A VISION FOR SPATIALLY INFORMED LAND ADMINISTRATION IN AUSTRALIA

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ABSTRACT

Research to incorporate sustainable development objectives into an information communication technology (ICT) enabled land administration system (LAS) began with the task of defining an emerging vision for spatial information. In common with European countries which enjoy mature LAS (Switzerland, Denmark, The Netherlands and Germany), Australian LAS could benefit from the spatial enablement of land information, following the model of the spatially enabled geocoded national address file (GNAF). Specific instances include opportunities for more comprehensive information about restrictions over land, remodelling the Torrens system into a modern land information system, and creating national land information systems.

Transition from the existing infrastructure of LAS to the new model requires –

- selective borrowing from experiences particularly in the European Union and USA
- new models of information sharing
- capacity to anticipate developments in technology in location enablement and spatial identification
- building on Australia’s capacity to create opportunities for government and the private sector in using spatial information in the ICT environment.

BIOGRAPHY OF PRESENTER

Jude Wallace is a land policy lawyer who works in international land administration. She is a former Law Reform Commissioner of Victoria, familiar with land transactions, development and resource law. She deals in systems to deliver social, environmental and economic sustainability. Her research includes modern land administration systems for complex property markets, rural land tenures systems, and modelling of systems and transactions. Her international consultancy work, including projects in Indonesia, East Timor and Vietnam and policy work with international organisations, covers all aspects of land in developing countries with a focus on food security and poverty alleviation.

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INTRODUCTION

Research Project

This paper is part of a large research project and explores the issues generated by rapidly changing technology, the “new property” markets, and changing government needs. It describes why we anticipate that spatial perspective will grow in importance, perhaps even stimulating new land administration systems capable of using the newly emerging technologies for location enablement and integration of spatial information. We take a very broad approach to assist policy makers and business planners to visualise the future. The reasons for the approach lie in the raison d’être for the project.

In February 2004, the Centre for Spatial Data Infrastructures and Land Administration began a research project “Incorporating sustainable development objectives into information communication technology enabled land administration systems” funded by the Australian Department of Education, Science and Training under the International Science Linkages programme, the Department of Sustainability and Environment of Victoria, the Department of Land Administration in NSW and the University of Melbourne. The research involved examination of systems built around land, land information and land activities by government and business sectors, here and overseas. Initial research on land policy, land information and communication quickly expanded to incorporate spatial information.

We are half way through our research. Detailed case studies of land administration were made with our partners in three states of Australia, Western Australia, New South Wales and Victoria, and four European democracies with stable land management: Germany, Switzerland, Denmark and The Netherlands. These case studies will be the substance of an expert group meeting to be held in November, the results of which will be published in mid 2006 as the final research output for the project.

To date, the project involved clarifying important issues described below at the periphery of the broad vision of a land administration system capable of generating, managing and disseminating spatial information and delivering accurate information to inform policy makers.

- Exploration of the relationship between spatial information and privacy indicated that the understanding of spatial information among people outside the industry was poor, and that it was losing out in competitions with the far more engaging concept of “privacy”. (Wallace and Williamson 2005a)
- Examination of the administration systems associated with land, marine environments and resources (particularly mining) indicated that the techniques used to build administration systems needed much clearer explication, and the differences between land and resource administration needed definition. Our vision of an holistic approach to land, resource and marine management is now documented (Wallace and Williamson, 2005b). Of more concern are issues surrounding a suitable infrastructure to support water trading.
- Review of land and resource tenures indicated analysis was far too legal and technical to be useful. The techniques of management of tenures need exploration and identification from the perspective of non-lawyers. We undertook work for the Food and Agriculture Organisation on statistical rural land tenure databases in Asia Pacific region, for United Nations Habitat on possessory tenures and use of remedies (not land rights) to stabilise access to land (Wallace and Williamson, 2004b). Remedies and land disputes are neglected as tools, though there is a growing interest in them. We worked with the World Bank’s Environmentally and Socially Sustainable Development (ESSD) Week, in 2005, dealing with issues of international land project work and delivery of security of tenure, particularly on how to determine when systems were working and why they failed. Tenure analysis remains an unfinished chapter of the research.
- Examination of the new, highly refined technical tools (such as cadastral models and web based sharing systems) suggested that their design needed to take into account the much more complicated markets in land based commodities (Wallace and Williamson, 2004a).

