City of Ballarat and Golden Plains Shire

GIS Strategic Planning - Recommendations Paper

Contact Details
Helen Thompson, Director

Centre for eCommerce and Communications (CeCC)
Suite 15 Greenhill Enterprise Centre
University of Ballarat Technology Park
PO Box 691  Ballarat Vic 3353 Australia
Web:  www.cecc.com.au
Tel:  03 5327 9418
Email:  h.thompson@ballarat.edu.au

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Executive summary

Regional stakeholders are working to position the Central Highlands region as a key centre for future growth, especially in knowledge based industries. The potential of information communications technology (ICT) as a driver of economic and social growth is well recognised. Spatial information can inform ‘big picture’ understanding and enhance regional decision making processes, create greater efficiencies in communication, increase the quality of information and support policy formulation and evaluation.

The City of Ballarat and Golden Plains Shire GIS Strategic Planning process has built an evidence base to support individual local government areas (LGA) and regional strategic directions and priority actions. A staged implementation of the GIS Strategic Planning recommendations will support the City of Ballarat and Golden Plains Shire in unlocking government investment in spatial information by distributing it to residents and other stakeholders to meet information needs and business requirements. As an outcome regional collaboration will be extended, innovative practice fostered, information shared and local government service and performance enhanced.

This study has reviewed past GIS strategies, benchmarked current geographic information system (GIS) usage and technologies and considered common infrastructure goals and objectives. Information gathered confirms significant opportunities. Improved GIS technologies, better and faster broadband, reducing costs of internet access and increased mobile connectivity will combine to enhance the potential for a wide range of GIS applications, data resources and business systems that together are capable of supporting well informed regional decision making, planning, monitoring and reporting.

Collaboration at a regional scale will more effectively support actions directed towards the effective use of web-GIS services. The City of Ballarat and Golden Plains Shire have an opportunity to provide leadership in the areas including information provision, sharing and use. The business case for continued investment in GIS services is based on efficiency gains, business improvements and service delivery gains.

Analysis of consultation outputs has informed recommendations in terms of next steps. Potential funding options, grants and implementation services are assessed as part of the prioritisation of service delivery in areas such as public, inter-council, intra-council and key stakeholder services.

The key recommendations and actions outlined below build upon and extend the Grampians Region Strategic Directions, Central Highlands Regional Strategic Plan, Ballarat ICT 2030 Strategy and the Central Highlands ICT Study.
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ArcGIS</td>
<td>ArcGIS is a system that supports authoring of data and maps for use on a desktop, in a web browser, or in the field via mobile devices</td>
</tr>
<tr>
<td>Confirm</td>
<td>Modular software for maintenance and management of public infrastructure assets</td>
</tr>
<tr>
<td>EDMS</td>
<td>Electronic Document Management System</td>
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<tr>
<td>GIS</td>
<td>Geographic Information System</td>
</tr>
<tr>
<td>LGA</td>
<td>Local Government Area</td>
</tr>
<tr>
<td>MapInfo</td>
<td>MapInfo is a Windows-based mapping and geographic analysis application</td>
</tr>
</tbody>
</table>
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1. Background

In June 2010 the City of Ballarat and Golden Plains Shire agreed to re-evaluate GIS strategies with the University of Ballarat’s Centre for eCommerce and Communications engaged to:

- Review existing GIS strategies, current GIS usage and technologies
- Consult and survey internal council stakeholders to identify progress on GIS adoption and to gather insights and information on operational requirements
- Analyse consultation and survey outputs to identify next steps to improve the use of spatial information to enable better business decisions, improve service delivery and enhance workflow processes
- Prepare recommendations paper including funding options/available grants and services for implementation.

2. Strategy review

During 2006 the Central Highlands Group of Councils identified the need for a GIS Strategic Plan that addressed LGA and regional opportunities as well as challenges associated with collaboration, training, new technology, investment leverage, spatial information requirements, stakeholders, resource sharing, key data sets and systems.

The 2007 Central Highlands Regional GIS Strategic Plan recommended that the City of Ballarat, Hepburn, Moorabool and Golden Plains Shires work together on GIS directions, data acquisition and quality, regional web mapping portals, forums, training and technology opportunities.

The companion GIS strategies for the City of Ballarat (April 2007) and Golden Plains Shire (April 2007) were based on a range of considerations including efficiency, accountability and business improvement linked to service delivery, infrastructure and environmental management. An overall aim of the strategies was to improve efficiencies and capabilities related to GIS and spatial information.

