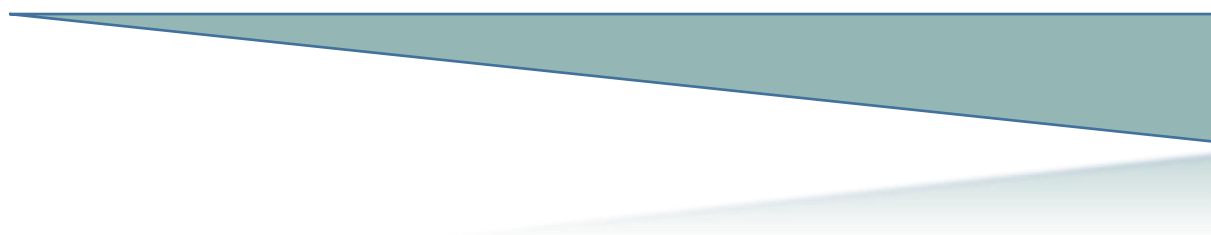




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LASS GIS REPORT FOR HAWKES BAY REGIONAL COUNCIL

Experiences of GIS Shared Services

Abstract

Prepared for HBRC, this report compiles a number of Geospatial Shared Services case studies, analyses common themes and identifies best practice.





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Executive Summary

As local government in New Zealand faces new amalgamation challenges, a number of regions are exploring shared services initiatives. In some cases, these are seen as a precursor to amalgamation, in others as a potential alternative.

For many reasons, geographic information systems (GIS) and geospatial data are often seen as a 'quick win' and are likely to be one of the early shared services projects in a region. Fortunately, other local government organisations in New Zealand and around the world have experienced the implementation of a GIS shared services framework.

This report has been commissioned by Hawkes Bay Regional Council (HBRC) to consolidate GIS shared service experiences in order to guide HBRC activities. As such, this report should be regarded as a resource both to guide the creation of a GIS Shared Services initiative as well as to be dipped into as issues arise during implementation.

The report identifies 'best practice' activities which have worked well in several other organisations. In these best practice topics, the report identifies areas of risk and makes recommendations about approaches to mitigate this risk. The most important conclusions are:

Change Management: Implementing Shared Services is an exercise in Change Management. The technology available today is able to ensure that GIS Shared Services can be delivered; we can ensure a single source of truth, we can deliver services which can be used by almost any technology, we can separate analysis from presentation – it is all easy. People are the issue.

Establishing a Remit: It is essential that the remit for GIS shared services is established early on. This is what will drive success. Aligning that across the many GIS teams is difficult and potentially time consuming.

Governance and Leadership: Establishing good governance and leadership is critical. This applies to both the broader shared services framework and to the specific GIS shared services project.

Funding: Gaining funding is challenging. Budget cycles and investment in previous strategies work against the Shared Service model. The funding mechanisms are something which the core shared services framework needs to handle. However, as GIS is frequently the first shared services project, it can be the project which suffers the challenges of funding realities.

Return on Investment: Return on Investment (ROI) is important in establishing targets and then in measuring progress. But consideration must be given to the question of 'whose ROI?' and the boundaries to measure that ROI need to be carefully considered.

The Importance of Communication: In order to achieve buy-in across the Councils, communication needs to be outbound and clear.

Focus on Business Outcomes: GIS shared services initiatives can become preoccupied with the technology at the expense of business outcomes.

Technology Migrations: Any technology migrations required as part of a GIS shared services initiative must be regarded as major projects in their own right.

Business as Usual: Business as Usual (BAU) will continue during a GIS shared services implementation. For that reason, caution is needed when planning to use internal resource for the implementation.

Background to Report

Local government reform is proceeding apace in New Zealand. Following the Auckland region's amalgamation into the 'Super City', several other regions are now exploring options ranging from full consolidation through to an increased sharing of services between regional and local government entities. It is anticipated that following local government elections in 2013 a number of regions will press on with the development of shared services.

'Shared Services' can be an ambiguous term. In its broadest sense it is the consolidation of any service which is being provided across a range of government entities. So this might include centralizing the HR functions across several council organisations in a region. ALGIM commissioned a report on the state of New Zealand shared services in 2010¹. The key recommendations from that report are reproduced in Annex A because any GIS shared services initiative must take heed of these recommendations.

Hawkes Bay Regional Council (HBRC) also commissioned a report on shared services opportunities in September 2011². This report highlighted a number of existing joint initiatives between councils in the Hawkes Bay region including aerial photography joint procurement and a shared GIS web portal. The reports key recommendation was for HBRC to consider partnering with the Manawatu-Wanganui Local Authority Shared Services initiative.

This report focuses on Geographic Information Systems (GIS) shared services initiatives. This might include:

- Consolidating the purchase of GIS software or geospatial data licenses across a region.
- Centralising server functions to provide all GIS capabilities from one IT department.
- Combining some or all of the GIS team functions into one centralised GIS team
- Sharing geospatial data sets across a region thus saving the costs of creating data many times.
- Setting up web services of data sets or spatial capabilities that are used across many organisations

The need to pursue 'low hanging fruit' to build confidence was one of the recommendations of the ALGIM report. There are several reasons why GIS has been seen as a quick win:

- The geospatial community has highly developed interoperability standards already in place, particularly when compared with other enterprise systems. This is by necessity due to the extremely high costs of collecting and maintaining spatial information and because by definition, spatial information overlaps between national, regional and local government.
- GIS teams at various tiers of government tend to have experience working together. They share data sets and along with that, share knowledge.
- GIS can be seen as a well-bounded challenge.
- GIS teams are often clearly defined and separated from IT departments.

¹

<http://www.algim.org.nz/Documents/2010%20Conference%20Presentations/ALGIM%20Research%20into%20Shared%20Services%20in%20New%20Zealand%20Local%20Government%202010.pdf>

²

http://www.wairoadc.govt.nz/docs/council_services/councilreorganisation/HB%20Shared%20Services%20Report%20-%20Peter%20Winder.pdf

- GIS teams tend to use specialist IT systems.
- GIS expertise can be hard to come by. Sharing people who have skills across boundaries is an effective way to expedite implementations which require expertise that a single agency may not have immediate access to.
- The majority of GIS teams in New Zealand use software from Esri which creates an apparent commonality of data models, applications and systems. It needs to be noted that in itself this should not be seen as a desirable precursor to developing a GIS shared services strategy; it is far more important that GIS continues to satisfy business requirements rather than who the incumbent software vendor is.

Fortunately, GIS has led the way in creating shared services in New Zealand. Several organisations have learned the hard way that GIS amalgamation isn't as straightforward as the rationales above might suggest. Internationally, there have also been a number of shared services initiatives with varying degrees of success.

This report aims to consolidate these previous experiences and highlight best-practices where these can be identified; and challenges where they have been encountered.

Methodology

Although this report is written by GIS professionals, the focus at all times is on the business outcomes that GIS provides and must continue to provide through any shared services initiative. This business focus permeates the methodology.

Any system comprises the five elements of organisation, people, hardware, software and data. Our approach has been to ensure the best possible balance between these five elements in our information gathering, analysis and recommendations. This is a challenging brief since it is often the lack of balance between these elements in a shared services initiative that creates issues.

The report has been compiled using the following steps:

- **Information Gathering** - Phone interviews with stakeholders in a range of New Zealand and international case studies
- **Analysis** –
 - A collation of best practice themes arising from the case studies
 - An identification of emerging technology trends that will impact a shared services environment
- **Key Learnings** – the success factors which determine success

Case Studies

Phone interviews were conducted with stakeholders in a number of organisations which have shared services experience. These interviews were conducted with the understanding that comments would be anonymised as far as possible. This means that the analysis and conclusions are not explicitly linked to specific case study findings.

In each case, the case studies are a work in progress. This creates real challenges in obtaining objective feedback since there is inevitably a vested interest in painting a positive picture of the project status. The simple fact is that there isn't a single case study which has delivered to its original objectives or timeline. There are good reasons why this is so and we have drawn those conclusions out as best we can.

The Principal Consultants of Spatial.IQ have extensive experience of most of the case studies. In some cases, that includes working for or within those organisations. This is clearly a conflict of interest that is acknowledged and is inevitable: the geospatial community in New Zealand is small. Spatial.IQ has been deliberately established to conduct strategic consulting without vested interests in any software vendor or delivery organisation. We carry that independence into this report.

Analysis of Experiences

We have identified common themes across the range of case studies and have consolidated these into an analysis of the experiences to date. To maintain the anonymity promised in the case study interviews, we deliberately do not identify which case studies have had which experiences.

The analysis is inevitably distorted by our own experiences and knowledge. This is not a weakness: this is a strength of bringing in external consultants who can offer an objective opinion based on many years of experience across many sectors and countries.

The analysis brings out a range of topics which illustrate current best practice. We choose to focus on the positive rather than identify things 'not to do'. That's because several of the case studies continue to attempt innovative approaches to resolving their current challenges and we feel it is not appropriate to undermine those efforts which might yet result in success.

Most of the case studies have been underway for some time. As is inevitable with IT, rapid change continues apace and some of these trends will inevitably impact the delivery of GIS shared services.

We have researched these trends and the report identifies the threats and opportunities these present.

Key Learnings

From this list of best practices, we identify the key learnings that will mitigate identified risks and offer opportunities for the quick wins that are so important to keep stakeholders engaged.

Case Studies

We have chosen a number of case studies, all of which are a work in progress. As such, the greatest care is taken to present the facts in an objective way. Interviews were conducted under a promise of anonymity which clearly presents challenges in presenting the full picture of project status.

This has resulted in obvious gaps between individual case study findings and the conclusions that are reached in the analysis.