The core research involved analysis of land markets and LAS models. The analysis of land markets explored ideas of complex commodities (see Table, Australia’s Titling and Commodification Adventures, below), and identified the five stages of development of land markets from the viewpoint of land administration, not law or economics (Wallace and Williamson, 2005c). An ideal model for land administration systems, (Enemark, Williamson and Wallace, 2005) was identified to be the touchstone evaluation of systems in use in the seven case studies. At this stage, we are exploring what land administration might look like at the end of the next decade, following a traditional change path in surveying and land management established by the FIG vision of the cadastre (FIG 1995) and Cadastre 2014 (Kaufman and Steudler, 1998). This change path involves designing a futuristic vision and explaining how it might be
achieved. Using similar methodology, our development of the LAS vision involves describing a series of small steps, exposing the ideas to critical review and evaluation, and incorporating advice from specialists in management and technology. While our LAS vision is under construction, the importance, indeed the centrality of spatial enablement of information, in its design is settled.

**International context**

Our search for innovations in land administration was world wide; necessarily so. Efforts to improve land administration systems are common to all nations, rich and poor, though civil strife and war may suspend activities temporarily in heavily indebted poor countries (HIPC). While developed nations seek to create orderly derivative, secondary and complex commodity markets, HIPCs are trying to build basic tool sets for simple land management tasks. Paradoxically, some poorer nations benefitted from newer technologies. Because they are unencumbered by legacy technology (mainframe systems used by developed economies, typically created during earlier digitisation processes from the 1970s and 1980s), some HIPCs and transitional nations are in the relatively luxurious position of being able to move directly into the newer technical solutions. Change momentum generated by challenging goals, such as impending membership of the EU or transition to land markets, stimulated adoption of novel solutions to widely shared problems in LAS (Bogerts and others 2002). Though no one would suggest there are simple answers to complex issues in LAS, the experience of building infrastructure in eastern European countries indicates a growing confidence in international transference of capacity and knowledge. Other HIPCs benefitted from development of land management (not land administration) tools and attracted the world’s best minds in land administration and project design, through land projects funded by European Union, the World Bank, international land NGOs and national aid programs. The challenge in all these efforts is to relate government capacities to economic, environmental and social sustainability.

The research output from the international scholars and experts in land administration and sustainable development includes two new literature streams. The first explores land policy. A most significant publication is the World Bank’s land policy, (Deininger 2003) which moves the focus in land projects away from individual titling through traditional methods, into recognition of lesser tenures, the importance of existing people to land relationships and the need to incorporate them into formal systems, and the importance of subordinate tenures: rentals and credit tenures. The second literature stream involves a healthy debate about how to build security of tenure and land markets and why these are important (de Soto 2001, Gilbert 2002). The influence of this thinking in building a modern vision for land administration in a country politically organised as a federation of states claiming sustainability as central policy (for instance, the National Land and Water Initiative) is apparent in what follows.

**Security of tenure**

Delivery of security of tenure is a constant for every nation and the central purpose of its LAS, even for those among the lucky 25-30 with mature systems supporting complex land markets. New tenures appear all the time: though we focus on one parcel and one owner, our governments must tackle securing rights to land and resources outside this paradigm. Two of Australia’s recent experiences illustrate the constancy of this problem:

- Native title (including the proposals to “loosen” its bonds to allow Aboriginal individuals to convert apparent wealth in native land into individual economic opportunities for poverty alleviation).
- Tradeable water titles.