2.1 Progress 2007-2010

Access to spatial information has improved significantly since the 2007 strategies were developed. The extent of GIS integration with core local government software systems has been progressively advanced. Golden Plains Shire has established a spatial data registry which is accessible via the intranet. There are opportunities for further enhancements in processes.
that support data import and export and to ensure that information across business units is adequately corporatised through prioritising the development of spatial information layers based on non-linked data sets.

Practices in the spatial data standards area are still maturing. Management from a whole of organisation perspective is important as LGA staff generally have a low level of understanding of metadata and the importance of corporate-wide data standards. Further focus in this area will improve data quality, support efficient sharing internally and enable data exchange and better support interoperability with external agencies.

Opportunities exist for extending data custodian responsibilities across both LGAs. The roles and responsibilities of data custodians need to be developed as part of business improvement strategies for each business area. The process of devolving responsibility to business managers should assist in achieving enhanced data quality and spatial accuracy.

The ability to view up-to-date high-quality aerial imagery generates significant efficiency benefits across all LGA business areas. A more frequent acquisition model for regional aerial photography (two-year acquisition model recommended in 2007) is required. The City of Ballarat has recently entered an arrangement with NearMap.com to access aerial imagery that will be updated at least annually.

Current GIS staffing levels at both LGAs appear inadequate to ensure that GIS strategies and operational plans are determined from a corporate view based on the benefits of using spatial information services to support key result areas. Ad-hoc approaches appear to be used to determine GIS priorities and resource allocations. A strategic approach with more explicit focus on measuring value (return on investment) and operational outcomes is recommended.

Two past recommendations for address staffing and capacity constraints remain relevant. Where GIS skills and data custodian responsibilities are required as part of a job, position descriptions should be revised to include GIS competencies as an adjunct to business experience. GIS reference groups should also be established in each LGA to support prioritisation of GIS development activities and GIS layer development.

General introductory training is made available at both LGAs. Past recommendations such as distributing periodic GIS information updates and news (short and sharp) and producing ready-reference documentation including simple online ‘how to’ style tutorials, remain relevant. Golden Plains Shire has made some progress in this area. Greater availability of advanced and customised training is needed to support further GIS adoption across multiple business areas.

Both LGAs have implemented significant GIS technology upgrades in the period since 2007 with the City of Ballarat’s MapInfo Exponare deployment undertaken during 2010/2011. A number of transition issues were highlight throughout the consultation with addressing speed
issues and system stability seen as immediate priorities. Common technology platforms across both LGAs may provide future advantages with respect to a regional web-mapping portal.

Data sharing arrangements will be supported by a continued focus on working with external stakeholders (state government, water authorities, VicRoad, catchment management authorities etc.) to improve processes and progress towards demonstrating best practice GIS and related activities.

3. Adoption trends

Significant information and insight on GIS usage was gained through the study processes. The accompanying GIS Strategic Planning - Consultation Outputs Report brings together the outputs of engagement with internal stakeholders as gathered through consultation activities (38 staff) and an online survey (99 staff).

3.1 User groups

Identified user groups include GIS administrators (3% analysts create and administer data, metadata and software), high level users (2% create new data and perform analysis), medium level users (21% create new data and perform analysis), non-technical users (63% access data, look at layers, zoom, toggle, pan and print maps) and others (11%).

3.2 Information use

The ability to view aerial imagery (82%) was the GIS activity which users ranked as most important to their work area. Other important uses included browsing property information (69%), viewing, acquiring and inspecting LGA data (55%) and identifying spatial data for specific projects (49%).

The use of spatial information was less important when creating and editing data for projects (41%), viewing or accessing third party GIS data (36%) and identifying current local government works (25%).

3.3 Access interfaces

The intranet (60%) was identified as the most important interface for accessing spatial information. There was also recognition of the importance of external gateways (40%), specialist interfaces (39%) and web portal interfaces (32%).
3.4 Successful aspects

The most successful aspects of current GIS systems were aiding in answering common queries (69%), reducing time needed to go onsite for field visits (52%) and supporting project-based activities (51%).

Moderate levels of success were attributed to delivering reliable GIS system and performance (49%), improving governance and informing future planning (45%), providing centralised access to accurate LGA datasets (44%) and integrating with core operating systems (35%).

Lower levels of success were linked with supporting effective spatial data access from all LGA officers (35%), achieving proactive approach to expanding GIS usage (34%), Increasing awareness of data quality responsibilities (34%) and integrating with business activities (34%).

