Australian Spatial Data Policy: Legal issues arising from data delivery via the Internet

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SUMMARY

The Australian Government "Spatial Data Access and Pricing Policy" was presented on 25th September 2001, listing the key aspects of provision of government held fundamental spatial data to the public domain. The policy has encouraged Australian Commonwealth government organisations to provide their data on-line free of cost to public domain users (as well as other Commonwealth, State and Territories), making the data accessible to all at a national and international level, an indication of the strong desire within government to make the fundamental data easily accessible to the public.

However, this desire is tempered with concern for the risk of liability imposed by decisions based on inappropriate use, lack of knowledge about, misrepresentation of the data by the end-user or use of outdated data in decision support systems. These concerns are justified when examining the recent legal issues associated with misuse of spatial data or use of dated data for specialised applications, whether the error was made on behalf of the user or the data provider.

It is clear then from the above, that there need to be mechanisms put in place to control to some extent, the dissemination of spatial data via the internet and limit the liability of data providers and minimise the probability of these incidents occurring.

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1. INTRODUCTION

With the growing recognition that spatial data is a major factor in assisting 'sustainable development and environmental management', as identified at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992 (Mason 2000) and that information is a core economic driver[1,] it became clear that to unlock the potential of spatial data, there needed to be a united approach to data distribution, access and pricing to allow all to access the data. This awareness was concurrent to other complementary policy considerations, such as the implementation of a common Spatial Data Infrastructure (SDI), the Australian National Competition Policy (NCP) introduced in 1995, and the Competitive Neutrality concept expounded by the Council of Australian Governments (COAG) in 2000.

1.1 Government Policy

The Commonwealth Inquiry by the Productivity Commission into Cost Recovery by Commonwealth Agencies preceded and influenced the Spatial Data Access and Pricing Policy (SDAPP) formulated in June 2001[2], which was developed in parallel with the Spatial Information Industry Action Agenda (SIIAA).

The SDAPP launched the Australian Government initiative to provide certain Commonwealth held spatial datasets to the public domain[3], cost-free online, alongside several other recommendations and initiatives. This supply of fundamental data to the public domain was seen to provide an information infrastructure, which could support a framework for public and private sector users to integrate and analyse other spatial data.

The SDAPP principles sought to:

- maximise the "net benefits to the community, noting that the Commonwealth's spatial data holdings were an asset" which if "made more accessible, [could] deliver economic and social benefits" outweighing direct financial returns; and,
- encourage the use of the internet for online distribution of particular datasets, hence reducing the cost of delivery of the data to consumers.

[1] Commonwealth of Australia - Action Agenda, Positioning for Growth 2001
[2] Commonwealth of Australia - Commonwealth Interdepartmental Committee on Spatial Data Access and Pricing 2001
[3] Copyright protected

The policy predicted that the flow on effect of low cost availability of spatial data would be an increased use of the data, which would culminate in economic and social benefits to the country.

A review of both the SIIAA and the SDAPP in December 2004[4], three years after the introduction of the initiatives, found that in terms of the effectiveness of the SDAPP in achieving the two principles noted above, the policy was successful in encouraging the use of Internet based online distribution, not only for the particular datasets listed on the schedule, but also other datasets which were voluntarily added on to the schedule. For the 2002-3 financial year, Australian Government agencies reported that just under 100,000 copies of spatial datasets were distributed of which approximately 50% were delivered by download[5]. The list included datasets other than scheduled datasets[4] (Table 1).

Over the last three years the number of datasets distributed has increased exponentially. Indications for 2005/6 financial year figures are, that the number of distributed datasets have doubled in the last financial year, of which two thirds are online download, further statistically substantiating the assertion of successful use of the Internet for online distribution of government held spatial, and growth of spatial information usage. These are purely first download statistics, there are no tracking statistics on secondary usage after download. The current research across the globe into Digital Rights Management (DRM) and Geospatial DRM is endeavouring to address this area of uncertainty. GeoDRM will be used to "protect privacy, assist in the maintenance of data integrity and enable rapid access to geospatial data in emergency situations.." (Cary, 2007).

TABLE 1 Number of spatial datasets delivered over period 2002 – 2005.

