



MODULE 11: Partnerships and Working Together - The Potential for Collaboration

Building capacity to implement natural resources information management systems.

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MODULE 11

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Guide for managers

Context

One of the additional benefits of introducing spatial information systems (SIS) into organisations and NRM regional bodies is that it can encourage cooperation and communication across the multiple sectors that require and use spatial information in their everyday work. It can also encourage organisations and NRM regional bodies to work together with neighbouring groups, plus local, state/territory and Australian governments.

The collection of data for an SIS can be costly and may require the purchase of specialised equipment and technical expertise. Careful planning is required to ensure collection activities are well coordinated and, where possible, data can be collected once and used many times by different business units within a single organisation. There are also potential cost savings in working together with other groups.

A number of key practices for working together on spatial information initiatives based on lessons from practice include the following:

- broad support for vision and expectations
- champion individuals/community support
- knowledgeable, respected participants
- frequent contact with national (higher order) organisations
- proactive, open, and inclusive processes/procedures to enable maximum participation/diverse perspectives
- improved understanding/outreach.

Experiences from groups working together through regional networks in Australia underline the benefits that can be achieved. These benefits are also highlighted in Queensland with an initiative by the state government to collaborate with local governments in the development of SIS.

Actions

Managers should consider the advantages and disadvantages of actively working across their organisation, with neighbouring organisations (either informally or through formal collaborative forums), other levels of government, business and the community in the development, maintenance and support of spatial information management systems. There are potentially great advantages in working collaboratively, however, establishing good working relationships takes time, effort and long-term commitment.

By working together, organisations and NRM regional bodies can also increase opportunities for sharing knowledge in relation to appropriate levels and types of investment in spatial information technology, adoption of standards and sourcing and acquiring spatial data at the lowest possible cost.

In some cases working together with neighbouring organisations and NRM regional bodies ensures that regional needs for spatial information can be better heard and understood by those working at a state/territory or federal government level.

Acknowledgments

This module draws heavily on the experiences and lessons learned from GeoData Alliance's 'Lessons from Practice: A Guidebook to Organizing and Sustaining Geodata Collaboratives': http://www.metrogis.org/documents/articles/lessons_entire.pdf. In addition, the specific experience of the MetroGIS, regional GIS approach in the Twin Cities, Minnesota region in the USA is drawn upon:








<http://www.metrogis.org/documents/presentations/index.shtml>.

A second example is drawn from the Queensland Government's Whole of Government GIS (Spatialink) involving shared access by all state and local government agencies.

Note: The majority of this module is taken from the ANLIC – Local Government Toolkit. This and other sources mentioned above are duly acknowledged.

Guide to symbols

The following symbols are used throughout the Toolkit as a guide to users, and draw attention to important issues and information.

	Information which readers should take particular note of
	Best practice information
	Tips for readers—based on experience and aimed at saving time and resources
	Caution—readers are advised that particular care should be taken or that the subject issue may be complex
	Additional information
	Capability raising—used to show a signpost to a higher capability level
Text	Used to highlight a particular issue
	Highlighting of issues specifically related to ANZLIC or the Audit

11.1 Introduction

The principles of working together to develop effective spatial information systems (SIS) apply within organisations as much as they apply to NRM regional bodies working with other groups such as local, state and national government. There are, however, some important differences in how SIS can be implemented within a council compared with issues that should be considered when councils work together, or work together with other levels of government.

The overriding issue in all collaborations is the simple question: why collaborate? If the benefits (and disadvantages) of collaboration are carefully weighed up then collaborative mechanisms (if any) will become clearer.

In many cases NRM regional bodies work independently to develop SIS. This has the advantage of that group or body developing its systems, processes and capabilities according to its own specific local needs. Larger groups in particular, can have the skills and experience required to work independently, and can work directly with state/territory agencies to obtain state-wide spatial information datasets relevant to their area because they know where to look and who to contact.



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Develop performance measures and review processes to support formal service agreements for the provision of spatial information services both within council and to external organisations.

11.2 Characteristics of successful spatial data collaboration initiatives

The 2001 report from the GeoData Alliance entitled *Lessons from Practice: A Guidebook to Organizing and Sustaining Geodata Collaboratives* provides a summary of six diverse GIS collaboration initiatives from the USA. The initiatives analysed were:

- New York State Data-Sharing Cooperative
- Ramsey County GIS Users Group
- Pacific Salmon Information Network (PSIN)
- MetroGIS
- Pennsylvania Mapping and Geographic Information Consortium (PaMAGIC)
- National Cooperative Soils Survey (NCSS)

See http://www.geoall.net/docs/lessons_from_practice.pdf.