The least successful aspects of the current GIS system were enabling new business workflows (15%), delivering centralised access to third party data (25%) and reducing duplication of datasets (28%).

The most successful training and knowledge transfer activity was basic GIS training for general users (73%). Advanced training availability for high level users was less successful (38%). A lower level of success was attributed to internal communications (37%) and external communications (13%).

4. Next steps

Spatial information can inform ‘big picture’ understanding and enhance regional decision making processes, create greater efficiencies in communication, increase the quality of information and support policy formulation and evaluation. Appendix 1 introduces a number of open government and shared spatial mapping services.

4.1 Data that should be mapped

Study participants identified a broad range of data that would be beneficial to map. The accompanying Consultation Report includes more detail for thematic areas which included:

- Community demographics
- Environmental data, EVC, flora and fauna habitats, native vegetation, threatened species
- Water infrastructure, catchment areas, stormwater drainage, sewerage and water mains
- Property data, building covenants, property overlays, vulnerable client overlay
- Planning schemes, applications, key strategic planning projects (e.g. Ballarat West)
- Transport infrastructure
- Council asset data, reserves, community infrastructure, furniture, signage, notice boards
- Emergency management, flood overlays, relief centres, police stations, hospitals
- Recreation facilities, locations, facilities, activities
- Groups and service providers, community services, childcare, community groups

4.2 Improvement opportunities

Study participants identified opportunities for business processes and outcomes to be improved by using spatial service approaches. These included:

- Enhancing accuracy and comprehensiveness of available information
- Optimising performance of Exponare - speed, reliability, interface
- Proactive approach to finding out the spatial services needs of different business units
- Better integration between GIS and administrative statutory planning processes
- Spatial analysis of planning and development trends
- Sharing data with neighbouring LGAs, regions and the state to broaden the strategic view

4.3 General public

Recent advances in web mapping services make it much easier for spatial data to be made available over the internet. The establishment of infrastructure of the type could support the delivery of an integrated set of information and services. Services could be tailored for audiences including the general public and for registered users (for example contractors and consultants requiring access to particular datasets).

The service set up would result in the establishment of significant GIS infrastructure including a Geospatial Data Catalogue and Web GIS infrastructure. Data licence agreements with external agencies would be supported by a combination of web mapping and web feature services.

The most important features of a spatial information gateway for the general public were confirmed as ease of use, use of non-technical language, accessibility, speed, user interface, depth of available data and interactivity. Respondents indicated they were unsure of the importance of a plug-in not being required and having platform and browser independence.

<table>
<thead>
<tr>
<th>Most important features</th>
<th>5 - Very Important</th>
<th>4 - Moderately important</th>
<th>3 - Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of use</td>
<td>68%</td>
<td>18%</td>
<td>10%</td>
</tr>
<tr>
<td>Use of non technical language</td>
<td>59%</td>
<td>22%</td>
<td>14%</td>
</tr>
<tr>
<td>Accessibility</td>
<td>53%</td>
<td>27%</td>
<td>16%</td>
</tr>
<tr>
<td>Speed</td>
<td>44%</td>
<td>34%</td>
<td>14%</td>
</tr>
<tr>
<td>User interface</td>
<td>37%</td>
<td>28%</td>
<td>27%</td>
</tr>
</tbody>
</table>
Depth of available data  
23%  
33%  
30%  
Interactivity  
20%  
30%  
40%  
Plug in not required  
13%  
24%  
54%  
Platform and browser independence  
12%  
21%  
57%  
1 = not very important  3 = unsure  5 = very important

The most useful foundation data layer to access via a spatial gateway for the general public according to study participants would be the latest aerial imagery (84%). Other beneficial layers included planning scheme information (83%), floodplains (79%), wildfire refuges/structures (76%), road/transport layer (76%), walking/bike tracks (72%), features/points of interest (72%), public transport routes (69%), property/cadastre (67%), vegetation (66%), water/hydro (63%), LiDAR-based layers (58%), council asset information (58%) and power/telecommunications (57%).

While many study participants were unsure about the level of challenge that would be associated with establishing a spatial gateway for the general public, the most challenging aspects were identified as establishment and maintenance of technical infrastructure (49%), initial costs (47%), ongoing costs (46%), data quality (45%), privacy issues (44%), speed and reliability (42%) and handling of updates and the custodianship of layers (42%).