	Method of Delivery	Schedule Datasets	Non-Schedule Datasets	TOTAL DELIVERIES
2002/2003	Online downloads	43,434	1,311	44,745
	Standard packages	8,277	3,645	11,872
	Customised products	31,388	2,433	33,821
	Total Units	83,049	7,389	90,438
2003/2004	Online downloads	48,055	77,266	125,321
	Standard packages	2,947	4,576	7,523
	Customised products	1,563	212,147	213,710
	Total Units	52,565	293,989	346,554
2004/2005	Online downloads	215,502	124,413	339,915
	Standard packages	1,811	7,084	8,895
	Customised products	2,508	360,313	362,821
	Total Units	219,821	491,810	711,631

[4] Commonwealth of Australia (2004) Review of the Implementation of the Spatial Information Industry Action Agenda and the Spatial Data Access and Pricing Policy. Available at http://www.industry.gov.au/assets/documents/itrinternet/Review_of_Spatial_Information_Industry_Action_Agenda_20050603094903.pdf.

[5] Commonwealth of Australia - Office of Spatial Data Management SDPE Annual Reports 2002-2005

Source: Commonwealth of Australia - Office of Spatial Data Management SDPE Annual Reports 2002-2005. 2005/2006 figures unreleased as at 15 February 2007. Whilst figures are yet to be confirmed, current indication is that online downloads have doubled since 2004/2005.

Progress of Australian Commonwealth agencies in providing this information to the public domain has, in parallel, increased in pace. The number of spatial datasets now available from Government agencies have almost doubled in the last calendar year (Table 2).

TABLE 2 Number of spatial datasets listed on the Schedule and Auxiliary List by calendar year 2003-2006.

	2003	2004	2005	2006	Change 2005 to 2006
Schedule	111	283	305	524	72%
Auxiliary	n/a	39	122	221	81%
TOTAL	111	336	427	745	74%

Source: Commonwealth of Australia – Courtesy of Office of Spatial Data Management SDMG SWG.

However in terms of the second principle of the SDAPP, of maximising the "net benefits to the community" through increasing accessibility, the review raised issues regarding the inconsistency of data collection methodologies leading to a lack of administrative consistency and standards and thus inability to use the "spatial information to analyse the spatial dimensions of human experience'.

Until recently, the use of spatial data has remained within the domain of the professionals involved in generation or analysis and integration of this particular type of data. However, with the increasing use and deployment of the Internet, an ever-increasing reliance on location as a factor for most mainstream applications (e.g mobile mapping, in-car navigation systems, online directories such as "Whereis" etc), and the ability to pinpoint targets with greater accuracy post 2000 with the removal of selective availability[6], there is growing acknowledgement worldwide of the importance and usability of locational information or geospatial information. Parsons[7] (2007) notes Reuters' interest in location based services as "just one example of the increased awareness of the importance of "where" in delivering future consumer focused services".

1.2 The Information Revolution

The use of spatial information in applications both on the Internet or otherwise is becoming increasingly ubiquitous, driven as much by general public demand, as by the intent of data

[6] Selective availability "switched off" on May 2, 2000 allowing increased accuracy of GPS technology
[7] Ed Parsons, ex CTO of Ordnance Survey, UK. http://www.edparsons.com/index.php viewed February 2007.

providers to present spatial information in a form that is usable and simple for the layman, making the complexity of these applications and the technicalities, such as projections, datums, and topology, of spatial data invisible to the general user. The advent and growth of the Internet has progressed to an era where spatial data usage within the Internet is omnipresent but not discernable to the public eye any longer in technical terms.

The Information Generation of today is increasingly becoming reliant on technological tools of the 21st century, not only for entertainment and operational use, but also in raising certainty in planning, investment and development decision making. This includes the Internet, mobile and Internet mapping, Global Positioning Systems, and other digital portable personal devices such as mobile phones[8], iPODs and Personal Digital Assistants (PDA's). Courchene (2000) described this new paradigm as the Globalisation and Knowledge/Information Revolution (GIR), noting that the "solution to the GIR challenge has to be to privilege citizens in their information and human capital dimensions," … "embedding GIR" within a socio-economic-political framework,"... "simultaneously ensure[ing] that GIR leads both to economic competitiveness and societal cohesion, which is the essence of embedding GIR".