A total of seventeen key practices for successfully creating and sustaining their respective collaborative initiatives were distilled from the case studies (Table 10–1).

Table 11–1 Key practices for successfully creating and sustaining collaborative spatial data collaborations (Geodata Alliance, 2001)

Key practices to success	New York	Ramsey County	PSIN	MetroGIS	PaMagic	NCSS
Broad support for vision and expectations	X	X	X	X	X	X
Champion individuals/community support	X	X	X	X	X	X
Knowledgeable, respected participants	X	X	X	X	X	X
Frequent contact with national (higher order) organisations	X	X	X	X	X	X
Proactive, open and inclusive processes/procedures to enable maximum participation/diverse perspectives	X	X	X	X	X	X
Improved understanding/outreach	X	X	X	X	X	X
Champion organisation(s)	X		X	X		X
Documented stakeholder benefits/business argument	X		X	X		X
Maintain institutional memory			X	X	X	X
Focus on common business information needs		X	X	X		X
Business plan and well defined issues	X			X	X	X
Seek consensus on policy decisions			X	X		X
Timely and important issue			X		X	X
Active involvement of elected officials				X		X
Alignment with internal business needs				X		X
Incentives		X		X		
Short, interesting meetings			X		X	

Six of these seventeen key practices were found to be common to all six collaboratives (no order of significance is intended), namely:

- broad support for vision and expectations
- champion individuals/community support
- knowledgeable, respected participants
- frequent contact with national (higher order) organisations

- proactive, open and inclusive processes/procedures to enable maximum participation/diverse perspectives
- improved understanding/outreach.

Findings from these case studies were compared with a previous national survey of GIS used in the USA, and academic research. The results of this combined analysis produced some important lessons. These are (Geodata Alliance, 2001):



- keep it simple
- formalise structure
- ensure that contributions are fair, equitable and continuous
- determine and communicate control and ownership
- manage perceptions about data ownership
- control the 'what's in it for me?' syndrome
- manage the process
- provide project leadership
- define roles and responsibilities
- manage change.

The above lessons are elaborated below:

Keep it simple

- The extent of the interaction between organisations usually goes beyond data-related activities to include joint system development, personnel space, and applications.
- Moving from data to applications, the interactions increase not only in their sophistication and complexity but also in the difficulty of making them functional.
- Shared or jointly supported application developments are the most challenging.
- Think big but start small and build gradually.

Formalise structure

- Mutual trust is the key to successful cooperation, but supporting interaction with formal documentation (such as intergovernmental agreements, MOUs, data licences, contracts, etc.) is wise. Documentation is typically used more in relationships with other organisations than within an organisation.
- These documents may enable a continued data exchange even in cases where the other forms of interaction are discontinued.
- The nature of sharing structures also needs to be established early in the process. The key is to establish a stable and simple relationship structure.

Ensure that contributions are fair, equitable and continuous

- First, determine the contributions in advance and in specific terms. Data are the major contribution to coordinated activities. Financial and staff contributions are also substantial, the latter being more evident in intra-organisational settings.
- Take into account the concerns most organisations would have about how commensurate their contributions would be relative to their size, resources, and use of data or other joint products.
- Apply the principle of equity in accepting contributions and distributing the common resources.
- Extensive negotiations may be necessary to decide on contributions and returns.
- Loss of full independence and investment of energy and resources are deliberate and tangible contributions toward developing and maintaining relationships with other organisations.
-
- Some level of contribution from each participant tends to increase the commitment to the joint goals and raises the stakes in success.
- Secure long-term commitments for contributions.

Determine and communicate control and ownership

- As with any multi-party venture, participants need to feel empowered to plan, make decisions and bring them to realisation.
- Participants in inter-organisational activities expect a fair decision-making process to ensure adequate control over the joint activities and resources.
- Voting rights and decision authority must be carefully determined and clearly defined.
- Extensive negotiations may be necessary as well.
- Differences will occur in definitions of fairness and equity depending on the resources, power and role in the partnership of the various organisations.

Manage perceptions about data ownership

- Openness with regard to data access, minimal proprietary interest in data and no major financial gains expected from data distribution are conducive to less conflict and tension regarding the ownership of data.
- All parties must perceive the coordinating unit or coordinator and their location as neutral.

