VICTORIAN SPATIAL COUNCIL

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Mrs Jane Prentice MP
Chair
House of Representatives Standing Committee on Infrastructure and Communications
PO Box 6021
Parliament House
Canberra ACT 2600

Dear Mrs Prentice

INQUIRY INTO THE ROLE OF SMART ICT IN THE DESIGN AND PLANNING OF INFRASTRUCTURE

I have pleasure in making a submission on behalf of the Victorian Spatial Council (VSC) as part of the House Standing Committee's Inquiry into the Role of Smart ICT in the Design and Planning of Infrastructure.

The Council is Victoria's peak body for spatial information policy and management. Its members come from all sectors of government, the private sector, the professions and academia. Among other things, the Council facilitates opportunities for a strategic focus on the development of spatial information through greater partnership building, collaboration, cooperation and education. Our members have a particular interest in providing an environment in which this information is available and able to be used. It also has a focus on developing frameworks, particularly in developing policy for spatial information management and availability.

The Council's remarks focus on three of the Inquiry's Terms of Reference:

- Harmonising data formats and creating nationally consistent arrangements for data storage and access;
- Considering the use of smart ICT in related fields, such as disaster planning and remediation; and
- Considering means, including legislative and administrative action, by which government can promote this technology to increase economic productivity.

The Council's principal recommendation is that simply making data available through Smart ICT is, by itself, unlikely to maximise the utility of either the information or the technology in generating social and economic benefits through better design and planning of infrastructure. A parallel information management framework (or infrastructure), operating alongside the necessary physical infrastructure, is critical to ensuring sustainable access to and sharing of information. Such a framework will provide the governance mechanisms necessary to ensure that data is well managed, and is available and accessible when and wherever it is needed using smart ICT.

The Council would welcome the opportunity to discuss its submission with the Committee members.

On behalf of the members of the VSC, I commend our comments to you for your consideration.

Yours sincerely

Olaf Hedberg, AM
Independent Chair

Information Management Framework

The capabilities that 'smart' ICT is able to provide is resulting in a public that is more informed about events or activities specifically related to their location, and thus able to make more informed decisions.

This however requires that accurate and reliable data is available, which in turn relies on a consistent approach to information management, applied across all relevant agencies, whether government or non-government.

This has been recognised in a number of reviews and policy papers over more than a decade, as the following examples illustrate.

As far back as 2003, the *Final Report of the Inquiry into the 2002-2003 Victorian Bushfires*[1] noted that 'emergency management relies extensively on the interaction of a number of critical support systems', including spatial information, and that

> *access to reliable and timely information is critical for effective emergency management, both in terms of preparedness and response. Less obvious is the importance of information management for mitigation and prevention. Collecting and maintaining high-quality datasets should allow for more sophisticated performance evaluation of prevention or mitigation programs (p.231, para 25.27).*

In 2011, the Victorian Government Emergency Management Green Paper, *Towards a More Disaster Resilient and Safer Victoria*[2], noted that

> *To respond effectively to emergencies of State significance, all agencies must have a common operating picture, although the contexts in which they operate and the decisions they make are different. Ministers and senior officials need to have a common frame through which to view the situation, determine what actions departments and agencies should take to support the emergency response or recovery (including considering the activation of specific powers), assess where the effort is going and measure progress against where it needs to go.*
>
> *Access to the right information, in the right form, at the right time is critical to coordinated operations and effective decision-making.*

The 2008 Cutler review of the national innovation system (V*enturous Australia – Building Strength in Innovation*, Review of the National Innovation System[3]), argued that

> *good information is crucial to the efficiency of markets and to the ability of discerning consumers to drive innovation by providers. Governments can promote good information flows both by finessing the 'rules of the game' in markets and by ensuring that the information and other content that they fund is widely and freely available to be used by consumers, and to be re-used and transformed into new value-added products by firms further down the production chain* (p.81).

In 2010, the Victorian Government observed in its *iTransport Discussion Paper* that

> *Continued advances in ITS [Intelligent Transport Systems] mean more and more information is collected, stored and analysed, from a variety of sources. With such large quantities of information, good data and information management practices become particularly important. To maximise benefits, data needs to be managed in a way that allows its use in other applications*.