User demand for a higher order of spatial data has grown alongside. Negroponte (1996) writes that:

> "while the politicians struggle with the baggage of history, a new generation is emerging from the digital landscape free of many of the old prejudices…..released from the limitation of geographic proximity as the sole basis of friendship, collaboration, play, and neighbourhood. Digital technology can be a natural force drawing people into greater world harmony – an interactive, truly democratic world".

Courchene (2000) similarly noted that the age of information (and the internet) is a techno-economic paradigm. Given that information includes spatial information it follows that the "..twenty-first century will be about people in their role as consumers, capitalists and citizens", pushing for access to more specialized, accurate, timely and low cost data. The information generation is the upcoming virtual reality generation (Besser, 1998) and we are seeing a steady progression incorporating an increased pace and reliance upon the stimulation of a larger number of senses. Current research strongly indicates, that mapping applications are by far, the most widely used of all technological applications available via the Internet or other Information Communications Technology (ICT).

[8] Spatial data dissemination occurs not only via the Internet, but increasingly demand for provision of mapping or location based services through portable devices such as mobile phones are gaining momentum. Mobile Mapquest Nokia smart2go Press Release (2007): Nokia delivers free downloadable maps to the mobile world. Directions magazine. http://www.directionsmag.com/press.releases/index.php?duty=Show&id=16420 viewed February 2007.

An example of this is Geocaching[9], an activity that has seen the growth of spatial technology users worldwide, getting involved with Global Positioning System (GPS) activity and gaining knowledge in the area of GPS technology making it more mainstream. This activity has grown substantially since its launch in 2000 to boasting approximately 7,233 active caches located worldwide, including a cache located on the continent of Antarctica.

Another more widely known activity taken up by the public domain, including industry and government, is the generation of "mashups"[10] to depict various types of information via a mapping medium or other. Of the 1,200 registered mashups[11], "50% are map-centric applications…" and it is predicted that the number of mashups available across the board are rising so rapidly as to surmise that the count "… will go logarithmic at some point early in 2007" (Edwards, 2006). Largely this is enabled by increased processing speeds "coupled with increases in broadband speed" (Gibler, 2006).

Google Maps, Yahoo! Maps, and MSN Virtual Earth are all Internet based mapping applications or "application programming interfaces", (API's), making use of spatial data, whether government supplied or commercial sector supplied under specific agreements. Google Earth has become one of the more recognised Internet mapping applications to bring information to the public domain, and has been tracked as being the most widely used API for deployment of mash-ups on the Internet (Figure 1). In terms of data on offer, Google has also pushed to access data from providers in order to gain a market advantage over competitors[12]. However, several other similar mapping applications exist.

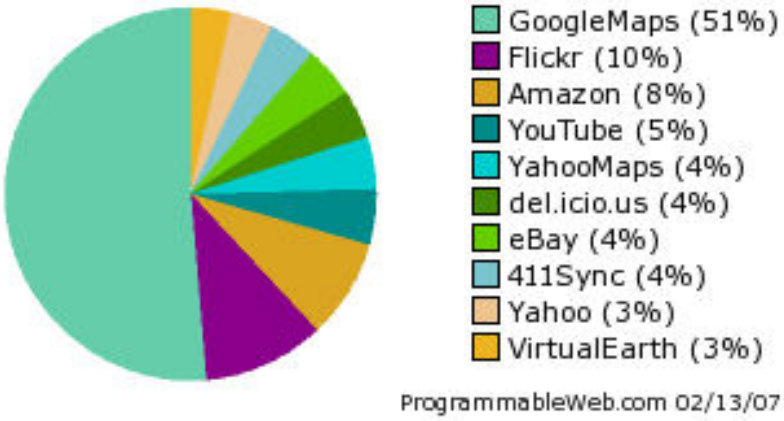
[9] Geocaching is an activity initiated in 2000 by David Ulmer who wanted to test the accuracy of GPS technology after the deactivation of selective availability. Geocaching is managed over the Internet, whereby users hide items at a specific GPS location and then communicate the location to all others via the Internet. Anyone in the vicinity can look for the container and replace contents upon finding it, for the next person to locate. www.geocaching,com/about/history.aspx

[10] A mashup is a website or application that combines content from more than one source into an integrated experience, Wikipedia. http://en.wikipedia.org/wiki/Mashup_(web_application_hybrid) viewed February 2007.

[11] Mashups registered with ProgrammableWeb.com. 1,538 registered as at 12 February 2007.