The following case studies were selected:

- **BOPLASS** (Bay of Plenty Local Authority Shared Services). BOPLASS is the most mature shared services initiative in New Zealand with a Council Controlled Organisation (CCO) (BOPLASS Limited) providing the structure and leadership. Their GIS shared services initiative involves nine councils across the region and has already realized savings through the acquisition of an enterprise license for GIS software for use across the councils.
- **Auckland Council**: Auckland Council was established in 2010 with the amalgamation of the region's seven previous city and district councils with the regional council into one "super city". At a stroke, the previously separate GIS teams merged into one centralized GIS team which has been working through the challenges of merging the various GIS systems in use across the Auckland Council.

- **Canterbury:** The Canterbury earthquakes required a joined-up approach to enabling recovery. The Canterbury Earthquake Recovery Authority (CERA) has created a de-facto GIS shared services framework for regional entities that will now receive a boost from Land Information New Zealand (LINZ) funding the Canterbury SDI initiative.
- **RCCDG** (Regional Council Collaborative Development Group): RCCDG is working on the Integrated Regional Information System (IRIS). IRIS aims to standardise Regional Council business processes for the 6 regions involved. IRIS has been built on a common platform with integration options to a number of back office systems.
- **National SDI** (Spatial Data Infrastructure): Lead by the New Zealand Geospatial Office (NZGO), SDI is “the technology, policies, standards, human resources, and related activities necessary to acquire, process, distribute, use, maintain, and preserve spatial data” As such, National SDI and any regional GIS shared services initiative must be tightly connected.
- **INSPIRE** (Infrastructure for Spatial Information in the European Community): INSPIRE is the largest and most ambitious GIS shared services initiative. It aims to establish a European infrastructure that will help to make spatial information more accessible and interoperable.
- **Thurrock / Southend (UK) Shared Services:** This case study is notable because they have clearly measured the total savings resulting from a GIS shared services initiative.

BOPLASS

BOPLASS Limited is a Council Controlled Organisation (CCO) owned by the nine councils in the Bay of Plenty region: Bay of Plenty Regional Council, Rotorua District Council, Western Bay of Plenty District Council, Kawerau District Council, Tauranga City Council, Opotiki District Council, Whakatane District Council, Taupo District Council and Gisborne District Council. BOPLASS was specifically established to promote shared services between local authorities and GIS shared services was one of the early initiatives launched by BOPLASS.

BOPLASS is by far the most mature Local Authority Shared Services organisation in New Zealand. In terms of structure and process it provides a model for other regions to follow. Of note is that GIS Joint Procurement and Shared Services are just a small part of a much broader sweep of initiatives.

History

BOPLASS Ltd was incorporated as a company in January 2008. Over the last five years, BOPLASS has embarked on a wide range of joint procurement and shared services initiatives, providing benefits to Councils and their stakeholders through improved levels of service, reduced costs, improved efficiencies and increased value through innovation.

The BOPLASS Directors are the nine Chief Executives of the constituent councils with the councils owning equal shares of the company. BOPLASS is funded by an annual membership levy which is proportional to the size of each council but most significantly from councils paying for their involvement in the services developed under the BOPLASS umbrella. Councils also contribute services ‘in kind’ to support shared service development.

BOPLASS has embarked on a wide range of activities including the procurement of a fibre network to connect the councils, negotiation of combined insurance, combined procurement of aerial imagery and centralized travel and accommodation services. These are just a few examples used to illustrate that GIS shared services and joint procurement are just one of many initiatives.

From a GIS perspective, in 2010, BOPLASS negotiated a region-wide enterprise license agreement (ELA) with Esri Inc. through Eagle Technology as Esri’s distributor in New Zealand. This agreement

saw all councils move onto Esri's ArcGIS platform and saved \$60,000 over the three year term of the ELA. (See case study from Eagle Technology³)

This joint procurement then allowed the development of a GIS Shared Services framework which led in 2011 to the joint procurement of a GIS Web Viewer.

Current Status

The GIS shared services initiative continues to make progress with Esri technology now in use in all councils. The GIS Web Viewer is currently being implemented throughout the region.

Progress on the GIS shared services initiative has been slower than BOPLASS would have wished, mainly because of the challenges involved in having staff tackle Business as Usual (BAU) and implementation in parallel.

Auckland Council

Auckland Council began operating on 1 November 2010, combining the functions of Auckland Regional Council and the region's seven previous district and city councils. This amalgamation saw the eight different GIS teams merge into one organisation.

As such, Auckland Council represents one extreme of shared services experiences – where shared services follow complete amalgamation. The remit of 'make it happen' removes many of the barriers associated with shared services implementations.

History

The Auckland region has a long history of GIS cooperation through the ALGGi (Auckland Local Government Geospatial Information) group. ALGGi was itself a shared services organisation which procured jointly owned regional datasets such as imagery. This data was brought together into the ALGGi Map Portal, a precursor to the current Auckland Council Viewer (<http://maps.aucklandcouncil.govt.nz/aucklandcouncilviewer/>).

ALGGi was important because in delivering its core mission of acquiring shared data for the region, it brought together the different GIS teams. This meant that with the formation of the new Auckland Council, at least the GIS teams knew each other.

ALGGi was also able to draw on the fact that most of the constituent councils were already using Esri GIS technology. It provided an environment for the sharing of knowledge and best practice.

The immediate challenge of amalgamation was to ensure that the new council would have GIS support on day one. This milestone was achieved largely through the federation of the existing systems with some replication of key data sets.

The next significant challenge was to provide mapping support for the Auckland Spatial Plan; the thirty year plan for the region. This significant undertaking was effectively a surge in 'BAU' work for the amalgamated GIS team – a surge which has continued as the delivered Spatial Plan has to cascade into the Unitary Plan and subsequently into the Area plans for each of the 21 Local Board areas.

In parallel with this activity, a considerable amount of work has gone into planning the 'Future Mode of Operation' for GIS.

³ <http://econtent.tauranga.govt.nz/data/boplass/images/Eagle%20Case%20Study.pdf>

Current Status

There is a dedicated team that has been seconded into a service delivery team for shared services against a clearly defined and well communicated service catalogue. These people don't have any BAU role and so can focus solely on service delivery.

The Auckland Council GIS team is currently preparing for the *Future Mode of Operation* project. This involves the consolidation of each of the existing GIS systems as well as the delivery of GIS connectivity into several hundred other projects. This will be the largest GIS shared services project in New Zealand and will be one of the largest in the world. It is strongly recommended that HBRC establish dialogue with Auckland Council to follow this project carefully.

Canterbury

The Canterbury Earthquake Recovery Authority (CERA) is the agency established by the Government to lead and coordinate the ongoing recovery effort following the devastating Christchurch earthquakes of September 2010 and February 2011.

History

With the earthquake emergency response being the driver for establishing an IT and geospatial infrastructure and an understanding that this would not be achieved using traditional approaches, CERA quickly established an out-sourcing methodology to get the capabilities it needed.

As a temporary agency there was also no desire to spend recovery money on unnecessary infrastructure when it was clear that there were other options which could support the need for fast, smart and auditable decisions.

The return-on-investment for the outsourced procurement of geospatial capability was easily established;

- CERA had no GIS capability.
- The time taken to advertise, hire and train GIS expertise and the on-going costs of supporting that staff, given the remit for CERA's lifespan, was greater than the cost of outsourcing which provided immediate expertise.

Establishing a Shared Service culture which included access to people, systems, software and data was not without barriers and issues such as reluctance to share data due to concerns about use and data derivation had to be overcome. Writing appropriate disclaimers for data use allowed supplying organisations to feel more comfortable handing it over to CERA for use in the response and recovery.

CERAs position was one of power in that they had been given a remit by government to do what was necessary to achieve their objectives. They were able to "tell" organisations that they "must" comply – an effective stick for removing barriers. Despite this, building relationships with organisations and agencies through the region was critical as this led to a desire to help. The formation of collectives which usually compete for work was a major success which through sharing of work, has enabled more to be achieved at lower costs than using traditional government procurement processes.

Current Status

Following the publication of the Recovery Strategy, as well as acting against the strategy through the established partnerships, CERA is now engaging the primary stakeholders in the Canterbury Region with the aim of handing over all capabilities to these agencies. This has always been the remit for CERA; establish, plan, implement and dis-establish.

Part of the planning for dis-establishment is how the handing back of systems, processes and data will take place without losing the gains that have been made in Shared Services.

Facilitating this is the recently announced Accelerating Canterbury Spatial Data Infrastructure Notice of Intent and Request for Proposal process which will deliver across eight work streams to ensure that the momentum in this area continues and lessons learnt are able to be applied nationally.

The CERA website and especially the news page is an excellent way of staying up to date with CERAs progress and also indicates where Shared Services across the region are facilitating the recovery process⁴.

Regional Council Collaborative Development Group

The Regional Council Collaborative Development Group (RCCDG) is a Council Controlled Organisation (CCO) which has been established to jointly develop business applications for member regional councils. RCCDG currently has six members: Northland Regional Council; Waikato Regional Council; Horizons Regional Council; Taranaki Regional Council; Westland Regional Council and Southland Regional Council.

History

RCCDG was established after a group of Regional Councils came together in 2007/2008 to undertake a competitive open tender process to jointly procure application software to support regional council administrative computing. No suitable package was found and so RCCDG commenced development of the Integrated Regional Information System (IRIS).

It is important to note that IRIS is not a GIS system. It is a business system that integrates some spatial information. It does not replace or even augment existing regional council GIS systems. As such, IRIS is not an example of a GIS shared services implementation. Rather, it is an example of a broader IT shared services project.

To develop a shared business application requires that there is agreement on common requirements and processes across participating organisations. On one level that should be straightforward since all regional councils are bounded by a common regulatory environment. On another level, each council has to answer to its own ratepayers which introduces some process challenges as well funding complications, especially regarding the alignment of depreciation of legacy systems that will be replaced by IRIS.

Development got underway in 2009 with major challenges being identified in 2010. With sound leadership, these challenges were overcome and delivery to the first group of regional councils took place this year.