Respondents were much more confident when identifying benefits (very beneficial or beneficial) associated with suggested services for inclusion within a spatial information gateway for the general public:

- Access to up-to-date aerial imagery (82%)
- Active transport (76%) - featuring walking tracks, bike tracks, bus routes and other facilities
- A regional transport linkages project (73%) - to promote and map regional transport options
- A destination marketing project (70%) - featuring walking tracks, bike tracks, riding trails, four wheel drive tracks and features of interest
- A regional recreational facilities pilot (67%) - generate robust data, map community sport and recreation facilities and usage, profile sport and physical activity, examine volunteering levels and identify priorities for future development and facilities upgrade
- My property account (65%) - like a bank account - secure access to service information, valuation, rates, pictures, easements
- Business improvement pilots (49%) - identify opportunities involving mapping business progress and improving workflow using GIS (internal / external service focus)
4.4 Inter-council

Inter-council services could include shared data custodian agreements, buffer zone information for adjourning council areas and services to support VicMap features of interest updates.

Study participants ranked the potential benefits of inter-council GIS activities with regional data sharing agreements with data custodians confirmed as the most beneficial (72%). This was followed by supporting local government in publishing information about points of interest (69%), sharing asset information across LGAs (62%) and establishing a shared data warehouse facility (59%).

Implementation of prioritised initiatives would provide the foundation for integration of other regional online services over time. This could support a more cost-effective approach to information dissemination and reduce the time that council staff currently spend on responding to information requests.

4.5 Key stakeholders

The shared services involving key stakeholder groups that study participants identified as the most beneficial were linked to emergency mapping (81%), emergency management (79%), climate change (72%), home carer support (70%), environmental management (70%), council/community reporting (69%), community planning and consultation (68%), consultants and contractors (67%), council maintenance and field workers (64%) and a regional connections project (55%).

4.6 Central Highlands IT and GIS networks

Networks for IT Managers and GIS users in the Central Highlands have existed in the past. It would be beneficial to reinvigorate these network groups as they could provide an important leadership role and support pro-activeness of member Councils in introducing innovative practices, such as regional collaboration, new information sharing models, business improvement linked to GIS and spatial information within the region.

4.7 Training and expertise

Training for Council staff is regarded as an essential part of future GIS directions. Effective training will provide benefits in relation to information access, communication and decision making. The next phase of development for spatial information services will generate greater demand for customised services which respond to business requirements, particularly those which are defined as common between LGAs and key stakeholders. These may result in the development of shared databases, greater use of overlaying techniques or demand for analytical or programming skills. Whilst these may be a skills that currently exists within the
GIS staff at each Council, the ability for business unit users to secure services and maintain relevant data could greatly reduce the resource pressures on existing GIS officers.

4.8 Potential funding sources

Funding is likely to be secured from a combination of local, state and federal government sources.

Local Government

Raise awareness of priorities and funding requirements with following groups/organisations

- Central Highlands Mayors and CEOs Forum
- Municipal Association of Victoria
- Regional Cities Victoria
- Rural Councils Victoria
- Ballarat ICT Limited

Through the Central Highlands IT and GIS networks prioritise project activities and seek an annual budgetary allocation from participating LGAs to support staged implementation of collaborative initiatives.

State Government

Examples of potential State Government funding opportunities include:

- Department Business and Innovation
  - Collaborative Internet Innovation Fund
  - Re-Innovate Regional Broadband Program
- Regional Development Victoria
  - Local Skills Partnership
  - Planning for Tomorrow
  - Economic Development through RDA

Federal Government

Examples of potential Federal Government funding opportunities include:

- Department Broadband Communications and the Digital Economy
  - National Digital Economy Strategy initiatives
- As one of the first 40 National Broadband Network sites the Moorabool Shire will have access to a number of programs - e.g. Digital Communities, Digital Enterprise, NBN enabled Education and Skills Services
5. Recommendations

The future success of the spatial information initiatives will be enhanced by the adoption of a staged implementation approach. Success will also be contingent on:

- Continued teamwork and collaboration across LGAs
- Funding (internal and external)
- Collective development and improvement in spatial information processes
- Implementation of data standards for information consistency
- New data procurement models and strengthened relationships with external agencies
- Pro-active approach to considering future collaboration opportunities

This study has reviewed current GIS usage and identified progress on adoption trends. Study participants have identified opportunities for further improving the use of spatial information to enable better business decisions, improve service delivery and enhance workflow processes. This section explores next steps in terms of recommended actions, anticipated benefits and potential funding sources.

5.1 Summary of recommendations

The table below provides a summary of the GIS Strategic Planning recommendations.