Control the 'what's in it for me?' syndrome

- This is only natural and should be taken seriously.

- Understanding and respecting the reasons that motivate organisational participation is part of the success.
- Saving resources and sharing a common mission and goals are the most frequently declared reasons for inter-organisational interaction.

Manage the process

- Ongoing communication and negotiation are inherent parts of coordination efforts.
- Identifying semantic differences and commonalities between concepts held by participants, and creating a common working language are prerequisites for effective communication.
- Communication happens both formally and informally.
- Persistence and willingness to compromise are the keys to success, particularly through difficult times.
- Coalition building and bargaining may be exercised as well.
- Differential commitment levels are possible.
- Process takes time and patience.
- The spirit of cooperation is crucial for keeping participants active and interested. It is based on teamwork, shared understanding, trust and mutual credibility.

Provide project leadership

- Leadership is the key success factor.
- Leadership provides vision, support and backing with resources.
- Project leadership exercises the authority to promptly act on common plans and decentralises power to allow for implementation of the agency-specific parts.
- Stability characterises effective project leadership structures.
- Project leadership ensures 'enforcement' of common standards.

Define roles and responsibilities

- The roles and responsibilities of each participant have to be well defined.
- Database development and maintenance responsibility is the life cord of inter-organisational activities.
- It is necessary to identify and secure support of the original data providers early in the coordination initiative so that data provision and updates will be kept close to the source or in organisations with compatible functions.
- Additional resources and support infrastructure need to be provided to the units with accepted new roles and responsibilities. Additional workloads and expenses may also be incurred.

- The units perceiving inequities in data maintenance commitments are prone to downgrade their own support of the system.
- Assignment of roles and responsibilities is highly susceptible to fairness issues and concerns.

Manage change

- In a highly technical field such as SIS, it is necessary to adapt local solutions to take advantage of technological change and innovations.
- The problems of mismatch between new database tasks and procedures and existing organisational structures are common in the newly initiated inter-organisational efforts.
- Technological change requires change in administrative and organisational structure and processes. Integrated and distributed data processing tends to generate leaner, more flexible and more responsive organisations with fewer management levels and more direct information exchange between the top and bottom layers.
- The sense of upcoming change, and the uncertainty brought with it, tends to be unsettling to many agencies and their personnel. It is crucial to confront the concerns about the implications of technological change and joint database activities for subsequent organisational and staff realignment.
- The status of the joint project needs to be frequently demonstrated and communicated to all participants and leaders. Project expectations should be managed at administrative, management and operational levels.
- The culture of both sharing and change must be nurtured.

11.3 Working together within organisations

As outlined in *Module 1: Information management and the sustainable development of natural resources*, how spatial information is used within organisations and NRM regional bodies depends on skills and capabilities which will, in turn, depend on their size, staffing numbers, budgets and location. With the increasing use of spatial information in all organisations there is often the need to consider how different groups can work together.

In essence, the principles for working between organisations, outlined in the sections above, also apply to working within organisations; but with the simplifying factor that accountability is to one chief executive and one organisation or NRM regional body.

Several factors affect the development of an organisational model and appropriate management strategies such as; potential benefits of shared spatial data among a number of business operations, specific operational needs of business operations, cost benefit trade-offs related to implementation alternatives, varied impacts on current business operations and related organisational impacts. Particularly relevant issues include (<http://www.geoanalytics.com>):

1. The organisation's vision, goals, and strategic plan

2. The vision, goals, and role for SIS within the organisation
3. The degree to which spatial data (base data and applications data) are to be shared among applications and users
4. The degree of autonomy of business units
5. The presence and use of related technologies and data, including desktop mapping, imaging, global positioning satellite technology, demographic and other thematic data, plus processing software, and data analysis software
6. The potential for business process re-engineering and organisational change
7. Strategic and operational time frames for implementing SIS
8. Financial issues, including requirements for cost-benefit justification and return, as well as levels and schedules of funding availability. These and other factors determine the direction and detail of SIS planning, which subsequently provide information for the development of an organisational plan and management strategies.

Additional material on enterprise application of SIS is provided in Section 10.5.

11.4 Examples of spatial information collaboration



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Organisation or NRM regional body staff or technical departments provide services using spatial information to meet the requirements of others or through peer networks to other organisations.