[12] Spot Image to provide 2.5m resolution imagery for Google Earth (2007). Google (France and Southern Europe) entered into agreement with Spot Image in January 2007, to obtain 2.5 meter resolution imagery over several European areas from the SPOT5 satellite for use in Google Earth. GIS Development http://www.gisdevelopment.net/news/viewn.asp?id=GIS:N_zihvtakfqx viewed January 2007.

FIGURE 1 Top API's for mash-ups



Source: ProgrammableWeb.com 13 February 2007

In the area of mobile mapping, similarly, a recent US based report on revenue share statistics for mobile applications touted MapQuest Mobile as the top revenue generating mobile application[13] with the largest market share over and above demand for music and weather information download (Table 3).

TABLE 3 Top 10 Downloadable Mobile Applications by Total Revenue Share (U.S)

APPLICATION	PUBLISHER	SHARE OF REVENUE (%)
1. MapQuest Mobile	Zingy	21.9
2. The Weather Channel	Weather Channel	5.7
3. Verizon Superpages 2.0	Verizon Directories	5.3
4. Music Choice	Music Choice	5.0
5. Sirius Music	Sirius Satellite Radio	4.8
6. Accuwather.com Premium	AccuWeather	4.4
7. eBay	Bonfire Media LLC	4.3
Backup Assistant	FusionOne	2.8

Source: Telephia Mobile Applications Report, Q1 2006.
*** Data does not include revenue for mobile TV and mobile game applications which is reported separately.*

The demands for data, in tandem with the increasing use of ICT tools, will, in all probability grow, and new emerging demands for virtual data will increase.

It is alleged that 80% of information collected by government agencies has a spatial component (Walsh, 2006). Australian Government distributes a large amount of this Commonwealth held fundamental spatial data cost-free to the public domain on-line through the Internet, whilst the UK Ordinance Survey functions within a semi-commercial model,

[13] Telephia (2006) MapQuest Mobile and the Weather Channel are the top revenue generating downloadable mobile applications, according to Telephia. http://www.telephia.com/documents/Applications_release_v5_FINAL_7.5.06_001.pdf, viewed January 2007.

providing most spatial products on-line, and charging for spatial data purchase, licensing the data accordingly with restrictions placed on use of the data.

The societal and industrial push is towards government (and the commercial sector) providing more spatial or public good locational data to the public domain either free or at lower cost14 and the uptake and longevity of these on-line mapping applications, seems to be linked inexorably with the availability of spatial data. In addition, the distribution model for dissemination of data to the public domain by government, which varies from country to country, appears to provide either an impetus for public use of the data, or equally a disincentive for public use of the data and therefore, mapping applications. Michael Jones of Google Earth identified the Ordnance Survey's licensing policies as a reason why Great Britain lagged behind the US in the creation of mash-ups[15].

Not only is this Internet based use of spatial information becoming more rampant in the public domain but also within industry and government. Australian Government for example, has recognised the role that online locational information can play in assisting government to provide better service delivery to the Australian public in carrying out its administrative duties, minimising duplication and time wasting by sharing relevant identity information across agencies.

The 2006 e-Government strategy launched by the Australian Government Information Management Office (AGIMO) within the Department of Finance and Administration (DOFA) outlines intentions of the Commonwealth Government in this respect, aiming to "move towards the vision of a connected and responsive government by 2010" with the promise of a "single sign-on" for public users of the on-line system. A parallel drive is that of Spatial Enablement of Australian Government, put forward alongside the e-Government strategy, aiming to share government held spatial data across government agencies, allowing for better service delivery and decision making. The underpinning concept is that of locational information commonality between agencies.

The formalisation of this strategy signifies the importance placed by government, on accessibility of (spatial) information and sharing of that information by all relevant government agencies, in the pursuit of better and more efficient service delivery.

With the increased circulation of spatial data, as with any other data, along with the increased demand and usage comes the growing need to ensure minimisation of incorrect or inappropriate uses of the spatial data in decision making. Balkin and Davis (2004) note the increased risk of "personal injury to each member of society" due to evolvement of new and complex technologies, in addition to population size and density growth. The increased

[14] "Give us back our crown jewels" The Guardian, March 2006. Available at http://technology.guardian.co.uk/weekly/story/0,,1736751,00.html. Article regarding public request for lower cost access to UK Ordinance Survey data.
[15] Jonathan Rush 13 November 2006, GI Goes Mainstream - AGI2006 Review, Geo Informatics (http://www.geoinformatics.com/asp/default.asp?t=article&newsid=2613, viewed November 2006)

activity in the area of spatial technology raises issues of legal liability which are currently being addressed worldwide, and which will be discussed herein.