Both of these illustrate how spatial sciences need to change to manage these new tenures: identification of the physical space requires a mixture of technology, social observation, incorporation of traditional values, and a government organised spatial capacity. Native title does not respond happily to surveying as a boundary identification method. Lines around parcels might suit us, but they do not reflect Aboriginal people to land relationships: in fact they distort them. The parallel issue with water is more challenging for system designers. The spatial or volumetric amount of water attached to a title takes on a problematic component when transfer is assumed. To illustrate the issue in over simple hydrological terms: if it takes 150 litres of water from upper Murray trader to satisfy a transfer of 100 litres to a buyer in Cobram, and 200 litres to satisfy a sale to a buyer north of Adelaide, how do we build national trading options? Does our knowledge about water account for seepage, flow-back, evaporation, spillages, flow losses and so on in the trading program? Builders and managers should not only facilitate incorporation of emerging opportunities offered by the new spatial technologies and Web, WAP and other communication systems; they also need to engage spatial experts in inventing new spatial concepts and an administrative infrastructure capable of supporting them.

While tenure management is demanding more inventiveness, an even more difficult problem for LASs involves fundamental reorganisation of their infrastructure for better delivery of sustainability. In this exercise, capacity to
manage and deliver spatial information is central. This story of why we need to reorganise LAS, and how spatial information might help concerns the rest of this article.

**CHANGE DRIVERS IN LAND ADMINISTRATION**

**Impediments to change**

Australia’s LAS accord with the traditional components of land registration, cadastres, land valuation and land use planning. These components are built on a jurisdiction basis, resulting in a multiplication of silos, or stove-pipes as they are sometimes called, which reflect their historical and legal heritage of statutory agencies established on a nineteenth century, British colonial model, replete with “generals” at the helm. They were simple, statutory, independent from cabinet vagaries of government changes, and powerful. Of these agencies, the land registries held the most significant information: who owned what interests in particular identified pieces of land. These “core data sets” are of inestimable value to owners as citizens and to governments. This value of course not retrieved. Moreover, land registries are change resistant, pleading their central role in LAS and their custodianship of mysterious “indefeasibility” and “government guarantees” as reasons for administrative and bureaucratic independence.

**Titling changes**

Beginning about the 1970’s, Australia’s statutory LAS components began to change. By 1995 (earlier in some jurisdictions), they were moulded into organisations more aligned with central government policy (Williamson and others 1998). The land registries were the last to survive, but even they were captured by the momentum of change, up to a point. A calendar of the great titling adventures generating by land market drivers and requiring new systems in Australia is shown in the table below.

<table>
<thead>
<tr>
<th>1850’s <strong>Torrens registration systems</strong>, adopted in many countries, converted deeds conveyancing systems in all Australian jurisdictions. Changes in Western Australia and South Australia were dramatic and effective. Other jurisdictions were slower, with New South Wales still arguing conducting a deeds transaction process in the context of modern registration, replete with anachronisms of lawyer controlled “exchange of contracts” and “requisitions”. It took a century for Australia to absorb the Torrens model. For purists there is still a long way to go, exemplified for example by the registration focused Land Registration Act 2003 in England.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1960’s strata title framework</strong>, adopted round the world from the NSW model, to permit multi-occupancy and multi-use developments of land and buildings. A much simpler and more manageable system than company share occupancies and stratum titles, stratas renamed ownership groups “bodies corporate” and divorced them from the inappropriate administration of company law. The system was modified in Australia to include cluster and community titles underpinning expensive, cloistered developments, and multi use developments.</td>
</tr>
<tr>
<td><strong>1970’s mortgage backed certificates and other assets</strong>, invented in US to create secondary markets out of residential mortgages held by lenders. The systems were brought to Australia later but in some ways more effectively. By 2005, these secondary market was contributor to Australian property lending, though in the US market players were experiencing difficulties.</td>
</tr>
<tr>
<td><strong>1970’s property trusts</strong>, commercial trusts creating opportunities for land investment of superannuation and contributed capital in specialist properties: retirement villages, central business district offices, shopping centres, industrial parks and infrastructure facilities.</td>
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<tr>
<td><strong>1970’s shopping centres</strong> appear as large scale, specialist facilities with nationally run, stock exchange listed, corporate owners and international investors, using boilerplate leases.</td>
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<td><strong>1980’s time shares</strong> allowed resort development and access for low capital investors. Popularity waned as recreational opportunities widened.</td>
</tr>
<tr>
<td><strong>1980’s marine production</strong> was commercialized by private shoreline and sea farming of commodities such as mussels, oysters and salmon in bays and along coastlines.</td>
</tr>
<tr>
<td><strong>1993 Native Title Act</strong> applying nationally, following the 1976 Northern Territory legislation – so that some three fifths of the country fell within native title purview.</td>
</tr>
<tr>
<td><strong>1990s public infrastructure</strong>, including freeways, tram and rail systems, airports and ports, was converted into private sector assets and businesses, requiring 3D titles and other technical LAS support.</td>
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1990’s “new property” appeared including carbon credits, trade waste discharges, building permissions and biota. Extensions of property theory aim at making these tradeable commodities and challenge the capacity of administrative systems.