11.4.1 South East Queensland

The South East Queensland Regional Organisation of Councils (SEQROC) was formed in July 1991 and comprises the 18 local governments in the region. The objectives of SEQROC are:



- to support and advance the interests of its members and their constituencies
- to formulate policies and strategies from which all member councils may act collaboratively in determining complementary plans for the coordination of regional growth and management of change
- to foster cooperation amongst members on issues of mutual concern or to further joint interests
- to act as an advocate to state/territory and Australian governments or public bodies on issues of concern to members.

SEQROC has a number of working parties including the Spatial Information Network Group which provides a forum to facilitate the effective use of SIS in local government, especially from a regional perspective. The group acts as a regional advocate for specific projects/issues raised by either state government or the private sector, allowing the network's members to present a consensus view. The

group also serves as a technical forum for sharing expertise and looking for opportunities to better use and promote spatial information in the region.

A key focus of the group is identifying opportunities to reduce duplication of effort and cost in the development of spatial information through the introduction of common standards, applications, processes and accessibility to data. This promotes and encourages local governments to work together in the region through a focus on improved economic opportunities and outcomes, and economies of scale for their members.

In addition to its active membership of the SEQROC Spatial Information Network Group, Gold Coast City Council also participates in the New South Wales Northern Councils Spatial Information Group (NCSIG). NCSIG is coordinated by state government staff (volunteers), with the host council providing the facilities. Spatial information industry vendors are also invited to attend. Participation in NCSIG is not through a formal agreement, (unlike SEQROC) although the objectives are similar and, as such, has an informal networking approach. Southern Cross University (Lismore) is also a member providing opportunities to discuss whether the spatial information curriculum is relevant to state and local governments' needs.

11.4.2 Queensland whole-of government GIS (Spatialink)

Sharing spatial data has always been a vital and necessary process supporting GIS business units across all tiers of government. The level of such activity and demand for information by Queensland State Government agencies directly reflects core business information needs and the ability to direct resources accordingly. In relation to local government, larger councils, such as Gold Coast, Brisbane, Caloundra, Toowoomba and Hervey Bay have developed advanced in-house GIS capability equivalent to many state government agencies. However, the majority of councils, particularly those in rural and remote areas, have not been able to establish effective in-house GIS capability. This can be attributed in large part to cost of data acquisition as well as GIS technology and expertise. Surveys in the past have indicated that councils are keen to use GIS and are willing to exchange fundamental datasets with the state government. The processes for sharing data have been both complex, expensive and time consuming. The emergence of Regional Organisations of Councils (ROCs) in the state has, to some degree, provided a valuable forum for councils to discuss common issues and opportunities for data sharing and engaging generally with the state government. Additional initiatives are continually being introduced to improve data sharing.

Key drivers for partnerships and working together



- recent advances in technology providing opportunities for efficient sharing of information and delivery of services to the public
- in Queensland, the availability of a whole-of-government IT (GovNet and LG Online), providing connectivity between all state and local government agencies
- champion agencies/organisations willing to take a lead role in implementing GIS services that deliver benefits beyond their own interests, (i.e. whole-of-government benefit) e.g. the

Departments of Natural Resources and Water, Local Government and Planning, Emergency Services, and the Environmental Protection Agency in Queensland

- changing policy within agencies with a greater willingness to share information and less focus on charging for information.

A whole-of-government approach to GIS

The Queensland Department of Innovation and Information Economy has developed a number of important, whole-of-government information services. The GovNet infrastructure (unique to Queensland) emerged as a robust and secure environment from which to deliver these services.

In 2002, the Departments of Local Government and Planning, Innovation and Information Economy and the Local Government Association of Queensland sponsored a program to share planning information online for use by all agencies. The definition of whole-of-government was extended to include all 125 councils who were provided with access to GovNet via the recently established local government online portal. Appropriate spatial data were provided by state and local government agencies under a largely common set of licences. While some datasets were purchased from specific agencies, the assumption was that the cost of renewing these licences would significantly reduce once the efficiencies and benefits of this service were realised.

The Integrated Planning GIS was the first GIS service developed and was followed by the whole-of-government GIS Clearinghouse (Figure 10–1), the latter being comparable with the MetroGIS (USA) example outlined in Section 10.4.3.