<table>
<thead>
<tr>
<th>Key objective</th>
<th>Action</th>
</tr>
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<tbody>
<tr>
<td>Leadership</td>
<td>Seek endorsement of GIS strategic planning directions from Central Highlands Mayors and CEOs Forum</td>
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<td></td>
<td>Reform the Central Highlands IT Managers and GIS User Networks</td>
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<td></td>
<td>Establish GIS reference groups in each LGA to support prioritisation of GIS development activities and layer development</td>
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<tr>
<td></td>
<td>Ensure GIS strategic planning priorities are aligned with LGA and regional plans</td>
</tr>
<tr>
<td>Key objective</td>
<td>Action</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Resourcing</strong></td>
<td>▪ Leverage existing and new technologies and infrastructure to support LGA and regional GIS activities</td>
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<tr>
<td></td>
<td>▪ Where GIS skills and data custodian responsibilities are required as part of a job, revise position descriptions to include GIS competencies as an adjunct to business experience</td>
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<tr>
<td></td>
<td>▪ Prioritise business improvement strategies in areas including emergency management, climate change, homecare support and environmental management</td>
</tr>
<tr>
<td></td>
<td>▪ Extend data custodian responsibilities through a process of devolving responsibility to business managers</td>
</tr>
<tr>
<td></td>
<td>▪ Source internal and external funding to support prioritised actions</td>
</tr>
<tr>
<td></td>
<td>▪ Evaluate spatial information service benefits through an explicit focus on measuring outcomes and return on investment</td>
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<tr>
<td><strong>Information access</strong></td>
<td>▪ Develop and implement spatial data standards from a whole of organisation/region perspective</td>
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<td></td>
<td>▪ Work towards consistency of base spatial information to better enable data exchange and interoperability</td>
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<tr>
<td></td>
<td>▪ Negotiate shared licensing arrangements with data custodians including state government, CMAs, water authorities, etc</td>
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<tr>
<td></td>
<td>▪ Explore a more frequent acquisition model for regional aerial imagery</td>
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<td></td>
<td>▪ Establish well structured geospatial data catalogue and provide centralised access to LGA and third party data</td>
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<tr>
<td></td>
<td>▪ Implement project to support publication and maintenance of information about points of interest</td>
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<tr>
<td></td>
<td>▪ Progressively implement new business workflows and other improvements taking into account priorities identified by study participants</td>
</tr>
<tr>
<td><strong>Training</strong></td>
<td>▪ Distribute periodic GIS information updates and news</td>
</tr>
<tr>
<td></td>
<td>▪ Produce ready reference documentation including simple online ‘how to’ style tutorials</td>
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<tr>
<td></td>
<td>▪ Identify common GIS training needs</td>
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<tr>
<td></td>
<td>▪ Develop training schedule with a focus on meeting demand for advance and customised training</td>
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<td></td>
<td>▪ Deliver regional training services</td>
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</table>
### Regional data and web-mapping portal

- Establish regional web-mapping portal
- Determine technology platform
- Define preliminary layers and datasets to be included
- Develop initial web mapping applications/services
- Ensure ease of use, use of non technical language, accessibility, speed, depth of data and interactivity
- Support interoperability of information via regional web-mapping portal and LGA GIS systems
- Operate the regional web mapping portal
- Progressively expand to deliver comprehensive range of externally sourced and regionally collected and maintained data and services

### 5.2 Anticipated benefits

Anticipated benefits include:

- Make data more accessible and timely through regional collaboration
- Generate efficiencies through a reduction of information silos within local government
- Broaden GIS skills across the Central Highlands region
- Strengthen relationships with external agencies
- Source project funding to tailor services to meet stakeholder needs
- Promote interoperability by implementing data standards for consistency
- Innovate with new business models, products and services
- Leverage next generation mobile and broadband infrastructure and services

### More information

Any request for further information or clarification should be directed to:

Helen Thompson
Director
Centre eCommerce & Communications
University of Ballarat
Email h.thompson@ballarat.edu.au
Phone 03 5327 9418
Mobile 0417 059 65
Appendix 1

Australian initiatives which are focused on open data are growing. The publishing of public sector information in open and accessible supports citizens in becoming better informed and engaged. Governments can also become more responsive. This section introduces a number of open data initiatives. It also provides information on shared GIS services. Together these examples assist in demonstrating how web-based spatial mapping services can support improved communication, access to information and services.