One aspect of the governance environment has been the use of external auditors to report on the status of the IRIS Project. This approach provides assurance to all participants that their money is being well spent. The report by Audit New Zealand is available on line.⁵

Current Status

IRIS is an elegant application which introduces commonality across the six participating regional councils. The latest Project report⁶ provides a full status of the IRIS project.

⁴ <http://cera.govt.nz/sites/cera.govt.nz/files/common/greater-christchurch-recovery-update-issue-19-11-march-2013.pdf>

⁵ <http://www.waikatoregion.govt.nz/PageFiles/19535/2239783.pdf>

RCCDG's experiences are based on a situation which is rather different to a typical region-based LASS. Developing shared services across like organisations is different (not necessarily easier!) to developing shared services between regional and local government organisations.

National SDI

National Spatial Data Infrastructure⁷ (SDI) in New Zealand is being led by the New Zealand Geospatial Office (NZGO), which is contained within Land Information New Zealand (LINZ). National SDI has emerged from a number of initiatives; the broader open government SDI is "the technology, policies, standards, human resources, and related activities necessary to acquire, process, distribute, use, maintain, and preserve spatial data"⁸ As such, National SDI and any regional GIS shared services initiative must be tightly connected.

In New Zealand, National SDI remains in its early stages. This creates real challenges for regions embarking on a GIS shared services initiative since their implementations will inevitably be out ahead of National SDI policy, governance and implementation.

History

SDI in New Zealand has been pursued for over a decade. The relative lack of progress in establishing SDI at the national level has to be contrasted by the world-leading prevalence of enterprise GIS at the regional and local council level in New Zealand. These two apparently contradictory conditions may be connected: regional and local councils have tended to be innovative and agile in implementing enterprise GIS; thus there is not the same urgent need to have national SDI provide policies and services.

There are clearly inefficiencies in this approach. There is little understanding of what constitutes 'fundamental' data; who should have responsibility for specific data sets; and how best to utilize data to maximum effect. As a consequence, data sets tend to be created and maintained many times and their use is inconsistent.

In 2009, the *Spatial Information in the New Zealand Economy*⁹ report by ACIL Tasman measured the economic value of spatial information (\$1.2 Billion in 2008) and provided evidence about the potential to increase that value (\$481 Million in 2008) if barriers were removed.

The barriers identified in the report include problems in accessing data, inconsistency in data standards and a general lack of skills and knowledge relating to modern GIS technology. In revisiting the definition of SDI above, it can be seen that SDI should be a powerful mechanism to remove these barriers.

The 2009 report established a macro-economic rationale for SDI which supported the growth of NZGO. However, more work is still required to establish the governance frameworks and funding to launch a formal SDI for New Zealand.

Current Status

NZGO is working on fundamental datasets and data custodianship guidance. That work faces challenges in the subjective nature of what datasets are considered fundamental and by whom. This

⁶ <http://www.waikatoregion.govt.nz/PageFiles/19535/2248891.pdf>

⁷ http://en.wikipedia.org/wiki/Spatial_data_infrastructure

⁸ http://www.whitehouse.gov/omb/circulars_a016_rev/

⁹ <http://www.geospatial.govt.nz/sites/default/files/assets/News/spatial-information-in-the-new-zealand-economy-2009.pdf>

has been a long-standing challenge in establishing SDI in New Zealand but it appears that progress is now being made.

The ten agreed fundamental data themes are:

- Positioning,
- **Cadastral and Property,**
- **Address,**
- **Transport Networks,**
- **Geographic Names,**
- **Elevation and Depth,**
- **Imagery,**
- **Administrative Boundaries,**
- **Water,**
- Land Use and Cover.

Regional and local government are a stakeholder in each of these data themes (all as a user and some (shown in bold) as a purchaser or maintainer).

NZGO is creating a framework to assist in the management of fundamental data:



As has been the case previously, this framework will be challenging to densify and even more challenging to regulate. Schemas don't matter in Data Themes, they are profoundly important in Datasets. There's little point in agreeing on fundamental datasets if the stewardship can't agree on a common schema; and agreeing common schemas takes time, resource (and thus money), and compromise.

This illustrates a major challenge for SDI in New Zealand: without regulatory teeth to enforce policy, progress will be slow. For organisations embarking on a GIS shared services initiative it creates immediate challenges because inevitably, these regional GIS shared services initiatives will get out ahead of centralized SDI definitions.

The recent formation of a regional and local government GIS service forum by Auckland Council is going to provide an important connect point to NZGO.

International Example: INSPIRE - Infrastructure for Spatial Information in Europe

European Directive 2007/2/EC is known as 'INSPIRE'¹⁰. INSPIRE establishes an infrastructure for spatial information in the European Union which is to be implemented by member nations. It was transposed into UK law in December 2009; most other European nations have similarly created legislation to enforce adoption of INSPIRE.

INSPIRE represents another extreme of a shared services initiative in having the full force of legislation mandating compliance at the national level.

History

INSPIRE was started in 2001 as an initiative to make the use of geospatial information and systems more efficient and effective across member states.

INSPIRE is based on a number of common principles:

- Data should be collected only once and kept where it can be maintained most effectively.
- It should be possible to combine seamless spatial information from different sources across Europe and share it with many users and applications.
- It should be possible for information collected at one level/scale to be shared with all levels/scales; detailed for thorough investigations, general for strategic purposes.
- Geographic information needed for good governance at all levels should be readily and transparently available.
- Easy to find what geographic information is available, how it can be used to meet a particular need, and under which conditions it can be acquired and used.

In 2004, the INSPIRE Proposal for a Directive was adopted by the European Commission. The text adopted by the Commission includes important statements:

Good policy depends on high-quality information and informed public participation...

...A new approach is therefore needed to deal with monitoring and reporting and with data management and delivery across the different levels of government. Policies need to be employed to reduce duplicated data collection and to assist and promote the harmonisation, broad dissemination and use of data...

...Spatial information can play a special role in this new approach because it allows information to be integrated from a variety of disciplines for a variety of uses.

By 2007, INSPIRE was adopted by the European Parliament and Council. The nature of the European Community then makes it necessary for European legislation to be implemented by member nations.

The aim of INSPIRE is to facilitate better environmental policy across the EU by:

- Improving the joining up of and access to existing spatial data across the European Union at a local, regional, national and international level
- Facilitating improvements in the sharing of spatial data between public authorities
- Improving public access to spatial data

¹⁰ <http://inspire.jrc.ec.europa.eu/>

Under INSPIRE Member States must make available in a consistent format spatial datasets which come within the scope of the Directive and also create network services for accessing the datasets. Datasets in scope of INSPIRE are ones which come under one or more of the 34 environmental themes set out in the Directive Annexes. Milestones are set for when metadata, data, and network services for datasets in each Annex are to be available. Technical Implementing Rules have subsequently been made by the EC to support implementation of INSPIRE.

Current Status

INSPIRE regulations go down to a very fine level of technical detail. Whilst this creates a strong basis for interoperability, its rigidity causes challenges for implementation and the very long consultative process to adopt change means that much agility is lost. Due to the sheer size of INSPIRE and the number of countries and datasets involved, a mass of documentation has been produced aimed at assisting data owners on how to make information available.

For example, the Thematic Working Group Addresses (TWG-AD) alone produced a guidance document of 177 pages. This document describes the data schema, mandatory fields associated with addressing data, information on meeting data quality and positional accuracy as well as many examples for the completion of metadata. Similar documentation is available for administrative units, cadastral parcels, geographical names, hydrography, protected sites, transport networks, coordinate reference systems and geographical grid systems.

It is immediately clear that this level of complexity is not appropriate to apply to a regional shared services initiative. There are however some key principles which are appropriate to consider in a New Zealand context:

- INSPIRE has not attempted to resolve data sharing for all data; only data corresponding to the most important themes¹¹ which were decided on through a committee. These themes represent data with the most important value in the European Context.
 - A regional shared services initiative should consider which data themes are most valuable and concentrate on building sharing around these themes in the first instance.
- Services are king! INSPIRE has been built on the understanding that member states provide services which facilitate access to data and information. These services include discovery (the index), view (read-only access), download (direct access to data for copy or direct use), transform (enabling interoperability between systems) and invoke spatial data (data inputs and outputs definitions, service chain combining multiple services and web service interfaces of the workflow or service chain.) Not all of these are appropriate in the New Zealand context.
 - A GIS shared services initiative needs to define services which are appropriate to target audiences (constituent councils, national SDI, and the general public) and at an appropriate level of granularity. If the granularity is too fine, then the recipient of the service will need to put effort into combining services to achieve a business outcome.
- Metadata is important. Metadata provides the mechanism to describe aspects of data including access, currency, restrictions, extent, theme, usage, etc. Via a catalogue service, individuals and organisations are able to establish what data is available and how relevant it is. Without metadata understand the data and information available is not possible.

¹¹ <http://inspire.jrc.ec.europa.eu/index.cfm/pageid/42/list/3>

- A pragmatic approach to metadata is recommended. Standards for metadata and the tools which allow organisations to meet the obligations of those standards are not as simple as they need to be. Object and data level metadata may be over ambitious in the first instance. It is more important to be able to describe information at the service level (an aggregation of layers and therefore metadata) and provide access to this for Discovery purposes.

International Example: UK Local Government

Thurrock Council (blue in map below) and Southend on Sea District Council (red) are Unitary Authorities located in the South of England on the Thames estuary. They do not share a boundary, but they could be considered as neighbours. Between them they service a population of 325,000 people in 220 square kilometres of land.

Although quite small, this case study is interesting because it has clearly documented financial outcomes in terms of measured savings.



History

Thurrock Council had a GIS Manager in post, with a mature GIS team providing support and services with a Local Land and Property Gazetteer poorly managed despite its integration to many other systems.

Southend District Council had an expert Local Land and Property Gazetteer working alone with GIS being managed by the ICT team.

Both organisations were working with a limited budget and recognised the importance of improving the provision of services internally and externally and over a period of time moved to a position where resources were shared between the 2 Councils; sharing the GIS Manager and the GIS resources.