Using technology to improve collaboration and service delivery

Queensland's whole-of-government GIS provides infrastructure and online tools supporting spatial data exchange, discovery and viewing. Much of the development effort addressed the need to simplify and automate the exchange of electronic data between state and local governments. Specifically this technology aimed to support:

- a secure area for each agency to manage data exchange, including:
 - registering dataset details and 'rules of use/access'
 - privacy control over elements within a dataset
 - supply or preparation of ANZLIC-compliant metadata
 - issue of a standard, QSIC endorsed e-licence for all downloadable datasets
 - messaging services to automatically notify owners/users of such transactions
 - choice of preferred GIS formats (upload/download auto-formatting)
- options to directly transfer data to nominated agencies or to the whole-of-government GIS for viewing online
- online mapping facility for map building, analysis and hardcopy generation.

The assumptions behind the concept of a whole-of-government GIS clearinghouse was that technology could be used to:

- improve access generally to GIS and its value in supporting day-to-day business within organisations (approximately 150,000 state and local government staff)
- provide a one-stop-shop for spatial data in the state and thus make them easier to discover
- standardise and streamline traditionally complex and time-consuming processes associated with accessing spatial data
- drive down the cost of spatial data through demonstrating the benefits of shared online services
- improve the climate of working together through the establishment of sustainable services that provide ongoing benefits across government
- create real opportunities for agencies on modest budgets to participate in developing their own GIS services by using existing infrastructure and shared data licences.

The focus was on implementing shared services which would support efficient processes for data exchange as well as provide new opportunities for collaboration. The whole-of-government GIS technology comprising network connectivity, servers and in-house developed GIS applications would also be available for any government agency to use, dramatically reducing the cost of individual agencies wishing to participate in this space.

Figure 11–1 The Queensland Spatialink Clearinghouse



Benefits



As a direct result of these initiatives, Queensland has generated new interest and activity in the areas of data sharing and cost. These services have also promoted new interest in collaboration to develop online SIS by agencies with little previous involvement in this area, including:

- connectivity through GovNet and Local Government Online between all state and local government agencies for a wide range of SIS and other business—one-stop-shop to all state and local government spatial data
- access to a wide (and growing) range of state-wide spatial datasets accessible under common whole-of-government licences. Sophisticated online tools to support immediate exchange of spatial and other data between state and local government. Spatial data formatted automatically for most desktop SIS applications
- support for recognised standards relating to licences, metadata, etc.
- enhanced tools to view and query data using online mapping and query tools

- opportunities for agencies to leverage their own SIS services using common whole-of-government infrastructure and data licences (including support for OGC web services standards).¹

Maintaining a sustainable SIS infrastructure for all agencies to use requires the ongoing support and participation of all agencies. It is envisaged that during the 2004–2005 period both state and local governments will escalate their data exchange activities through this infrastructure as well as work collaboratively to deliver shared information.

11.4.3 The MetroGIS Initiative: Minneapolis–St. Paul metropolitan area, USA

The MetroGIS initiative is a voluntary collaboration of organisations in the Minneapolis–St. Paul metropolitan area that uses geographic information systems technology to carry out their business functions.

Lessons learned from MetroGIS found that the intangible benefits of participation in a multi-participant GIS initiative included:



- improved cost-efficiency through reduced redundancy in data development and maintenance, and cost-sharing opportunities
- improved decision-making support and improved methods of analysis and presentation
- access to data from other jurisdictions in a compatible format for analysis and query
- improved communication with the public
- improved management and retrieval of data
- enhanced revenue opportunities from private sector for data consistency from county-to-county throughout the region
- enhanced academic research capability
- stronger bargaining position with vendors for purchase and support.

The MetroGIS mission statement is to:

- Provide an ongoing, stakeholder-governed, metro-wide mechanism through which participants easily and equitably share geographically referenced data that are accurate, current, secure, of common benefit and readily usable. The desired outcomes of MetroGIS include:
 - improved participant operations

¹ Early examples of agencies taking advantage of this include the Treasury Government Asset Management System and the Department of Education (both developed as a web service). With the existing infrastructure and data licences in place, these services were able to be developed at a fraction of the 'normal' cost and in a matter of weeks rather than months.

- minimised stakeholder expense and duplication of effort
- supported cross-jurisdictional decision-making.

Benefits of MetroGIS core services and desired outcomes

1. Foster GIS coordination among stakeholders

- provide an inclusive, trusted forum to collaboratively resolve geospatial data and GIS technology-related issues and opportunities of common interest
- improve trust and mutual understanding within the GIS community through frequent opportunities to communicate with colleagues and peers
- build sustainable solutions to common geodata-related needs through the use of collaborative and consensus-based processes that seek to institutionalise custodian roles and responsibilities pertaining to capture, maintenance, documentation and distribution of commonly needed data
- enhance individual stakeholder GIS programs and capabilities through sharing technology and proven practices with colleagues and peers.