1.3 Liability – Duty of Care

Liability is concerned with determination of whether a person is harmed due to a poorly made decision, (Klinkenberg *et al*, 1997). Liability falls into three broad categories.

1. Contract liability (or breach of contract), including breach of express and implied warranties.
2. Negligence.
3. Product liability (or breach of statutory duty regarding consumer protection statutes).

Negligence, a tort that emerged in its own right in 1825, operates on the premise of a standard duty of care being owed. The three elements of this tort are – duty, breach of that duty, and, whether the ensuing damage was within the risk created (Balkin and Davis, 2004). For this tort to arise it must be established that there is a duty of care owed directly by one party to the other in a relationship. Lord Atkin in the landmark case, *Donoghue v Stevenson* [16] defined the duty concept in his dictum:

> The rule that you are to love your neighbour becomes in law, you must not injure your neighbour; and the lawyer's question, "Who is my neighbour?" receives a restricted reply. You must take reasonable care to avoid acts or omissions which you can reasonably foresee would be likely to injure your neighbour. Who, then, in law is my neighbour? The answer seems to be – persons who are so closely and directly affected by my act that I ought reasonably to have them in contemplation as being so affected when I am directing my mind to the acts or omissions which are called in question.

The standard of duty of care owed is judged in accordance with the concept of reasonableness – ie, whether the person who holds the duty of care has departed from the conduct expected of a reasonable person acting under similar circumstances (West Publishing Company, 1998). In the professional arena, the duty of care owed is that as can be determined by the professional standard of care as set by the profession, or determined by agreement or law (Creenan, 2003). To be careless does not necessarily constitute negligence.

The duty concept, through *Donoghue v Stevenson* brought about impositions on manufacturers of maintaining certain minimum standards of care in favour of the consumer.

In terms of spatial data therefore, the production and distribution of spatial data for consumer use, implies an imposed duty of care on the part of the supplier to minimise risks of personal injury or loss to property that may occur as a result of users utilising that spatial data. These risks can arise in the course of spatial data usage by way of any of the following:

1. errors in represented location;

[16] [1932] AC 562

2. representations of error free data; or
3. unintended or inappropriate uses.

Cho (1998) notes that liability can arise if there is a "failure to secure accountability for defective data or GIS tools (which can also mean models, methods and services based on the data and tools)".

The proceedings of *Stephen Finlay McMartin v Newcastle Wallsend Coal Company Pty Limited & Others*[17] demonstrates that not only does a liability exist under these conditions, that is, for failing to secure accountability of incorrect data or misrepresenting data, but that liability is assumed for anyone acting in a professional post. It is deemed that any performance while in this post will adhere to the standards reasonably expected of a person within the professional practice in addition to relevant regulations stipulated in legislation.

Judge Staunton noted in judgement that:

> "Once he [Mr Robinson] became Mine Surveyor at Gretley and took it upon himself to certify the accuracy of mine plans relevant to the Gretley Colliery and 50/51 panel in particular, he took upon himself the liability that certification as to accuracy invites."
>
> and there is appreciation of
>
> "..the real need of plans being as accurate as modern methods of surveying will permit, and the exacting nature of legislation in this connection. In fact, inaccurate plans can be a source of danger and distraction in many ways."

Staunton J further analysed and gauged the actions of the mine surveyor against the standards of the professional surveying practise. In this case, the *Coal Mines Regulation (Survey and Plan) Regulation 1984* provided specifications for the surveying practise as relevant to coal mines, including that "making and preserving of accurate field notes is an essential part of a surveyor's professional practice" and noting that these plans/maps are a "decisive factor in decisions taken at corporate level".

Omission or errors in representation of data can equally be considered negligent. In a US based case, *Towing Co vs United States*, the US federal government was found to be negligent in maintaining the status information of a lighthouse marked on federal charts (Klinkenberg *et al* 1997, Lynch *et a*l 2000). Whilst the location of the lighthouse was marked correctly, it was no longer operating. This omission led to the incorrect assumption that the lighthouse would provide warning to vessel operators, of dangerous waters in the vicinity.