An Annual Partnership Agreement is the necessary governance to support the initiative which has by-in at the Chief Executive level.

Current Status

Since April 2011, the full shared service approach has been running and annual savings across both Councils exceed GBP100k (NZD183k at March 2013 exchange rates).

Both Councils “win” through the sharing of skills which reduce their own internal costs. The teams benefit through a more varied workload which increases morale and adds a level of job satisfaction.

Care is taken to recognise and deal with the challenges of longer decision time-frames and “one-man, two-guvnors” attitudes from destabilising the relationship.

In the future the Councils hope to bring other local authorities in to their partnership which will allow for even greater cost savings. They are also looking to consolidate software licensing through a lead council. Both of these initiatives will further reduce costs allowing money to be redirected through each Council.

Analysis of Experiences

From the interview notes (reproduced in anonymised form at Annex A), we have identified some common themes from which we can identify best practice: either because success was achieved by using this best practice; or because lessons learned from failure identified the things which could have been done differently.

In many cases, the best practice transcends GIS and is applicable to broader LASS best practice – it is pleasing the extent to which these findings mirror the recommendations from the ALGIM report (reproduced at Annex B). However, since GIS is often the first or one of the first LASS projects, it is essential that the GIS shared services project team is aware of these best practice recommendations – if only to ‘check them off’ as the project gets underway.

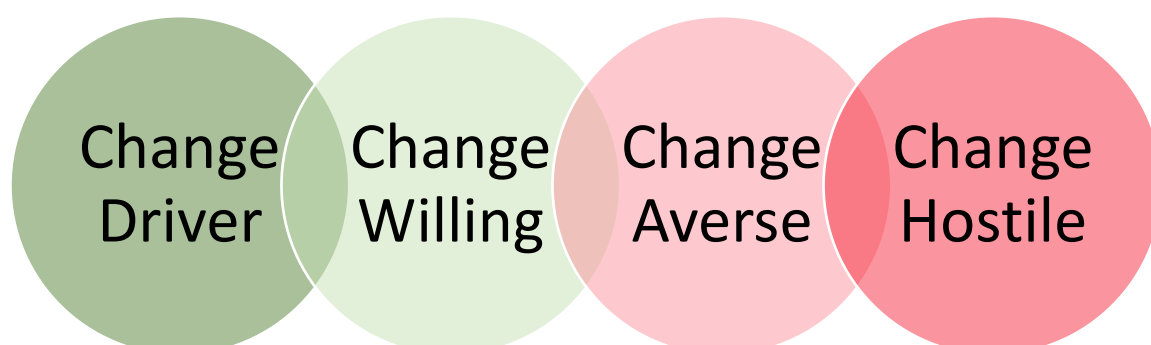
Change Management and Leadership

Implementing Shared Services is an exercise in Change Management. The technology available today can deliver to satisfy the business objectives of shared services; people are the challenge.

- People want to keep control of what they have today – there is an unwillingness to let go
- Passion gets in the way of business; GIS people are passionate but to make Shared Services successful a more business focused attitude is needed.
- Trust is needed between the parties. That takes time to establish but once it is there the momentum created will allow more to be achieved than it would be alone.

This is inevitable in any IT project; it just becomes amplified in a shared services initiative as the people involved span multiple organisations. GIS can pose specific challenges in this respect because GIS teams can be quite autonomous within each organisation and their representation is often a way down the hierarchy.

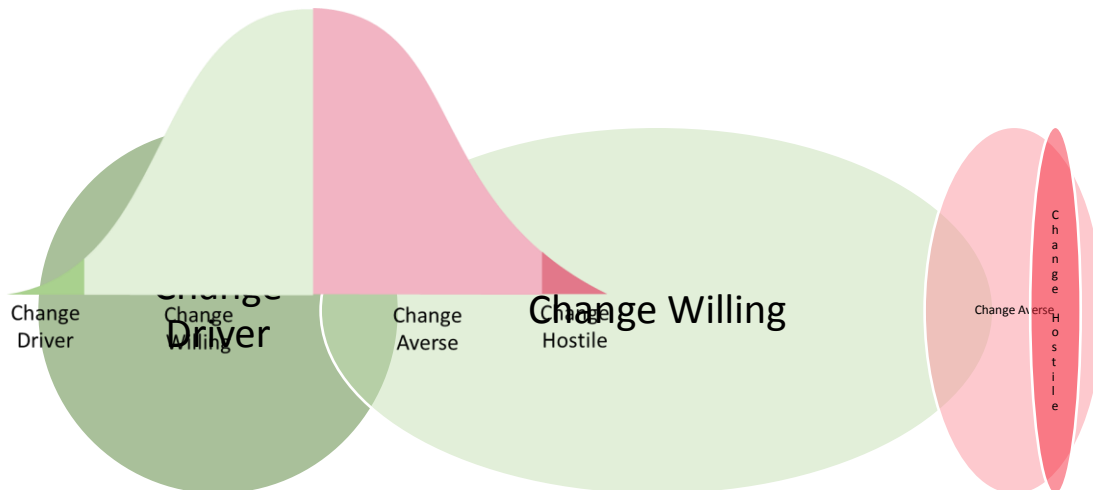
If people are the challenge, good leadership is the solution. Leadership through change is not the same as leadership in a BAU situation. BAU can be managed but change demands leadership. Change challenges people more than BAU and in any organisation facing change, there will be a



spectrum of responses to that change:

Change Drivers are the risk takers – the individuals who initiate and drive change in an organisation. There won't be many! The change willing won't initiate change but will support change initiatives. The change averse would rather not have change but in most cases can be persuaded. There will then be the overtly change hostile: "this is way things have always been".

In most organisations, there is a bell curve of attitude:



Positivity tends to emerge from the green side of the diagram; negativity from the red side. Good leadership and effective communication pulls stakeholders to the left side of the diagram:

Poor management and poor communication has the opposite effect:



A shared services initiative is challenging because it spans many organisations and so it isn't as easy to appreciate where different participants sit on this spectrum. Good leadership is also more difficult since most of the stakeholders will be in remote locations with the attendant problems of communication. GIS teams are also typically managed a long way down the hierarchy and may be used to operating fairly independently.

In any project involving the implementation of technology, there is a need for the leadership to be knowledgeable about technology realities. It is all too easy for leadership to become so focused on business outcomes that technical idealism creeps into the implementation. Without sound technical appreciation, a project can quickly drift out of control. GIS is a particular challenge in this respect with apparently minor technical details making a substantial difference to the viability of a proposed solution.

This doesn't mean that every leader has to become a technical guru – but it does suggest that a steering committee must have access to independent technical advice. Whether that advice comes from internal resources or external resources is an important decision. Internal resources are obviously 'cheaper' but they have a BAU role to consider; and they will inevitably have close ties to the core implementation team. External resources must be carefully selected to ensure that they don't bring their own technical agenda to the table.

Conclusion

The case studies show the need for executive buy-in from across all participating organisations – ideally CEO representation on the steering committee or other leading governance entity.

The leadership must have access to independent technical advice to ensure that technical realities are understood.

Communication

Good leaders communicate – so this section could be part of the section above. However, communication is so important and so challenging in a shared services environment that it has been broken out as a separate topic.

In order to achieve buy-in across the Councils, communication needs to be outbound and clear.

It is not sufficient to merely communicate across the GIS shared services team. In the short term, BAU will inevitably be impacted as staff are pulled into design and implementation work. If the benefits of the shared services project have not been clearly communicated, the business units that rely on the GIS team may become very negative about the process. This is especially the case if rumours start to swirl that staffing cuts will follow the shared services implementation. Good communication kills rumour stone dead.

Good communication can emphasize the benefits of sharing knowledge with other councils and help reassure staff that the outcome will principally be improved services.

Conclusions

Communication of the benefits of Shared Services to all staff helps build education and acceptance.

Ideas that are generated within one team need to be articulated in terms of benefits and shared with appropriate individuals in other teams.

Vested Interests

It is perhaps useful to look at the broader history of IT. For the last 30 years, IT has dramatically reduced friction in business; friction being defined as the costs incurred in supporting the business. As a straightforward example, think of the 'typing pool' which existed in most mid-sized and larger organisations. That typing pool was a friction (cost) that has been eliminated by IT. In most cases, the introduction of PCs into the organisation wasn't intended to replace typists; it was an unexpected benefit... unless you were a typist.

In reducing friction in an organisation, the reduction in cost correlates to losses in jobs, consultants, power, promotion etc. In almost all cases to date, IT has been the reducer of friction; non-IT people have been impacted.

IT (and GIS) has become a cost – think of the IT infrastructure. A shared services initiative aims to reduce the friction of the IT infrastructure. For the first time, IT people are impacted by IT's reduction in friction. This creates an inevitable vested interest in maintaining the status quo.

The term 'vested interest' is used to explain how influences impact behaviours. If an activity is subjectively important and perceived personal consequences are significant, there will be a greater chance that the individual's attitude will be expressed behaviourally. It is important to note the word 'subjectively' since it doesn't matter about the logical content of a presentation on the topic; a vested interest is an emotionally-driven position. There are five components of vested interest: Stake, Salience, Certainty, Immediacy and Self-efficacy

- Stake – this is the perceived personal consequence of the activity. In the case of GIS shared services, some staff might either feel that their job is at risk or their chances of advancement reduced. These are major consequences and it is important that this perception is carefully handled. If redundancies are anticipated, this needs to be explained. The management structures of the new shared services environment also need to be discussed as openly as possible.
- Certainty – this refers to the perceived likelihood of personal consequences from the activity. This is perhaps the easiest to address in a GIS shared services situation since frank and open discussion can help to align perception with reality.
- Immediacy – this refers to the perceived amount of time between the action and its consequences. Most GIS shared services initiatives will be multi-year efforts which will help to reduce the immediacy of any personal impacts. However, with BAU continuing as well as effort going into the shared services implementations, short-term work stresses might be present.
- Self-efficacy – this refers to the perceived level of empowerment to participate in the activity and make a difference. Someone who feels powerless and swept along in a shared services initiative which is ignoring input will harbour negative feelings.