1990- 2000 and onwards: new financial instruments in lending, conversion of equity into debt, deposit bonds, restructured mortgage financing with non-bank and even banking sector offering a huge range of new loan products. Mortgage churning became a major industry.

2000 onwards brought water title trading, demanding “robust separation” of land and water rights (Young and McColl 2002).

Stretching land administration systems

This selective calendar of titling adventures illustrates that only Torrens titles (or land registration), strata titles and time shares fell happily into traditionally defined land administration systems. The others, however, also demanded administrative support systems. Some, typically water rights and carbon credits, were “fitted into” land registration systems. Private sector solutions filled the gaps for other innovations. What was lacking was the ability of land administrators to reconstruct the basic tools of a LAS to service these new activities. A number of new tools need to be developed quickly. Capacities to layer, prioritise and order new property rights, to control activities related to these new opportunities and to identify their place in the overall “order” of land administration are slow to develop. This point can be better understood if one compares our poor attempts to service complex property markets within modern administrative systems with the efforts to systematise land information to meet perceived threats to national security and deliver emergency services. These drivers are attended by urgency and necessity, and they expose the level of difficulty experienced by people who seek to improve systems by the order of magnitude necessary to build public confidence in emergency response. There are no equivalent drivers to push land administration into servicing complex commodities creation and trading.

Regulation changes

Meanwhile, post World War II Australia, following trends in all modern democracies, began building land based restrictions and responsibilities. By the way, voluminous legislated restrictions appeared for all human activities: tax law and social security law (legislation, regulations and rulings) went from a few hundred to many thousands of pages. Regulation hit the trivial: cat ownership and littering attracted volumes of words. Land regulation is no different in volume but it brought substantial capacity of bureaucrats and planners to influence decisions and behaviour not just to record results of private decisions as do the land registries. Government roles in land management grew with the arrival of public (town) planning and management of land based activities, such as supply of utilities, building controls and business operation. Incorporation of the extensive vocabulary of land restrictions within the fabric of a LAS is recognised internationally as a major challenge (van der Molen 2003) and is the subject of a separate research program in the Centre.

Land Administration as a Discipline

Positive changes in land administration during this period were nevertheless remarkable and extensive. The ancient art of land surveying blossomed into a more comprehensive approach to management of key issues, and formal surveying dropped in importance as other land management competencies arrived, though it remains fundamental. The relationship between surveying and land registration underwent changes as geodesy, GPS, and plastic pegs appeared. After 1995, land administration emerged from its technical focus to engage professionals from the disciplines of engineering, economics, political and social sciences, law and computer technology in service of international organisations and national governments which struggled to deliver land and food security and to build land markets. A healthy discipline capable of contributing to world discourse in land policy, land management, public organisation and infrastructures, and technical systems was competently established. Visionary ways of organising information were developed collaboratively on an international scale with technical sciences, notably the spatial data infrastructure (Williamson and others 2003, Masser 2005) and with government infrastructure, for instance the concept of authentic (authoritative) registers (van der Molen and Weltzer, 2004). These visionary efforts are continuing.