Provision of misleading information can similarly, if found to be negligent, be actioned against, in particular under the *Trade Practices Act 1974* (Cth) in Australia. In A US based case, *Aetna Casualty and Surety Company vs Jeppeson and Company*, aeronautical map supplier, Jeppeson, was found to be negligent by way of misrepresentation of flight

[17] [2004] NSWIRComm 202: proceedings in regards to, among other issues, insufficient validation and adherence to professional standards, by Mine Surveyor of map information provided by DMR (NSW)

approaches to an airport, which led to a fatal plane crash. The court maintained that the flight crew were misled, not by inaccuracy of data, but by the graphic representation of that data (Klinkenberg *et al*, 1997). The *Judiciary Act 1903*, Part IX, outlines the jurisdictional application of laws, noting that the Australian Commonwealth and States are subjects to application. The rights of parties in lawsuits, whether Commonwealth, State or other, are noted to be the same as any other party (s64).

It would follow then that public authorities responsible for generation and distribution of data not only exercise a duty of care in carrying out their statutory powers, but also owe a standard duty of care to users of that data, to carry out due diligence in collection and provision of data to users.

However, in applying the duty of care concept to public authorities it must be noted, that while the duty exists and the public authority is subject to a duty of care in the exercise of its statutory powers, case law has brought about new principles of determining whether a public authority is strictly liable. These principles recognise that a public authority may be constrained by financial and other resources that are "reasonably available to the authority for the purpose of exercising those functions" and that the authority may "rely on evidence of its compliance with the general procedures and applicable standards for the exercise of its functions as evidence of the proper exercise of its functions in the matter to which the proceedings relate" (Balkin and Davis, 2004).

As usage of Internet distributed data increases, the probability of incidents occurring increases alongside. Further, government and industry, in their roles of data providers must analyse the possible risks that may arise by providing this data. The SDAPP principle, as stated previously, is to maximise the "net benefits to the community, noting that the Commonwealth's spatial data holdings [are] an asset" which if "made more accessible, [could] deliver economic and social benefits" outweighing direct financial returns. This would support the argument that rather than limit the distribution and use of spatial data, the strategy must be to implement methods to minimise or mitigate the risks.

1.4 Mechanisms to Navigate the Risks of Dissemination in Spatial Data via the Internet

In terms of distribution and licensing, a project which is increasingly becoming well-known is the Creative Commons project which advocates an open access approach, allowing data providers to list data and specify what particular rights the users of the data have in copying the data, providing attribution, modifying the data, and/or to provide the modified product back to the public domain, and/or to use the data commercially[18]. This approach allows a certain level of control in data dissemination via the Internet, particularly in respect of ability to control secondary licenses and uses of data after initial download. Interestingly, whilst the approach allows for control of dissemination, rather than stifle data distribution, it increases the exposure of datasets in the public domain, as the medium of the Internet allows for non-

[18]http://www.creativecommons.org

hierarchical, and non-specialised searching of information, via meta-tags[19] and existing mainstream search engines, increasing the awareness of availability of these datasets.

1.5 Licensing, Disclaimers and Limitation of Liability Notices

Commonly used liability limitation tools in most product/service provision, are the use of Licences, Disclaimers, and Fitness for Use statements. Fitness for use has been documented in the international arena increasingly and is in essence a "fit for purpose statement" where explanation is given on what the data was produced for so that it is not used out of its context.

Licences, Disclaimers and Fitness for Use statements are increasingly appearing in most digital online contracts and as Duncan (2003) states, are the main strategy used by GIS professionals and geologists to address liability. Licences are devised stating specific Terms and Conditions which expound on the disclaimer of warranties and responsibilities of the product/service provider in terms of limitation of liability. The use of disclaimers is becoming more prevalent both in industry and all tiers of Australian government, including Local, State and Commonwealth Government data provision.

