments will have key roles in the process, noting that while there is much that local governments can do for their communities they require appropriate legislative empowerment (Cradduck, 2017) and State/territory and federal level support so to do.

At a federal level the emphasis of the (newly re-elected) federal government's to facilitating *smartness* through appropriate public policy is reflected in its significant commitments to funding, infrastructure support, as well as to inter-governmental collaborations (DPMC, 2016). Its commitment to assisting local governments to find collaborative solutions to long-term problems also falls within its more recently announced *Smart Cities and Suburbs Program* (DPMC, 2016a). However, the *Smart Cities Plan*, unfortunately, commences by defining the areas it will benefit by exclusion. This is done by clearly stating *"So when we talk about Australians cities, we mean both metropolitan and regional"* (DPMC, 2016, p.6). This is inappropriately limiting as it focusses attention away from those areas in greatest need of government support in order to ensure that appropriate physical and technological infrastructures are constructed/provided (Cradduck, 2015). As highlighted by the *Macquarie Park Case Study* (DPMC, 2016 p.10) the need for a minimum level of access to the essential infrastructure found more commonly in urban areas, is vital for Australia's future economic growth. It also is vital for its social development (Gregory, 2015).

The role of all levels of Australian government in enabling Australia's residents in, and the development of its, digital economy will not end with the physical establishment of the NBN. As new and better technologies arrive there will be *"a continued need to support people and communities in accessing technology and in acquiring the literacy skills required"* to engage with those new technologies (Helsper, 2008, p.15). Enabling digital skills acquisition, and upskilling, particularly by those living in remote Indigenous communities (Telstra, 2014) and recent migrants (Alam & Imran, 2015), as well as those who otherwise elect not to engage (Calzada & Cobo, 2015), will be essential to all Australia.

5.1 Policy Development

Cognizant that any delay in implementation of an appropriate *smart* framework may serve only to increase the digital divide in rural and regional areas (Park, 2016); it remains important that public policy is developed properly. An appropriate policy development process is one that is necessarily iterative and therefore requires time in order to be developed. The process commences with issue identification and problem definition, moving through data collection and consultation stages, to implementation, and post implementation evaluation and refinement to ensure effectiveness in practice (Cradduck, 2015, p.93 – considering Edward, 2001). Importantly, in order to be effective a policy solution must draw together various diverse perspectives from a number of disciplines (Edwards, 2016) and stakeholders into one holistic and workable policy.

A policy to enable the *smartness* of rural and regional areas therefore is one that would be developed by a rigorous (Howkins, 2009), balanced and inclusive (Bishop & Davis, 2002) yet targeted process, which engages with all relevant stakeholders – governments, industry, professions, community groups and individuals. Focus groups and selected interviews will be essential in order to understand the specific needs and concerns of rural and regional areas to ensure these are appropriately included within the resulting *smart* policy framework. Conscious that laws when created bind all citizens (Engle, 2008), a core aspect of the policy development process will be testing the policy and laws in practice.

In order to develop an appropriate policy a variety of matters must be considered, which includes the ability to use ICT for surveillance and control (Shaw, 2015; Richards, 2013); competition issues (Atkinson, 2009) privacy fears (Edwards, 2016; Maras, 2015); safety (Vestergaard, 2016); and other security concerns (Almeida et al., 2015); Gregory, 2015); and issues of ongoing governance responsibility once implementation of related infrastructure and or ICT network is completed (Althaus, et al., 2013). However, while industry has a policy development role (Howkins, 2009; Bridgman & Davis, 2003) the impact of such matters on both individuals and Australia as a whole means developing an appropriate governance framework to support them into the future should not be left purely to market forces.

6. CONCLUSION

Australia's growing population will lead to increased urbanisation, both by migration to existing cities and increased urban sprawl. Concurrently, improved telecommunications facilitated by the ongoing roll-out of the NBN will see rural and regional population bases become more significant as their citizens, no longer needing to commute for work or education; will remain more engaged within their local communities. Regulatory matters that will require specific and ongoing attention include effecting integration with existing infrastructure; ensuring privacy and data security; enabling digital inclusion (including ongoing digital literacy); governance and maintaining effective market functioning.

While the *Smart Cities Plan* and other policy initiatives remain under review, Australia's digital future is effectively in limbo. In the meantime, it is anticipated that commercial interests will continue to pursue *smart* objectives where financially viable so to do but in most instances not without such incentives. Acknowledging that *smartness* requires access to the internet, which can be enabled by a variety of means, the federal government's focus should be on *what* is delivered (i.e. access to the internet *per se*, and thereby access to the various services, information and communications that it enables) and not on *how* it is delivered (i.e. cables, WiFi, mobile phone technologies, or something not yet invented). This also will assist with drafting the policy and related law/s, which will implement the policy, as it will enable these to be written in a technology neutral manner. In turn this will assist with future proofing both. The result being that these then will be best positioned to adapt to, and encompass, future developments.

Government intervention is *essential* not optional. A new approach is required to develop Australia's *smartness* into the future and this is one that concurrently must encompass rural and regional areas; and urban areas, to ensure no-one is left behind. While the market and commercial interests have a role in enabling internet access and service provision, current experience evidences that in many areas and for many persons, access will not be enabled absent specific and easily enforceable legislated obligation. Implementing policies and laws to address this as a first step on the path to *smartness* is crucial. The consequence of not doing so will only be to further widen the already wide digital divide.

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