LAND ADMINISTRATION IN A SPATIALLY ENABLED WORLD

Turning land information into spatial information

Though spatial information is central to all these tenure developments, titling activities and market trading, spatial enablement could not be a driver for change until technical capacity arrived. From the perspective of creating some sort of over-arching order for all this commodification and regulatory activity, the tools used by the surveying profession, especially the digital cadastre itself, are essential. Two other things are needed: removal of the technical
differentiation between survey and spatial information and the software systems that support them, and change in focus of land registries, custodians of owner/parcel information, away from merely delivering security of tenure to delivering information that is spatially or locationally enabled.

Spatial information in a computer does something that digital land information does not. It enables a user to identify the position on a computer map to which information relates and shows the observation in relation to every other related observation. The effect is a leap in quality and usefulness of the basic owner/parcel address cadastral information. The digital cadastral in Victoria in the hands of the Spatial Information Infrastructure group becomes a much livelier and inter-operable tool. Spatial enablement of land registries must be national. The alternative of each jurisdiction developing its own spatial location tools for the different vocabularies and tables of land information would be a disaster. The geo-coded national address file, GNAF, which for a year has offered its 10 million confirmed address points, is an order of magnitude more valuable than a digital phone book plus a street map. The construction of GNAF by the Public Sector Mapping Agency, PSMA, is a remarkable achievement. Use of GNAF shows preliminary applications in risk and emergency management, real estate selling and location finding. Use will increase, especially after the GNAF XML schema becomes operative and wider access routes is available. While the take up has been in creative sectors, spatial enablement of information including addresses through nationally designed systems needs to penetrate back into all state and territory LAS activities and services.

Upgrading Spatial Information -- iLand

Levels of knowledge, understanding and use of spatial information are well below what they should be. The reasons are well understood and intelligent efforts are directed to establishing spatial information as key infrastructure of government widely used by business and the public. The ANZLIC proposal to establish a “socio-economic and emerging issues” strategic committee to support wider adoption and use of spatial information in non-traditional communities of practice is applauded. So too is the switch in focus of the Western Australian government from Administration to Information, exemplified in the change of departmental name from “Land Administration” to “Land Information” and the focus on a Shared Land Information Platform (SLIP). Location enablement is now part of standard software packages: for use in government, intra-businesses management and inter-business organisation. The development of LandXML, though at a clumsy early stage, shows promise in drawing together information and satisfaction of a need for information. Claims made for location enablement and web enablement exceed what is now deliverable, but the gap will shrink rapidly. This technological revolution will require much more dramatic reconstruction of our land administration models than did the paper to digital journey, the flat file to relational database upgrade, or the conversion of main frame computers to networked PCs. The technical and organisational key to this next generation is the convergence of land information and spatial information in the context of national needs for spatial intelligence combined with other information: Information meets People and Activities at different Times via the Government. Since much of the crucial information in the chain involves land and activities on land, and since land information is the key to accurate positioning, we have called the new land administration model “iLand”.

Consider what is possible. What if Australia spatially enabled building permit information, building insurances, parcels related to bodies corporate, multi story building parcels, parcels related to properties and properties related to parcels, parcels with another parcel above or below, and so on? Think of being able to show these on a map based display system that permitted other attributes to be added. Public buildings (already identified by location in PSMA Australia Points of Interest), parcels that are roads, parcels that are easement affected, parcels affected by mortgage, parcels affected by a big-four bank mortgage, or super fund mortgages, and so on. Once the information is computerised and spatially enabled and available, remarkable opportunities for enhancement of its use and for management of land assets follow, limited only by our imagination and available technology. If the spatial layers are capable of integration, one of the difficult problems of relating mining and resource tenures to land tenures is practically solved. But there is more to the spatial enablement menu than this.