Most recently, in 2014 the Productivity Commission *Inquiry into Public Infrastructure*[4] made a number of comments about data availability for infrastructure decisions, such as

> *Data problems limit analysis and benchmarking. A coordinated and coherent data collection process will address this and improve future project selection decisions (Vol 1, p.2).*
>
> The *Australian Government should... promote collection of data and information to inform decision making by governments about future infrastructure projects (Vol 1, p.12).*

1. http://www.royalcommission.vic.gov.au/getdoc/e9af877b-fae7-4dd1-99dc-d696fa2c8c04/INF.018.002.0001.pdf
2 http://www.dpc.vic.gov.au/images/documents/featured_dpc/Green_Paper_Emergency_Management.pdf
3 http://www.industry.gov.au/innovation/InnovationPolicy/Pages/ReviewoftheNationalInnovationSystem.aspx
4 http://www.pc.gov.au/inquiries/completed/infrastructure

Government is a significant creator and provider of the information which underpins Smart ICT, and therefore can influence its availability through the policies it applies for its management, provision and re-use.

To improve the design and planning of new infrastructure, these information resources should be available within and beyond jurisdiction boundaries.

One of the key characteristics of digital information is that individual datasets held by many agencies and collected for a particular purpose can be brought together and readily combined to support planning and decision making in other subject areas.

Given appropriate planning and coordination, this can happen with significant saving of costs.

In 2000, a report for the United States Federal Geographic Data Committee estimated the potential for savings if duplication is reduced, through avoided costs, and from potential benefits through increased effectiveness (ie, capability and capacity). It noted that:

> *The true value of a ready-made web-enabled, pre-constructed set of digital geographic data can only be truly appreciated if one understands the significant project time, budget, and personnel time consumed in the geographic database building process.*

75% of project time is devoted to locating, integrating and assembling data and, of the remaining 25%, some 75% is spent in navigating between data elements and types, resulting in only 6.25% of project resources being available to meet the project objectives.

Consequently a shared, always available information resource has the potential to avoid up to 75% of individual spatial project costs by providing 'ready-made, pre-constructed spatial data', and the real potential to provide further benefits by ensuring that most, if not all, entities are drawing on the same information resource.

Although these figures were published a decade and a half ago, they remain valid and the Council has a keen interest in promoting practices that address the issues they highlight.

An Information Management Framework will enable government and industry to take full advantage of the available information, by ensuring it is consistent, is of an acceptable standard, its existence is widely known, it is accessible, and it has an easily identified, authoritative source.

This requires that there be a consistent approach to managing information, applied across all relevant agencies in the jurisdictions (and these may include data suppliers outside the public sector, such as utilities). Such an approach should incorporate requirements for custodianship of data, publishing data and metadata, awareness and access, among others.

Simply making large numbers of datasets available through Smart ICT is, by itself, unlikely to maximise the utility of either the information or the technology in generating social and economic benefits through better design and planning of infrastructure. The users of spatial information depend on the continuing availability of authoritative, well-maintained data that is fit for purpose. In particular

- Physical infrastructure is important, but a parallel information management framework is essential.
- Information management must have strong and transparent governance
- Adequate custodianship arrangements must be put in place and maintained
- The point of truth must be maintained for every dataset involved
- Adequate funding must be provided for core spatial datasets to ensure that their quality and currency are maintained
- The system of licensing must be appropriate to the spatial data being accessed
- Data needs to be fit for purpose for a wide range of users
- Data must be capable of supporting evidence-based decision-making
- The continuity of existing agreements between government and others for data supply, maintenance and exchange must be ensured

Recommendation

An information management infrastructure (or framework), operating alongside the necessary physical infrastructure, is critical to ensuring sustainable access to and sharing of information. As the Open Data Institute has recently commented,

> *Governments, businesses and communities plan essential physical infrastructure carefully – our highways, electricity lines, water courses and broadband connections. We should treat data in the same way. We need to plan and create data infrastructures.* (Open Data Institute, *Who Owns Our Data Infrastructure?*[5])

A comprehensive framework for spatial information management will ensure the data is being managed and made available in a way that facilitates and encourages its use, and is clearly understood by users.

Such a framework will provide the governance mechanism to ensure that data is well managed and is available and accessible when and wherever it is needed.

Contribution of Smart Technologies to disaster planning and remediation

The growing application of smart technologies, such as smart phones and smart energy meters, and the incorporation of location related information (such as features of interest and positioning) as part of their core functionality, also provides potential for building community resilience in the face of emergencies.

This resilience has to be based on the ability of public safety agencies to be able to make sound and timely decisions, not just in times of crisis and disasters, but through the full range of requests from citizens for help, from a single event to a full scale emergency situation.

In other words, both decision making capability and capacity has to be scalable and based upon not just the best information available but the best possible analysis of this information to inform decision making.

The Council recognises that in emergency management language this is about 'Situational Awareness' in order to form the Complete Operating Picture upon which decisions can be made regarding the appropriate type and level of response.