In each case, 'perception' is the key word. Perception can be made positive with good leadership with open, honest communication. Where communication is limited and management are seen as remote, perception will always be worse than reality.

One challenge is that these vested interests can be present at senior levels within the participating councils. In smaller councils which will often be remote from the core project team, there can be a perception that the role of the GIS team will be taken over by a new centralized system; in larger councils, perceptions about loss of seniority or lessened opportunity for advancement might dominate.

Conclusion

This emphasizes the importance of strong leadership as distinct from poor management. Sound leadership is capable of alleviating emotional concerns where weak management can amplify them. It is emotional concern that fuels vested interest.

Governance

Because a shared service initiative by definition spans several organisations, governance has to be carefully designed and unambiguously communicated. The governance structure needs to support centralized activities as well as the separate migration projects that might be needed across the participating organisations; it needs to be clearly defined before contractors are brought on board.

Successful shared services initiatives adopt a corporate structure with a Board of Directors defining strategy in the interests of the stakeholders; and appointing executive officers to execute the strategy.

The make-up of the Board of Directors must include representation from all participating councils, ideally at the CEO level. The executive needs to be much leaner to ensure that decisions can be made swiftly.

Each specific shared services project then needs to have a clear mandate from the Board of Directors and a project manager who has been delegated adequate authority by the executive. The nature of the project governance will depend on the size and complexity of the project; in most cases, a region-wide GIS shared services project will be a large, complex project and its governance should reflect this with formal project directors, steering committees and reporting mechanisms defined. This will add to project costs; the alternative is significant project risk with attendant unplanned costs.

In the case of the largest shared services initiatives, Information Technology Infrastructure Library (ITIL) has been used to introduce structure into the project definition. This use is suggested with caution; a selective use of ITIL avoids being overwhelmed in paperwork.

The project governance must be explicitly defined and documented. This is important for internal stakeholders, it is critical if any external contractors are to be used.

Conclusion

Shared services governance is important and will be a major factor in the success or failure of a shared services initiative. The GIS shared services project must also have carefully defined and documented governance structures in place. In most cases the governance structure will need to support a large, complex project.

Service Catalogue

The Information Technology Infrastructure Library (ITIL) Service Design defines a service catalogue as a list of services that an organisation provides. Each service within the catalogue typically includes:

- A description of the Service
- Timeframes or service level agreements for fulfilling the service
- Who receives the services
- Costs
- How to fulfil the service

The service catalogue is a critical document that needs to be put in place for each service proposed in a GIS shared service environment. This provides clarity to all parties and also makes it easy to identify service gaps and overlaps.

Service catalogues form only one small part of the broader ITIL tool set. Whilst service catalogues were found to be useful, there was concern that ITIL as a whole had the potential to be too heavy a methodology to be useful in a shared services project unless approached in a pragmatic way. ITIL was useful as a tool to aid in the development of a common language for shared services which facilitates better understanding of terminology through the participating agencies.

Conclusion

A service catalogue is the most useful ITIL tool to apply to a shared services initiative.

Technology versus Business Outcomes

GIS must satisfy business outcomes. The technology (software, hardware and data) must be subordinate to these business outcomes. In each case, before the shared services initiative this was the case.

One challenge is that the frequent motive for a shared services initiative is about efficiency and saving... which only indirectly references the business outcomes. Worse, when the focus is specifically on GIS shared services, then the motives of efficiency and saving become twice removed from core business outcomes.

This means that the temptation to become technology driven can be difficult to resist. The nature of any shared services initiative is that technology challenges need to be solved by technology people. It is all too easy to become ensnared with these technology challenges and to let the focus shift away from the business outcomes.

GIS shared services initiatives are particularly challenging in this respect since technical complexities around data sharing can become significant.

Conclusion

Each element of a GIS Shared Services program must remain focused on each organisation's business outcomes. The needs of the shared services programme must remain subservient.

Requirements, Processes, Schemas and Applications

If requirements and processes amongst constituent organisations are different, then the schemas and applications must also be different.

This is where the greatest care must be taken to understand the context of a shared services initiative.

- Amalgamation of organisations (Auckland Council for example) can aspire to achieving commonality of requirements and processes. This is a huge undertaking out of which should eventually flow common applications and schemas.
- Commonality of organisations (RCCDG for example) can aspire to achieving commonality of agreed requirements and processes... with resulting common applications and schemas.
- Most regional shared services initiatives do not set out to change requirements or processes in the constituent organisations. As a result, common applications and schemas will be more challenging to implement.

It is a challenging exercise to identify common requirements and processes and then look at areas where a minimum compromise might achieve more commonality. Even more challenging is to separate out the GIS aspects of this exercise – accepting that other enterprise systems may need to remain in their current state.

Another approach is to look at the problem from the other end: what are the common GIS datasets which are used as inputs in each council? If the 'value chain' of these datasets are followed through all their uses, it becomes possible to see where GIS commonality is easily achieved – and where it will be costly to achieve.

Conclusion

Commonality of schemas and applications can only be achieved if there is agreement on common requirements and processes. Where this agreement cannot be reached, then a more pragmatic approach to identifying focused areas of GIS commonality will be needed.

Idealism versus Pragmatism

Local government GIS teams rarely have time for idealism. They have busy jobs and have to remain focused on pragmatic solutions. Idealism is expensive, risky and time consuming and GIS operations tend to uncover unrealistic approaches very quickly: geospatial data are big, complex, processor intensive and represent real world entities.

Shared services initiatives provide a lot of room for idealism. This is particularly the case during the planning phases when it is seen as desirable to promote the benefits and positives in order to justify the spending on shared services. Common idealistic themes:

- Let's build our GIS shared service environment using only open GIS standards.
 - See section below on open GIS standards. Open GIS standards are indeed important but not as important as continuing to achieve good business outcomes.
- Let's agree on a common GIS schema for everything.
 - GIS schemas are challenging even for one organisation. To agree one GIS schema for all organisations is a major challenge and once again must be subservient to achieving business outcomes. Schemas are based on requirements and adjusted by constraints. Are all requirements the same? If yes, the effort might be worthwhile. If no, the commonality of requirements needs to be addressed first. Are all constraints the same in each organisation? This is unlikely, especially the constraints imposed by other enterprise systems.
- Let's consolidate all our GIS applications.
 - Applications are based on requirements. Are all requirements the same? If yes, the effort might be worthwhile. If no, the commonality of requirements needs to be addressed first.

Once idealism is introduced, it can be extremely difficult to revert to pragmatism – which can be perceived as failure. This is especially the case if the shared services project team becomes isolated from day-to-day GIS work either by seniority or function.

Conclusion

Ensure that the shared services program allows for pragmatism and that idealism is recognized early and whenever it is introduced.

Think for the Long Term

In any implementation project, timelines can become compressed as decision points abound. A shared services project spans many organisations and must serve the long-term business as usual operations.

Decisions should be made with a view to the long-term. Some Shared Service implementations, especially those initiated as a required response to an event, have suffered as they try to undo knee-jerk decisions that were made in a response to compressed timelines. The cost of remedial action is greater than the cost of the initial work in most cases.

When implementing Shared Services in a Regional Context, those immediate pressures do not exist, so more considered decisions can be made. The corollary of this is that the project cannot be allowed to stall because of indecisiveness.

Key decision points need to be identified. Where decisions will have a major impact, it is strongly recommended to carefully test the decision before rolling new systems or processes out across the whole shared services environment. All costs, particularly long term operational costs, associated with the decision need to be carefully assessed. Once a bad decision cascades through a shared services environment, it can be costly and damaging to credibility to undo.

Conclusions

Shared services environments are long-term investments. Decision making must reflect this.

The Realities of BAU

Full consideration needs to be made to Business as Usual activities (BAU). Individuals within the Councils have day jobs. Their role descriptions are focused on the role that is performed for the Council. There is often no capacity or recognition for the additional work needed to perform the roles required by the Shared Services Organisation. In particular, GIS teams rarely stand idle. Indeed, most local government GIS teams work to capacity managing the 'Business as Usual' activities leaving lower priority work to build up over time.

Unfortunately, in most of the case studies, the resource required to run a shared services project was underestimated – significantly in some cases. As a result, GIS teams have been expected to run major migration projects at the same time as maintaining their BAU roles.

The nature of the resource is another important point. Staff who are running GIS in a BAU mode of operations are not necessarily qualified to run a migration program, especially if that migration program involves a change in technology.

The cost to the Shared Services organisation on relying on internal staff is a significant risk of targets slipping as staff struggle to meet deadlines. Slippage has an impact on morale and appetite for continuing to work towards Shared Services.

A desired outcome of a GIS Shared Services initiative might be to improve efficiencies across the region and thus either reduce the burden on GIS teams or reduce staffing. But the process of developing a shared services environment must be recognized as a significant burden on the GIS team.

This amplifies a concern that if a member of staff did demonstrate that they could perform their BAU role as well as their shared service project role, then at the end of the shared services project, their BAU role may be vulnerable to down-sizing or elimination.

Conclusions

A shared services initiative must design and manage a transition from design to delivery to training all whilst maintaining the BAU workloads.

Councils can only rely on goodwill for so long. Once the initial excitement and passion has gone, shared service projects will slip as individuals refocus on their day job.

Although seen as a cost, consideration should be given as to how the Shared Services organisation can augment internal resources to provide the additional capacity needed to ensure the success of the Shared Services implementation.

When designing a GIS shared services program, the BAU workload must be known and protected. Then the resource costs for the program must be calculated and found without impacting on BAU.

Open GIS Standards

GIS standards have developed over many years to solve the challenge of getting geospatial systems to interoperate. The business driver for the development of these standards is to ensure that as far as possible, expensive geospatial data can be created and maintained once and used many times.