The MapQuest site holds a clear Limitation of Liability notice which states that:

"UNDER NO CIRCUMSTANCES SHALL MAPQUEST, ITS PARENT, AFFILIATES, DIRECTORS, EMPLOYEES, DISTRIBUTORS, SUPPLIERS, AGENTS OR RESELLERS (COLLECTIVELY, THE "MAPQUEST GROUP") BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES THAT **RESULT FROM THE USE OF, MISUSE OF, INABILITY TO USE, OR RELIANCE UPON THIS WEBSITE OR THE MATERIALS, INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF USE, DATA, BUSINESS OPPORTUNITIES, OR PROFITS. THIS LIMITATION APPLIES WHETHER THE ALLEGED LIABILITY IS BASED ON CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, OR ANY OTHER BASIS**..." [20]

Disclaimers such as this are becoming more common in practices not only in distribution of digital data, but also in other areas of Internet contract law (Duncan, 2003). But this increase in use of disclaimers does not necessarily signify that the strategy is a fail-safe mechanism to use in limiting or avoiding liability. Recent research has shown that disclaimers are not effective in negligence or malpractice law suits (Dansby 1992, Fogl 1998). Duncan (2003) suggests that a "Customer Friendly Disclaimer" may be more effective as it explains the limitations of liability in layman's terms, by expounding on the accuracy, resolution and completeness of the data, including providing information on the fitness for use of the data. He notes the importance of metadata alongside.

1.6 Metadata Standards, Lineage and Currency

In Australia the Australia New Zealand Land Information Council (ANZLIC) metadata standards are well known and widely used, particularly in terms of the Australian Spatial Data

[19] In essence, a meta tag is a method, similar to a listing of key words in a journal article, used to include subject headings of a website. This meta tag is invisible in the normal viewing layout of a web page, however is able to be analysed by a browser when a person conducts a word search for particular types of articles.
[20] http://www.mapquest.com/features/main.adp?page=legal

Infrastructure (ASDI) and operationally through the Australian Spatial Data Directory (ASDD). Duncan (2003) notes that metadata can play a key role in liability management, as it serves to declare the limitations of the data. If metadata is incomplete, it can prove a block to determining a datasets' fitness-for-use[21].

In considering this, it is clear that metadata would prove to be part of the supporting material courts can refer to in the event of litigation, and most importantly, standards would need to be consistent to be applicable to a broad range of circumstances such as defined by communities of practice. A pioneering initiative in this area is The National Land and Water Audit (NLWRA) – ANZLIC agreement which requests the use of consistent standard metadata[22] for environmental datasets supplied under agreement from the jurisdictions/states.

Government would need to devise and implement policy to address the consistency of metadata standards and to enforce these standards as part and parcel of spatial data generation and supply. Europe is currently looking at implementing such a policy, through approval and initiation of a project termed INSPIRE (Infrastructure for Spatial Information in the Community), which will be operational by early 2009[23].

The *Freedom of Information Act 1982* (Cth) s(3), advocates the transparency of government process in carrying out its duties, particularly "the right of the Australian community to access to information in the possession of the Government of the Commonwealth". Whilst spatial data is not specifically noted in the Act, the concept of providing lineage information about spatial data conforms to the Acts' objective. The provision of this information allows both for authenticity validation, and a rationalisation of expectations of the data. This allows users to be better informed on the history of the spatial data, and aids in minimising utilisation of the data for inappropriate uses or decision making. In parallel is the need for users to have access to up-to-date information. This has been put forward particularly in relation to the NSW Coronial Inquiry into August 2004 with requirements of provision of up-to-date maps for the fire fighting community[24].

1.7 Certification

The area of certification and accreditation of spatial professionals is a growing topic of discussion and movement in Australia. The Spatial Sciences Institute (SSI) promotes a certification system that provides an "exacting measure of an individual's achievements competence and integrity in a range of spatial information positions". This system encourages professionals to gauge their experience for the purposes of being able to port their abilities internationally. A rigorous approach to maintaining currency with the profession is advocated and monitored[25]. This approach allows not only data users to maintain a certain amount of

[21] Metadata Education Project, Wyoming Geographic Information Science Centre.
[22] Data Access and Management Agreement, available at http://www.anzlic.org.au/infrastructure_standards.html
[23] European Parliament Press Service, Better Geographical Data: conciliation agreement on INSPIRE. 22 November 2006. (http://www.europarl.europa.eu/news/expert/infopress_page/064-81-324-11-47-911-20061120IPR00064-20-11-2006-2006-false/default_en.htm, viewed December 2006)
[24] Submission to the National Bushfire Inquiry, NSW Farmers Association, January 2004 available at http://coagbushfireenquiry.gov.au, viewed February 2007.
[25] http://www.spatialsciences.org.au/professional-certification/Level-2-spatial-information.asp viewed January 2007

confidence in the quality and standard of work supplied, including the providers capability and qualifications, but also allows courts to gauge against clear guidelines, what the expected reasonable "professional" standards are for a person acting within the profession.