New discourses about land

Existing LAS in developed economies are characterised by their centrality in national economies. Hence they must be slow to react to pressures and technological innovations. The value and importance of its LAS to any national economy require cautionary, not revolutionary change. However, even here, demands for change are accelerating. Thinking about the next generation of LAS has forced us to realise that Australia’s discourse about land, land information, and government functions has totally changed in ways that existing systems cannot comprehend. Modern discussions about land, how it works, what it means, what it does and who should pay what tax demand new questions and concepts that cannot be serviced. Our LAS must transform into systems that manage land with appropriate degrees of survey accuracy plus capacity to deliver spatially accurate information about many aspects of government, personal life and business activities related to land. One might keep in mind the oft-repeated estimation that some eighty to ninety percent of decisions involve a spatial element. In short, the focus of land information necessary for good
government has changed from the kind that is survey accurate and dynamic to a much bigger collection of spatially accurate and dynamic, and personally and temporally relative information.

a) **Taxation brings a new language.** Combinations of information, spatial and otherwise are the potential growth area. Databases and cross-matching cannot meet the tasks of modern governments. State and national taxation of land provides the best illustration. Australian regulation absorbs and estimated eight percent of its GDP. While the regular army numbers 25,000, some 85,000 members work in the “tax army”. The cost of compliance to small and medium business is unjustifiable. One explanation for this situation is the switch from a government serviced tax collection to taxpayer supplied information for routine personal and business tax collection. After the early 80’s, taxation of property changed radically. The goods and services tax and capital gains tax together added layers of difficulty to the creation and trading of land commodities. For these systems to operate, new categorisations of property (“residential”, “commercial”, “agricultural”, “principal places of residence”, “first homes”, and so on) needed precise definition relative to time and taxpayer. As does the interplay between owner, aggregated ownership, value, sale price, address, purpose or land use; both in the national income tax and in the complex land tax systems run by the states and territories. The old systems of land administration delivering core activities of registration, planning and valuation are creaking under the weight of these new needs for relative information.

b) **Strategies for organising information.** The owner reporting system built into tax collection infrastructure is acknowledged as a failure. Consequently, the Australian Tax Office, ATO, is establishing a “massive data-matching investigation into property transactions to target schemes that funnel capital gains to taxpayers on low marginal tax rates or allow taxpayers to claim a property as their tax-exempt main residence”. The ATO is also concerned about schemes used by developers to minimise GST. The office will systematically cross-check property sales in every state and territory since July 1, 1999 ($200 billion of sales a year). The data on all sales of residential housing, land and commercial buildings will be checked against the ATO’s capital gains, GST and income tax records (The Weekend Australian Financial Review, 2005). The Australian government is about to duplicate the records held by the states and territories in one of the most expensive data gathering and matching exercises ever proposed.

c) **Land and monetary policy.** The Reserve Bank of Australia needs more up to date and reliable information about land sales patterns and information that is nationally comparative (Reserve Bank of Australia, 2004a, 2004b) to inform decisions about monetary policy. Sound policy making requires comprehensive, accurate and timely information about land investment patterns.

> “The HILDA (Household, Income and Labour Dynamics in Australia) survey supported this [that many investment properties were geared], with 55 per cent of households owning an investment property also owing debt on that property. However, this figure may underestimate the true proportion of geared investment properties; in particular, it is considerably lower than would be implied by ATO data, since 74 per cent of investment property owners deducted interest payments on their tax returns in 2000/01. This discrepancy is puzzling, but it might be explained by the different definitions of investors used in the two sources.”

(RBA, 2004c, p 54-55)

The Bank concluded that there is poor data on this “household behaviour”. Data inadequacy is more generally significant. Australian systems do not deliver enough information to adequately “price” tax options because we cannot identify the potential range of affected taxpayers and their related land holdings. It is difficult to extrapolate from the effect of an option for capital gains and depreciation on a particular taxpayer or group to its national impact. National analysis requires much more information.