The Open Geospatial Consortium (OGC) is the main standards organisation in the geospatial sector. It creates standards, some of which are then adopted as ISO standards through OGC's close relationship with ISO/TC 211 (ISO's geographic information / geomatics technical committee).

Open GIS standards are essential to any GIS shared services initiative. A failure to use open GIS standards disconnects the GIS shared services initiative from national SDI initiatives and can create vendor lock-in where it becomes challenging to move from one GIS software vendor to another.

However, it is important to understand the nuances involved in adopting open GIS standards.

The first and most important is that the adoption of open GIS standards does not in itself achieve interoperability. Interoperability can only be achieved through careful system implementation and testing.

The second challenge is that there are so many standards to choose from. OGC has more than 30 standards under development. No GIS software vendor supports all of these. ISO/TC 211 has well over 60 published standards. Again, no GIS software vendor supports all of these.

Almost all GIS software vendors support the following OGC standards:

- Catalogue Service for the Web (CSW)
- Geographic Markup Language (GML)
- Keyhole Markup Language (KML)
- Web Coverage Service (WCS)
- Web Feature Service (WFS)
- Web Mapping Service (WMS)

However, even within this subset of widely understood and adopted standards, it is important to appreciate why the adoption of standards cannot guarantee interoperability:

- Standards have different 'profiles' or implementation options. Some vendors implement standards flexibly so that a wide range of profiles can be supported. Other vendors implement more rigidly so that encountering the 'wrong' profile will generate an error.
- Standards have different versions. Again, some vendors support backward compatibility; others do not.
- Standards can have optional subsets. For example, the basic WFS allows querying and retrieval of features; the transactional Web Feature Service (WFS-T) also allows creation, deletion and updating of features. Almost all GIS software vendors support WFS – very few support WFS-T.

No councils use only open GIS standards. In order to achieve business outcomes, all use proprietary standards to some extent. Creating a GIS shared services environment does not suddenly make it possible to use only open GIS standards... but if care isn't taken to maintain a focus on business outcomes, the shared services initiative can become overtaken by idealism.

Conclusion

Although this section may appear contradictory, both statements are correct: it is invariably necessary to use proprietary GIS standards to achieve all the business outcomes required in a council organisation; it is necessary to also use open GIS standards in order to facilitate interoperability with other entities and to be able to participate in national SDI.

Open IT Standards

Few council business outcomes are satisfied by GIS alone. In almost all cases, it is the integration of GIS with other enterprise systems that achieves business outcomes.

For most local government in New Zealand, the interoperability between GIS systems is not the main challenge – it is the integration of GIS systems with other enterprise systems. So the more important standards for achieving business outcomes are the broader IT standards. This point can be lost if a GIS shared services initiative loses sight of the need for enterprise integration to achieve business outcomes.

When GIS is selected to lead the way in a regional shared services initiative, this creates challenges in determining which IT standards should be used. GIS has typically embraced IT standards earlier than other enterprise systems, largely because the compute-intensive, high bandwidth, vast storage needs of GIS constantly demands the adoption of emerging architectures and approaches. There is typically an expectation that a GIS shared services initiative will see an updating of GIS technology – which in turn demands the use of the very latest IT standards. As most GIS teams well know, the IT department will often need considerable persuasion to allow the use of recent standards.

This problem is amplified in a multi-organisation shared services initiative. The larger councils will have large, powerful IT departments which take time to change; the smaller councils will have small, overstretched IT teams which will not have the capacity to take on the challenge.

Furthermore, a shared services initiative may cast an acquisition shadow over other enterprise systems which will languish on older technology until another phase of shared services implementation achieves a centralized procurement. This older technology may be incapable of supporting the new architectures and standards that the GIS initiative requires.

Modern IT standards introduce a level of flexibility in implementation and agility in subsequent evolution. This makes it important to ensure that a GIS Shared Services initiative is founded on up-to-date best practice, even if compromise has to be made in establishing connections to older systems.

Conclusion

Independent technical peer review may be one approach to help persuade IT teams to embrace the new standards being proposed by the GIS shared services initiative.

Fundamental Data

NZGO has identified ten fundamental data themes:

- Positioning,
- **Cadastre and Property,**
- **Address,**
- **Transport Networks,**
- **Geographic Names,**
- **Elevation and Depth,**
- **Imagery,**
- **Administrative Boundaries,**
- **Water,**
- Land Use and Cover.

Those in bold are those fundamental themes which regional or local government has a stake in – either as a creator, maintainer or purchaser of datasets within those themes.

Associated with those fundamental data themes are datasets; the datasets have stewardship and custodian roles associated with them.

A Data Steward is a person that is responsible for data content, context and associated business rules. Data Custodians are responsible for the safe custody, transport, storage of the data and implementation of the business rules. Put another way, Data Stewards look after the rules; Data Custodians make sure that the rules are correctly implemented.

There is a significant complexity associated with Stewardship and Custodianship when it comes to geospatial data. If we take transport networks as one example, this will comprise many datasets, each with different coverage and content:

- The State Highway network – NZTA has the Steward / Custodian responsibility. Every regional and local council uses this dataset.
- The local road network – Road Controlling Authorities (RCAs - 66 TLAs plus Department of Conservation, Local Government New Zealand and NZTA). This creates a patchwork of individual datasets, each of which requires a steward / custodian.
- The Road Assets – RCAs are also responsible for roading assets – everything from culverts to signage; road surface to road works. Road asset data is stored and maintained in the RAMM system.

It can be seen that significant challenges will be created if GIS shared services initiatives fail to align with NZGO recommendations regarding fundamental data themes, stewardship and custodianship. Equally, work on defining the detail of constituent datasets, schemas and metadata is in its early stages so explicit guidance can be difficult to find.

At the very least, good communication with NZGO is required at the initiation of a GIS shared services initiative and this communication needs to be maintained through the course of the implementation.

An important forum has just been established by Auckland Council to guide local and regional government regarding service provision best practice. Over time, Auckland Council hope that this forum will facilitate a repository for documentation, job descriptions and service specifications. Inevitably, this will provide a strong connection to NZGO activities.

Conclusion

GIS shared services initiatives need to be well connected to the NZGO. It is recommended that a specific NZGO coordination role be identified in the GIS Shared Services team to initiate and then maintain communication.

It is strongly recommended that HBRC participate in the Auckland Council forum.

Changing from One GIS Software to Another

Migrating from one GIS software to another is a major undertaking. It is never just about swapping one software for another. The migration needs to be undertaken as a major project which examines each of the five system elements (organisation; people; software; hardware and data) *in the context of the organisation's business outcomes*.

All too often in a shared services initiative, some organisations are expected to migrate their GIS systems as a minor part of the overall initiative. Not only does this create project challenges as inadequate resources are applied to the problem, the need to focus on that one organisation's business outcomes can all too easily be subordinated to a focus on the broader shared services business outcomes... which are not the same thing.

It is possible that the functions undertaken by the GIS team in a participating organisation might be taken over entirely by the shared services program. That decision will still involve a migration of all business functions associated with the old GIS. Once again, this is a major project in its own right and the integration with other enterprise systems will be a major challenge.

Even if the intention is to amalgamate all GIS functions into one central team, it is important not to underestimate the magnitude of all the migrations that will need to take place. This is especially the case since it is very unlikely that all other enterprise systems will be amalgamated at the same time.

Conclusion

Any migration that needs to take place as part of the GIS shared services initiative must be managed as a major project in its own right.

The Opportunity for Integration

Once shared systems and services have been implemented, there are many options for other systems to benefit from the provision of information provided by these services.

Considering geospatial services, these can add value to other council systems through the provision of location information in to those systems. Modern applications are able to utilise web services for information transfer and consuming geographical services in to solutions or processes such as the Help Desk, Traffic Management, Rates and Property Valuation, Environmental Planning, and Resource Consents. The addition of location allows new trends to be shown and facilitates future policy making through a greater understanding of the problem.

Connecting all of these services together adds even more value. The Environmental Health Officer in the field would be able to access Resource Consent and Property Ownership information based on their current location. This is a key benefit to the implementation of shared services and the use of those services within the organisation; the immediate access to information where you are and when you are.

Externally from the Council, Shared Services will allow the integration between Regional Councils. Much data overlaps Regional Government geographic boundaries. Sharing information across these

boundaries can reduce costs for duplicate data collection. The acquisition of aerial imagery is one such success which has been effectively used for several years.

Conclusion

Once Shared Services are in place, the Regional Council needs to look at ways that integration between systems and processes can add value through the sharing of information which may have previously been siloed. Achieving this allows for significant Return on Investment to be realised.

Recent Trends that will Impact GIS Shared Services

Cloud Computing

Cloud computing is the use of shared computing resources (hardware and software) that are used to deliver capability services over a network. (For a full definition, Wikipedia provides an easily digestible article¹²). It can be seen from this definition that the cloud is likely to play a part in any future shared services initiative.

The cloud is evolving quickly and over the last two years, has become robust enough to support the entire range of GIS functionality. Moreover, the nature of GIS in the cloud offers potential advantages for shared services:

- Infrastructure is elastic:
 - Scaling processing to meet sudden spikes
 - Scaling bandwidth to meet demand caused by public announcements
 - Scaling storage to accommodate new data collections
- The cloud provider handles security – which can be a headache in a shared service environment
- The cloud can readily be used to provide disaster resilience, avoiding the risks of reliance on one IT infrastructure.

Although on one level the cloud is just another computing platform, the reality is that the dramatically changed costs, capabilities, agility and elasticity can drive profound change within an organisation. This is particularly the case where the cloud forms part of a shared services initiative:

- Capabilities that did not demonstrate a return on investment because of the high cost of infrastructure suddenly become affordable.
- Capabilities can be evolved much faster when the infrastructure is provided as a service
- Capabilities can be shared between organisations much more easily
- The scaling of capabilities to cope with changes in demand is much faster, lower risk and lower cost.