Data.gov.au

The Department of Finance and Deregulation has developed data.gov.au as a data catalogue of government information. The site provides an easy way to find, access and reuse public datasets from the Australian Government and state and territory governments. The main purpose of the site is to encourage public access to and reuse of government data by providing it in useful formats and under open licences. Improving the quantity and quality of the site’s data will be an ongoing process.

The data.gov.au site is an example of Government 2.0. It is supporting the use of the new collaborative tools and approaches with the aim of achieving more open, accountable, responsive and efficient government. State, federal and international governments are increasingly recognising that information collected by or for the public sector — is a national resource which should be managed for public purposes. It should be freely available for anyone to use and transform unless there are compelling privacy, confidentiality or security considerations.
In Victoria data.vic.gov.au provides an online access point to Victorian Government public sector information. Visitors can search or browse to a variety of datasets in different formats, or download the information they need.

The State Government of Victoria, the Australian Bureau of Statistics and other government entities have supported mash-up contests and hack days to encourage the creative and innovative use of data and digital content and to foster new types of collaboration. The App My State [http://archive.premier.vic.gov.au/app-my-state/about-app-my-state.html](http://archive.premier.vic.gov.au/app-my-state/about-app-my-state.html) was a competition to inspire Victorians to create mobile and web applications that would benefit Victorians which was launched in February 2010. Entrants competed for $100,000 in prizes.

**Visual Place**

The purpose of the Visual Place project [www.vic.gov.au/visualplace.html](http://www.vic.gov.au/visualplace.html) was to build a proof of concept model that shows the value of supporting the development of an interactive GIS enabled information delivery services as a part of Victoria Online.
The South Australia Council Maps website [www.sacouncilmaps.sa.gov.au](http://www.sacouncilmaps.sa.gov.au) is a collaborative initiative involving the 31 metropolitan and regional Councils that was initially funded by the Local Government of South Australia Research and Development Scheme.

The goal is to provide the community with access to an online mapping system containing information with a Local Government context including waste collection, land development...
zoning and the nearest libraries, parks and playgrounds. Data is being provided by numerous agencies including the participating Councils. Examples include:

- Australian Electoral Commission - Electoral boundaries
- Aerometrex Australia - High resolution aerial imagery
- Department of Education and Children’s Services - Education facilities (education and child care)
- Department of Environment and Natural Resources - Council wards, national parks, property boundaries, railways, roads, suburbs, rivers and creeks
- Department of Planning and Local Government - Bushfire zones, council boundaries, heritage sites, land development zones, land use and wind speed zones

UB Spatial


UB Spatial is an interoperable web-GIS that was initially established as a collaborative project between the Corangamite Catchment Management Authority (CMA) and the University of Ballarat (UB).

The impetus for the project was to provide the most relevant and current Natural Resource Management (NRM) data into an environment where it can be shared with and accessed by catchment managers, researchers, consultants, municipalities, government agencies and members of the general public.
UB Spatial is based on open standards and systems and designed as a user-friendly and fast web-GIS capable of handling data from varied sources. Its interoperability with disparate systems allows data managed by a variety of custodians to be published in its native format on the same map base. Current datasets include those managed by the UB geology department (and collaborators) who have assembled the data through research, investigation and monitoring undertaken in recent years through the Corangamite CMA salinity and soils programs, viz: groundwater bores, salinity, soil erosion and landslides; as well as those managed by other agencies such as the seamless geology map managed by GeoScience Victoria (Department of Primary Industries - DPI) and historical aerial photographs supplied by the Colac Otway Shire.

Since the implementation of the web-GIS, the Colac Otway Shire (COS) and Municipal Association of Victoria (MAV) have co-invested in the project. The COS were successful in gaining funds through the National Disaster Mitigation Program (NDMP) to construct a landslide database. The MAV, through their Broadband Innovation Fund supported the extension of the web-GIS portal to COS and the Corangamite Shire (the South West Knowledge Hub project).

The COS portal [www.ubspatial.com.au/cos](http://www.ubspatial.com.au/cos) was launched on 7 August 2009 with components including aerial photography, local points of interest, rubbish routes and a number of other useful datasets including a database of landslides which, among other things, serves to alert ratepayers of planning constraints when building near landslides.
Corangamite Catchment Management Authority

The Corangamite CMA Knowledge Base [www.ccmaknowledgebase.vic.gov.au](http://www.ccmaknowledgebase.vic.gov.au) is an extensive collection of publications and technical reports on all aspects of the catchment and has been in existence for a number of years. The innovative search interface for the knowledge base has been refined and enhanced to take advantage of new web technologies including map-based searching and user-generated tagging.