1.8 Legal Response

In terms of legal response to minimising the liability for distribution of spatial data online, there is very little existing precedent and case law in Australia as well as internationally. However this may be a changing scene. The momentum is due to the high publicity associated with situations of loss of lives which arguably could have been avoided. One of the solutions may be to increase awareness within the public domain of the findings of cases/inquiries which may lead to formation of precedent.

In particular the conditions of caveat emptor should be stated clearly and objectively where necessary, particularly as part of the Terms and Conditions in online contracts. Staunton J in *Stephen Finlay McMartin v Newcastle Wallsend Coal Company Pty Limited & Others*[17] noted the assumption of accuracy made by public domain users of maps provided by a statutory authority, further stating that maps should "be validated for accuracy and currency whether supplied as certified or not", and whether provided by a government organisation or private company.

There is a need to educate the court system of the special circumstances of spatial data, including the interactive roles between Commonwealth, State, Local Government Agencies and private industry in generation and provision of data, and consider assessing areas of where the law is not adequate.

2. CONCLUSION

In summary, Internet law is a growing area of information that is forming in response to events as they occur. As Internet law basis itself on common and criminal law, it is limited by the distinctions of that law. Take for example the fact that currently Intellectual Property law does not recognise data as property and no recognised rights exist in data as property[26]. This is an area of the law that may have to change in the coming years with the digital information age.

Cameron (1997), in his discussion of the case referred to p.14 of the C.P.R. report of the reasons:

[26] In the case of *Stewart v The Queen*, (1988), the Canadian Supreme court held that the defendant Stewart, was not liable for theft, mischief or fraud in his act as a consultant working for a union, of copying a confidential list of hotel employees from the hotel records. The court found that the copied list, as confidential information, was not a property and therefore not capable of being stolen and further stated that "criminal law cannot recognise information as property because civil law has not yet recognised proprietary rights in information" (Duxbury, 2006)

> If this interpretation should be thought to be inadequate to meet the needs of modern Canadian society, particularly because of its implication for the computer age, the remedy must be a change in the law by Parliament.

There are several factors to take into account in determining solutions to minimising liability of online distributed government held spatial data. These are:

- the complex nature of the environment and the industry in which we function;
- fluctuating allocation of resources and funds to improve data collection and maintenance;
- "rogue" internet which allows for broad distribution of data; and,
- increasing use of spatial data in a vast and varied number of applications.

The list of solutions explored in this paper, which include:

- the commons approach to data distribution;
- licensing, disclaimers and limitation of liability notices;
- metadata standards, data lineage and currency; and
- certification (professional standards),

are most effective if implemented to operate in parallel rather than in isolation. This, given that, the nature of the multifactorial environment demands a multi-faceted approach – which may be a combination of policy, legal and operational or technical reform (and others not considered herein). The most important point to note, is the dynamic nature of the triple bottom line environment, and that the solutions effective today, may not be effective tomorrow. Any solutions need to be continually assessed and redesigned according to the environmental factors influencing the situation.

Finally, these risk management mechanisms must be interoperable on a local and global scale to be effective as it is becoming increasingly clear that spatial data and the internet are not hindered by administrative or political boundaries.

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BIOGRAPHICAL NOTES

Gypsy Bhalla gained her undergraduate degree in Applied Science, majoring in Remote Sensing and GIS in Canberra. She worked in the commercial sector with a value adding company, AGRECON, for a number of years focussing on client delivery of imagery and GIS based integrated products. She then gained a position within Australian Government and has remained within the remote sensing and spatial data areas for over six years. Her current role is as Geospatial Researcher for spatial policy advice, within the Spatial Information Industry Advice and Facilitation Branch of Geoscience Australia. Gypsy is currently also undertaking a Masters of Applied Science by research, based on the legal implications of government spatial data policy, at the University of Canberra on behalf of Geoscience Australia, and is an active SSI ACT Region Committee member.

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