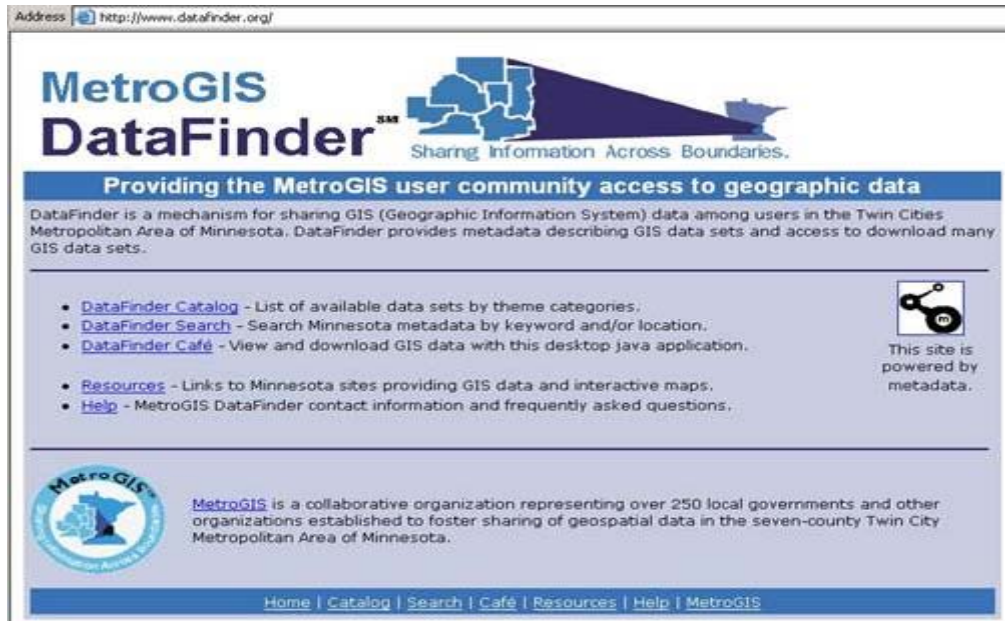
2. Oversee solutions to common information needs

- increase access to, and use of, trusted, reliable and current data required to support business needs through sharing data and creating community-endorsed regional data solutions—build once and share many times
- improve decision support for its entire stakeholder community through the use of minimal data standards pertaining to assembly of data produced by multiple organisations into regional datasets. These datasets work together horizontally within a given geospatial data theme and vertically among themes
- facilitate use of data standards and best practices.

3. Support MetroGIS DataFinder (www.datafinder.org)

- support data discovery and distribution through a centralised internet-based tool that is a node of the US National Spatial Data Infrastructure (NSDI) (Figure 10–2).

Figure 11–2 The MetroGIS DataFinder™



What principles guide MetroGIS?



MetroGIS makes a practical assumption that organisations cooperate out of self-interest. Very early, participants agreed to support the 'data sharing' ideal only if it met their own business needs. For MetroGIS, the principal stakeholders are the metropolitan council, other regional agencies, and local units of government—counties, cities, school districts, and watershed districts—few of which need geodata for the same purpose, or use it in the same form. The principal challenge for MetroGIS is to meet the common geodata needs of these organisations without costing them more in resources or time than would otherwise be the case if they developed or assembled the data they needed from others independently.

Based on this 'self-interest' assumption, MetroGIS is guided by several fundamental principles, including:

Secure champions

Broadly supported 'proven practices' will not just happen. Sustained collaboration requires leadership from organisations with related business needs and a willingness to participate.

Broad support of vision and expectations

Reach collective agreement on the desired purpose of the collaborative and continually monitor the correctness of the stated purpose.

Actively involve policy makers

Empower elected officials (councillors) early on and throughout the initiative to maintain policy focus on the broader public good, broaden understanding of the issues and benefits, provide direction on

strategic initiatives, provide a reality check for proposed courses of action, identify appropriate areas for collaboration, advocate with higher authorities when needed, and set policy.

Promote understanding

To help policy board members better understand the value of geospatial data and use of GIS technology, a demonstration is made at each board meeting to show the benefits of using the technology and what can be gained through data sharing and collaboration.