However, the cloud can be perceived as risky by the IT team. This is often as a result of a confusion between the chaotic public cloud of YouTube, Facebook and other social media versus the highly secure private cloud environments as used by organisations such as the US Department of Defense Cyber Command... who know about security!

This report is not the place to delve into the depths of detail involved in cloud computing – suffice to say that any GIS Shared Services project needs to consider the cloud as one platform option.

¹² http://en.wikipedia.org/wiki/Cloud_computing

Mobile

Mobile computing is becoming ubiquitous and is the most rapidly evolving area of IT. In some parts of the world, the mobile network is the only network and provides more people with access to the internet than any other platform.

As mobile network speeds increase to 4G and mobile devices become more powerful, there is an expectation that applications are able to deliver services to these devices.

Mobile device users also have high expectations about user experience which GIS applications often struggle to meet.

Organisations able to take advantage of mobile can expect to achieve streamlined business processes and meet the needs of a greater proportion of the population. Applications which allow the update of information in the field greatly reduce the latency of information transfer, allowing organisations to respond more accurately and in a more timely fashion.

The ease of creating single-focus applications for use by the general public which take advantage of real time data flows offers the opportunity to deliver better services but also cut costs by making access to information self-serving.

As mobile devices and applications on those devices are better able to access services provided over the internet on faster and faster networks and as the price of data transfer over those networks continues to fall, mobile becomes a more important part of the shared service model.

Mobile is highly relevant to GIS shared services initiatives. Increasingly, mobile devices are involved in the collection of geospatial data; need to be provided with services of GIS data to enable field workers; and act as portable dashboards for executives.

Again, this report is not the place to go into detail about the role of mobile in a GIS shared services initiative; our recommendation is that a GIS shared service project be aware of mobile GIS.

Report Conclusions - Key Learnings for the Establishment of GIS Shared Services

From the many topics above, we have pinpointed the following key learnings which have either created success in the case studies or have been identified as factors which would have improved outcomes. In almost every case, the learnings could apply to any LASS initiative. This emphasizes several points:

- The importance of GIS shared service projects conforming to general LASS best practice
- GIS is frequently the 'first cab off the rank' as a LASS project. It is therefore the GIS project which will benefit from these learnings first; or risk the consequences of learning the hard way.
- GIS is a complicated system placing real demands on organisation, people, hardware, software and data. These risks are amplified in a shared services scenario where many organisations have to work together. These learnings will assist in mitigating these risks.
- GIS teams frequently work quite autonomously within an organisation – a shared services project suddenly places the glare of management scrutiny onto the team. These learnings should be communicated across all the GIS teams to help in understanding the context of this change in circumstance.

Change Management

Implementing Shared Services is an exercise in Change Management. The technology available today is able to ensure that GIS Shared Services can be delivered; we can ensure a single source of truth, we can deliver services which can be used by almost any technology, we can separate analysis from presentation – it is all easy. People are the issue:

- People want to keep control of what they have today – there is an unwillingness to let go. GIS teams are often quite autonomous adding to the challenge.
- Passion gets in the way of business; GIS people are passionate but to make Shared Services successful a more business focused attitude is needed.
- Trust is needed between the parties. That takes time to establish but once it is there the momentum created will allow more to be achieved than it would be alone.

Establishing a Remit

It is essential that the remit for Shared Services is established early on. This is what will drive success. Aligning that across many organisations is difficult and potentially time consuming. Responding to an event or doing something that has not been done before can circumvent any barriers that may be put up.

- Gaining high level buy-in (at the CEO level) is one way to break down barriers – the remit then becomes one of "you must".
- Building trust relationships between common parties and allowing passionate and expert people to input in areas they know about help to accelerate adoption.
- Where necessary, technology decisions should be made as early as possible. This helps remove any ambiguity about what is needed and allows individuals involved in the Shared Services Organisation to focus on business outcomes.

Governance and Leadership

Establishing good governance and leadership is critical. This does not require reams of paper – keep it simple. Without a framework in place to work under, management of people across different organisations is difficult; individuals do not understand their responsibilities or delegated authorities. The core GIS Shared Services team needs to have the time to do the job properly. They need to be able to represent the group not their own interests so must have a big picture mind-set.

- Work out the structure for resourcing the Shared Services Organisation early on.
- Use expertise with each agency involved to do the work – this keeps them involved and reduces the overhead in the Shared Services Organisation.
- Ensure that the Shared Services Organisation is made of people from within the business who have some domain knowledge so they do not lose sight of why they are doing what they are doing.

Funding

Gaining funding is challenging. Budget cycles and investment in previous strategies work against the Shared Service model. Seed funding is one mechanism to overcome this but there needs to be commitment for at least a 5 year period to allow the implementation to succeed.

The funding mechanisms are something which the core shared services framework needs to handle. However, as GIS is frequently the first shared services project, it can be the project which suffers the challenges of funding realities. It is also important to educate GIS team leads so that they appreciate these broader challenges and don't just perceive illogical decisions.

Treat the principles of funding as you would a "bring-a-plate" lunch. People will bring a variety of food depending upon what they like and how much they are able or want to spend, from smoked salmon and cream cheese blinis, to pre-frozen, warm at home sausage rolls. People who have special requirements, for example, an intolerance to gluten, need to bring something to meet their specific needs, whatever the cost.

- Establishment of the funding model is needed very early on. Consider the size of the entities involved; proportional representation is a good way of gaining buy-in.
- Decision making must be equitable; just because you may contribute more, does not mean that you have more power.
- Win-win does not have to be equal. As long as no-one feels that they are being disadvantaged, consider that a win.
- Organisations should not have to contribute more than they would have if they attempted the implementation alone.
- It is important that the complications and realities of financial mechanisms are explained to everyone involved in a shared services initiative. Without this knowledge, technical leads are likely to become frustrated.

Return on Investment

ROI is important in establishing targets and then in measuring progress. But consideration must be given to the question of 'whose ROI?' and the boundaries to measure that ROI need to be carefully considered.

- The centralized ROI for the whole Shared Services initiative should be easy to define and measure.

- The ROI for each participant is equally important but much more challenging to define and measure. All participants must have an ROI and it needs to be an objective ROI, especially for the smaller participants.
- Making the boundaries too tight might make it difficult to demonstrate an ROI. Making the boundaries too loose makes it difficult to measure.

Long Term Decisions

Decisions should be made with a view to the long-term. Some Shared Service implementations, especially those initiated as a required response to an event, have suffered as they try to undo knee-jerk decisions that were made in a response to compressed timelines. The cost of remedial action is greater than the cost of the initial work in most cases. When implementing Shared Services in a Regional Context, those immediate pressures do not exist, so more considered decisions can be made. This does not mean that you should be slow in your decision making as that leads to boredom; but you should be considered.

- Plan for your Shared Services infrastructure to support your Business As Usual operations. In the event of an incident which will be supported by this infrastructure, your solutions are more likely to be robust enough and suitable enough to support the additional requirements.
- Open doors are not necessarily easily shut! Once you introduce a technology or process to people, the momentum of usage will make it difficult for you to take it away at a later date. Consider what you need and who needs what before mass roll outs of new systems or processes as part of your Shared Services implementation.

The Importance of Communication

In order to achieve buy-in across the Councils, communication needs to be outbound and clear. It must not be thought that only informing the people initially affected is enough. Many organisations like to know that their staff are available internally and this feeling crosses teams and business units. The IT Manager may not like the idea of a member of the GIS Team splitting their time resources internally and externally if they do not understand that they are not losing personnel, but in fact gaining them from all of the other Councils involved.

- Communication of the benefits of Shared Services to all staff helps build education and acceptance.
- Ideas that are generated within one team need to be articulated in terms of benefits and shared with appropriate individuals in other teams.

Focus on Business Outcomes:

GIS shared services initiatives can become preoccupied with the technology at the expense of business outcomes. One reason for this is that the soft aspects of people and organisation can be more challenging than the technology aspects of hardware, software and data. Unfortunately, it's the people and organisation which provide the business context: the technology must serve the business and must be subservient to the people and organisational aspects.

- The leadership of the GIS shared services project must remain tightly focused on business outcomes and must be alert to a drift to technology issues in the team

Technology Migrations:

Any technology migrations required as part of a GIS shared services initiative must be regarded as major projects in their own right.

- A migration from one GIS software vendor's platform to another is a major undertaking. If this is being done in one or two councils, although the software acquisition might have been facilitated by a joint procurement activity, those councils must run the migration as separately funded and managed projects. These projects will need to be tightly connected to the broader GIS shared services initiative.

Business as Usual:

Business as Usual (BAU) will continue during a GIS shared services implementation. For that reason, caution is needed when planning to use internal resource for the implementation.

- Consider the establishment of a Shared Services team who will take responsibility initially for implementation and subsequently the running of the Service Catalogue. Second individuals in to this team for fixed periods, allowing them to return to the business as champions, promoting the benefits of Shared Services.
- Using internal resources will increase the time needed to successfully implement Shared Services. BAU will always take priority and this can demoralise those individuals who are passionate about delivering Shared Services.
- Consider how you may augment internal resource with external expertise in order to accelerate the Shared Services implementation.

ANNEX A – ANONYMIZED INTERVIEW NOTES

The raw interview notes have been categorized into general sections to ensure they are anonymous – as promised to the interviewees.