An “Authentic Register” of parcel information

Driving use of spatial information forward requires a flagship or lead project. The designation by all Australian governments of their digital cadastres as collectively the national “authentic register” of parcel information integrated into the PSMA national cadastral database is a first step. The idea of the authentic registers comes from efforts to rationalise national administrations in the European Union. Behind this concept is the idea that governments identify a single authoritative register in a key administrative area which all government and non-government sectors should use. In the Netherlands in 2002 the Council of Ministers formally designated six bases as the core of a system of authentic registers. By 2004, two registers were established: **persons** (municipal personal records database) ‘owned’ by the municipalities, and the **cadastral parcel** (property information) ‘owned’ by the Cadastre, Land Registry and Mapping Agency. Two were under development: **geography** (topographical database 1:10,000), ‘owned’ by the Cadastre, Land Registry and Mapping Agency, and **businesses**, ‘owned’ by Chambers of Commerce. Registers under preparation were a **buildings**, in pilot phase, and **addresses**, for which a feasibility study was finished (van der Molen and Welter, 2004). In every one of these registers, spatial elements are crucial, even in people registers: think of problems involved in identifying people without “places of birth, marriage and death”. The parcel or property information layer
is the key to digitally connecting addresses, business activities and people with places. The concept of authentic (or an authoritative) register for parcels would help overcome the issues of national cooperation in Australia.

\textit{iLAND}\footnote{In the late 1990’s change focused on \textit{eLand} initiatives designed to convert land administration processes to computers (FIG 2005). However, the future offers far more opportunity for reengineering: \textit{iLand} involves spatially enabling even relative information and organising processes around an identified place or collections of places. Borrowing from the music industry transformation, led by iPods and iTunes and its internet music store, and looking about a decade out, our land administration visions could change dramatically. iTunes sell because people want to buy them, the price is very cheap and the purchase system remarkably easy. In future, spatial information might have these three characteristics. In the iLand concept, the basic information is generated by essential LAS government functions at state/territory and national levels, spatially organised, layered, multi-user friendly and available cheaply. As a concept, \textit{iLand} is not yet fully defined: it is a working vision tentatively described in the figure below.}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{iland-diagram.png}
\caption{The Concept of \textit{iLand}, Under Construction}
\end{figure}

CONCLUSION

The opportunity for a well organised and spatially enabled land data system is obvious. From the analytical perspective, property records could be organised as spatial information in terms of properties with and without a mortgage owned by a person who owns another property; properties owned by an owner with no other property, properties not lived in by owners, and so on. A digital Australian Atlas could also result. This emerging LAS vision involves re-engineering land information, refocusing land administration and creating access to what governments need and the public wants to better manage relativities in their personal lives and business activities. Our research into private sector use of spatial information in Australia suggests that creativity exists and is ready to go. The initiatives of the national organisations are well directed and capable of delivering greater utility in state and federal administrations. Building suitable land administration for a federated state operating complex markets and delivering sustainable development is a big task. What is needed is more work on how government activities might develop to
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capture opportunities from new technology in the future. The initiatives identified in this project thus far warrant critical review and collaborative engagement of all interested stakeholders to inform the model finally designed.

REFERENCES


FIG, 2005, e-Land Administration, Proceedings of International FIG Seminar, Innsbruck, June,


Wallace Jude and Ian P Williamson, 2004a, Developing Cadastres to Service Complex Markets, Cadastral Modelling Workshop, FIG and COST, Bamberg Germany, 9-10 December


Wallace Jude and Ian Williamson, 2005b, Registration of marine interests in Asia-Pacific Region, Marine Policy, publication pending.
Jude Wallace and Ian Williamson, A vision for spatially informed land administration in Australia


Williamson Ian and Jude Wallace, (2005a) Land Markets In A Changing World – Opportunities For Surveyors, Conference paper, Malaysia,

Young MD and JC McColl, 2002, Robust Separation: A search for a generic framework to simplify registration and trading of interests in natural resources, CSIRO Policy and Economic Research Unit.
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