Seek consensus on policy decisions

Consensus among policy board members is sought for action on issues and opportunities fundamental to the success of MetroGIS.

Represent diverse perspectives

MetroGIS's decision making derives from work performed by broadly representative committees and workgroups, comprised of committed managers and technical staff with appropriate expertise. No single organisation or faction dominates.

Document stakeholder benefits

Identifying and documenting stakeholder benefits in a manner readily understandable by the various stakeholder communities are fundamental to strengthening commitments to MetroGIS.

Maintain focus on common business information needs

MetroGIS made a particular effort to identify common business information needs of key stakeholder organisations via a broadly collaborative process and then embarked on a regional geodata strategy focused on meeting these common needs.

Focus on stakeholder benefits

Identifying stakeholder benefits is fundamental to strengthening commitments to MetroGIS.

Acknowledge fair-share contribution options

Contributions to the sustained operation of the regional collaborative, from any one stakeholder, may be in the form of funding, data, and/or people and equipment.

Align with internal business needs

No stakeholder organisation will be asked to perform a function for the collaborative that exceeds their internal business needs.

Maintain an institutional memory

Champions at all levels of the collaborative initiative have and will continue to leave MetroGIS, which may result in stakeholders not being able to keep abreast of all MetroGIS activities. Creditable documentation of meetings, policy decisions, studies, etc. is critical to maintaining a course consistent with previously agreed policy and direction.

Connect with geodata initiatives on the state and national levels

MetroGIS's endorsed procedures for addressing its stakeholders' common information needs and its one-stop data distribution mechanism have been highly influenced by the vision of the National Spatial Data Infrastructure (NSDI) to ensure that MetroGIS is part of the larger vision.

11.5 Additional support

State/territory SDI sites and atlas sites

Queensland: <http://www.qsiis.qld.gov.au> and <http://www.information.qld.gov.au/>

Western Australia: <http://www.walis.wa.gov.au/> and <http://www.atlas.wa.gov.au/>

New South Wales: <http://canri.nsw.gov.au/nrdd/> and
<http://www.nratlas.nsw.gov.au/wmc/savedapps/nratlas>

Tasmania: <http://www.thelist.tas.gov.au/>

ACT: <http://asdd.ga.gov.au/asdd/tech/node/act-1.html> and
<http://www.gim.act.gov.au/actLocate/index.dwt>

Victoria: <http://www.land.vic.gov.au> and <http://www.dpi.vic.gov.au/dpi/vro/vrosite.nsf/pages/vrohome>

Northern Territory: <http://www.ntlis.nt.gov.au/> and
http://www.ntlis.nt.gov.au/imfPublic/imf.jsp?site=nt_atlas

South Australia: <http://www.asdd.sa.gov.au/> and <http://www.atlas.sa.gov.au/>

Intra-organisational spatial data collaboration support

A wide range of support materials is available at the GeoAnalytics website:

<http://www.geoanalytics.com>

In particular, valuable papers specifically on organisational issues include:

Management and Governance Dimensions of Enterprise IS/GIS

For specific support on the science of organisational GIS see the paper by Rebecca Somers 'Developing GIS Management Strategies for an Organization' from the Journal of Housing Research, Volume 9, Issue 1 (1988):

http://www.fanniemaefoundation.org/programs/jhr/pdf/jhr_0901_somers.pdf

Inter-organisation spatial data collaboration support

Centre for Technology in Government (USA): New Models of Collaboration: A Guide for Managers:
http://www.ctg.albany.edu/publications/online/new_models/

This includes a case study of the New York State Geographic Information System Coordination Program and hosts a formal data sharing cooperative and a variety of educational and support services to encourage state and local development and use of spatial data.

GeoData Alliance Lessons from Practice: A Guidebook to Organizing and Sustaining Geodata Collaboratives: http://www.geoall.net/what_we_do.html

A summary of six successful geodata collaboratives from the USA is presented, including examples from local government.

Academic paper from Australian local and state-based collaboration: the key to unlocking the potential of SDI by Mathew Warnest, Kevin McDougall, Abbas Rajabifard and Ian P Williamson: <http://eprints.infodiv.unimelb.edu.au/archive/00001116/01/Spatial%20Sciences-2003-Mathew.pdf>

The paper provides an academic examination of critical factors in the success of four GIS collaboration initiatives in Australia.