We are in the midst of a new era of information generation, accessibility and sharing thanks to smart technologies which are themselves developing and converging at an unprecedented rate.

Managing this information spatially will underpin agencies' and citizens' ability to analyse and make sense of it in order to make effective decisions that will affect their personal and business lives. In emergency events the decisions made by individuals, communities and public safety agencies can often have life changing impacts.

Once again however, the right management framework is required to ensure that this information is accurate and current and available when and where it is needed.

The focus should be to encourage and direct the development of a network of government agencies and private sector organisations that will work together under this framework to deliver coordinated and managed spatial information for emergency management.

Such a capability should be based on ensuring participants are *prepared and connected* (ie always available), evidenced by:

- availability and quality of relevant data
- knowing that data exists
- knowing who to contact to get it
- knowing that it will technically fit with other data (ie compatibility of data and systems, and 'interconnectivity' to enable the exchange and sharing of data and products)
- being able to achieve this in meaningful timeframes (hours, not days or weeks)

5 http://opendatainstitute.org/who-owns-our-data-infrastructure

It should improve the way in which information is gathered and managed by agencies, stored in appropriate repositories, made available to other users, through technologies such as Smart ICT, used to generate an understanding about the nature of an emergency and how to respond to it, and how to recover from that emergency.

Participants should contribute data that complies with agreed quality requirements. Existing responsibilities for data (that is, ownership and custodianship) should not change, but the data provided should be quality assured and integrated into resources powered by smart ICT and available for distribution to all participants, subject to appropriate security and privacy provisions.

Recommendation

Governments across Australia already have significant information resources, as well as the capability to publish and deliver spatial information by both public and private sector organisations, but it is often incompatible with other information, difficult to obtain (for example, for commercial or confidentiality reasons), or otherwise requires upgrading to bring it to the standard required for emergency management.

The VSC acknowledges that there is recognition of the value of spatial information in day to day operations, and that there are a range of activities underway to acquire and manage spatial datasets. However they are often duplicated throughout both Government and ESOs.

It believes Victoria and Australia is extremely well positioned to be able to manage information spatially as a result of the products and services offered as part of the authoritative information provided by Governments.

Critical data should be brought under a standard management regime (to ensure comparable quality); a central store for that information should be established, and the connectivity should be put in place to make that information immediately available, including through smart ICT, for an emergency (and establish physical distribution arrangements for routine operations).

Legislation

In response to the kinds of issues in this paper, the Victorian Spatial Council believes that the reliability and availability of the right spatial information, for infrastructure planning and development, emergency management and more generally, could be enhanced by an appropriate management framework. Such a framework may incorporate legislation.

In 2010 the Council commissioned a review to determine the need and feasibility of a legislative approach to simplify and streamline the provision and management of spatial information to ensure it is accessible and useable.

The investigation concluded that there are numerous reasons for change, such as:

- increasing importance of spatial information, and growing need for data quality and consistency
- lack of standardisation and consistency of data (particularly address data)
- insufficient cooperation and data sharing
- unclear roles, leading to institutional relationship problems
- duplication of effort

As a consequence of these shortcomings, there continues to be no consistent, up-to-date, overarching management framework for the supply, management and delivery of spatial information, either in Victoria, or nationally.

Importantly, there is currently no formal basis for achieving consistency in digital spatial information datasets within jurisdictions or across Australia.

The Council also notes that on 16 March 2015, the United States Senate introduced S.740 Geospatial Data Reform Act 2015 which will require ‘federal agencies to implement international consensus standards, assist in eliminating duplication, avoid redundant expenditures, accelerate the development of electronic government

to meet the needs and expectations of citizens and agency programmatic mandates, and improve the efficiency and effectiveness of public management'.[6]

Recommendation

A new authorising environment and management framework should be put in place to formalise roles and responsibilities for managing spatial information, to define a set of fundamental or core information, and to set out requirements for exchanging and making that information available, whether through smart ICT or other means.

The framework should include new legislation that would:

- play an 'enabling' role for the creation and management of spatial information
- promote the sharing of spatial information
- set a framework for spatial information standards, guidelines, and for consistency and inter-operability between datasets
- clarify and standardise terminology in order to reduce the presently large role for interpretation due to the lack of clear and common definitions
- clarify roles and responsibilities, and reduce overlap

Appendices

An Information Management Framework for Victoria, Victorian Spatial Council Position Paper No.1, July 2015

A Legislative Framework for Spatial Information, Victorian Spatial Council Position Paper No.2, July 2015

6 https://www.congress.gov/bill/114th-congress/senate-bill/740/text