Establishment of Shared Services

- Implementing Shared Services is really a Change Management exercise. The technology is easy today, it is people who need managing through the process; people who don't want to let go of their "patch".
- Organisational Change and Change Management is complex even within one organisation; SS requires that to be done across many organisations
 - Alignment of budgets is very difficult
- Organisations are typically not good at collaborating
- Need to gain senior level buy-in – that takes time, but it is important to have a champion.
- Need to establish the ROI for Shared Services:
 - Making better use of existing assets; innovation and reallocation of resources
 - Improving decision making
- Pushing against an open door – there was senior level buy in all the way up to the CEO.
- The prompt was Emergency Planning – not after an event, but so that they were prepared to respond to an event.
- Must align messaging to the Corporate Plan as that is what senior staff stake their reputation on.
- What are the external influences to implement Shared Services? What is the government agenda?
- Regional and Local Government will shape National SDI – that is where the expertise and mass of usage lies. SDI must be what you need it to be – it has to deliver benefits through its services.
- In the UK, central policy and guidelines tell organisations what needs to be done; you have to do it and the supporting data infrastructure is in place to do it properly.
- The Shared Service approach must align priorities of the organisations involved.
- A normal operating environment vs. a disaster response does not have the same influence to achieve through SS
- How will implementing SS help? What are the benefits – these need to be clearly understood
 - Must talk to Stakeholders
- There is directive from Central Government that all agencies must take part in SS. Once the benefits have been realised, it will be pressure put on Local Government to do the same.
- It helps to be able to tell people that "they must" help, but from the stick can demonstrate that it has worked.
 - Faster decisions
 - Multiple organisations engaged in action
 - Used science to support decisions – had empirical evidence
 - Got the key stakeholders together and using that evidence moved to a decision
- Barriers to Shared Services include:
 - People overcoming nervousness around their data and how it will be used and other data will be derived from it.
 - This can be dealt with through disclaimers and is easily solved.

- People want to protect their patch and feel threatened by change. In the vendor community this includes systems which store data in a proprietary format – business see this as their competitive advantage.
 - This has to be dealt with against the required outcomes for SS.
- These issues are removed in an emergency situation – dealing with BAU is an issue
- New Zealand is an interesting beast and preparedness for an event is important.
 - Access to shared data and resources enables that preparedness; you are better able to respond in the event of a disaster if a Shared Services culture is already in place as part of Business as Usual.
 - If you do things in a hurry you often just have to accept what you get – it may not be the best and backing away from it at a later point in time is very hard indeed. If something is working and is supporting BAU, this often goes away.
- The easiest way to embark on SS is as the result of a compelling event
 - It is hard to break in to existing and disparate investment cycles
 - It is very hard to line up budgets – organisations don't have the same reasons for being there
- It is easy to start something new which has not been done before as it is unthreatening
- Need buy-in from the CE level and a desire, an acknowledgement that this is good today and in the future
- There had been some collaboration beforehand; mainly in non-political/sensitive areas such as Lidar or Aerial Imagery, so some of the principles were understood and some value had already been established. There was a lot of talk – converting enthusiasm to commitment takes energy!
- Needs to be a clear cross-agency agreement established
 - Don't underestimate the time that this takes to achieve
 - Need to blend building and growing the relationship with a quick win which helps establish that it is a worthwhile exercise
- Other agencies coming on board as work is being done and processes established can confuse the issue:
 - LINZ taking on responsibility for Imagery has caused funding for regional and local Imagery acquisition to dry up until it is known what LINZ is going to be delivering and where the cross over to Local Government is.
 - Also raises questions about wider ranging strategies; why decisions were made
- Shared Services are about evolution not revolution
- Implementing Shared Services requires more business focus than technology focus. It is a Change Management exercise – the need to take people on the journey outweighs the technical implementations that are part of the delivery.
- Governance – Board of Directors are the CE of the constituent Councils
- Patch protection, push back against change – having these guys on board helps alleviate that
- Shared Services wouldn't happen without that CE level monitoring – gets energy in to the project

Governance

- Need to establish common terms of reference and terminology so people are on the same page – otherwise misunderstanding occurs.
- A framework is being established to assist in the management of fundamental data running from:

- Data Themes > Datasets within Themes > Stewardship of Themes > Custodianship of Datasets
- Different perceptions of terminology – need clear terms of reference
 - Educating people/organisations who don't know is not an insignificant effort
- Need acceptable protocols:
 - Rules of engagement, who can and can't make decisions.
 - Need to be able to survive changes in personnel and even government.
 - Protocols may include exit strategies ensuring that no one is disadvantaged if one organisation chooses to leave.
- A strong governance and management group and consensus on that is important
- Decision meetings for the governance group are simply validating decisions that have been made elsewhere. Working groups made up of the most passionate and able individuals across all participants made decisions which are then ratified by the governance group.
 - This allows the organisation to achieve more than any one set of individuals, or one individual would be able to.
 - As trust grows across the group, even more is achieved as the “others” are willing to let those that know make decisions on their behalf.
 - There is a lot of validation at first, but as trust is built up below the CE level, that drops off.
- It is important to accept that win-win does not mean that everyone wins by the same amount! If everyone is better off, that is a win.
- Governance and Management of the SS Organisation is critical. A LASS had a project and appointed a person who had no governance in place. They made decisions which had a financial and operational impact on other councils and the project bled money.
 - This was the result of a non-structured enthusiasm and an inability to deliver on that enthusiasm and a lack of management and governance
- Need to treat SS with similar rigor as a piece of internal work
- Adequate documentation is needed to justify decisions made especially in an environment where things change. This is an overhead but it protects against churn and changing policies.
 - Process and Policy needs to be reviewed regularly. People are happy and understand that technology changes quickly and therefore needs to be reviewed regularly – policy and process less so, but it needs reviewing more often than you think. Decisions made in the past may not be valid today. There is a need for agility.
- Communicate the service being provided – avoid ambiguity, even if you are only providing one service. Publish the service catalogue and maintain it
- Timescales can be long and this works against you – you need to be prepared to re-visit plans through the process to take advantage of changes.

Financial

- How do you pay/cross charge for services provided between Public Sector organisations?
- Finances to support initiatives are difficult to find, need to break apart the enthusiasm from the commitment! Often, to secure funding it is necessary to sell internally (savings, efficiencies, better services, etc.) rather than looking for external benefits.
- Central Government makes cross-charging simpler than it will be in Regional and Local Government
 - Treasury can pool money via the vote
 - Local Government is funded through rate payers so this is not as easy

- Need to find a seed funder – potentially the Regional body who may have more money available, e.g. Imagery in Canterbury; ECan seed funded through their own money plus contributions from LINZ
- Large organisations do not want to subsidise small organisations
- If Regional Government can seed fund to start change, accepting that it will take time for full change to occur – and they may need to continue to offer financial support over that period, it could happen – but this is a new way of thinking.
- Need to de-couple funding decision from political ones including who are the elected representatives, otherwise political changes impact results with potential policy changes.
- Funding is determined on the size of the participant. Not everyone contributes the same. The largest contributes 34% of the budget and the smallest only 4%. Decision making weighting is however equal across all participants
- There is an overhead in operating the administration and governance of the Shared Services Organisation and it is estimated that the overhead to reach a decision added an overhead of 30% to costs vs. a single organisation doing the same thing. However:
 - You pay less in the long-run than you would have done due to cost sharing across the group.
 - You establish very good practices based on the best of the current practices in use across the group.
 - You observe a momentum gain as time goes on. At first it takes time to get people together – you tend to move at the pace of the slowest organisation. As trust and collaboration occurs, things speed up as more independent work takes place – the passionate people take on responsibility for things they are interested in and do that work quickly. Trust allows the other organisations to let them get on with it trusting the outcome. You therefore achieve more than any one individual or organisation is able to achieve.
 - You are protected from staff turnover as it is the group that has the knowledge.
- Dealing with funding;
 - No-one gets a free lunch. Some organisations have a greater capacity to contribute than others.
 - Costs need to be viewed against what it would have cost to have done something alone. No-one should have to pay more than that amount and typically a lot less, therefore despite some organisations paying more than other, the outcome is positive.
 - View it as a bring-a-plate party. People who like cooking, often bring more and higher quality plates. Some people can only afford to bring sausage rolls – but they still contribute. If you were gluten free, you would carry the additional cost that may involve.
- Move to a position where organisations know that they are not being disadvantaged, therefore they are gaining an advantage. If you achieve that, then funding amounts are more easily dealt with.
 - Factoring size of an entity is a good way to approach that
 - A contribute and consume model is useful but you may contribute in kind, not necessarily in cash
- Shared procurement
 - Better purchasing power
 - Developing standardisation across the Councils; different software and platforms

- Shared Services beginning with the standardisation which establishes team working
 - It was an easy ride; easy integration, training across Councils – trainers came to the central organisation – time and cost benefits
 - Support from one Council to another
- Budgets were done at a CE level – done by size of the Council;
 - Agreed at the start of the shared service initiative.
 - Same formula used when new costs need to be covered, e.g. additional resource.
 - There are equal voting rights.

Technology

- Across all of government there is an emphasis on platform – Infrastructure as a Service (IAAS).
 - The issue is budget cycles and timing. If an organisation has already invested in something and has planned to write that off over 5 years they are unlikely to accept change unless incentivised.
 - CISCO had a trade-in a few years ago to get people on to new kit and this helped to reduce their support costs and the old kit (expensive to support) was removed.
- Having all of the data needed accessible by all and shared between agencies led to a common understanding and allowed evidence based decision to be made
- Technology is generally used to effect change, therefore a Shared Services implementation is actually all about Change Management.
- Decisions on technology were made early on. This removed ambiguity.
- Some technical decisions were made on a knee-jerk – more thought was needed, but this was often as a result of input from above with direction such as “just keep the lights on”. Unpicking the result of these knee-jerk decisions takes more time than the implementation. Doors opened as a result of this are difficult to close.
 - Take time to stop and think carefully before reaching a decision. That is not the same as being slow – it is being considered. Ensure that you are always working towards the overall strategy, not being purely tactical.
- Initially there was an agreement that one Council would be hosting and providing the infrastructure – but no-one wants to do it now. Approached a cloud provider to now provide that infrastructure – GIS will be the first.

Standards

- There is no real sense of best-practice for data management in NZ; common data standards or national datasets?
- ‘Fundamental’ is such a subjective issue that it is difficult to establish what is/is not fundamental depending upon who you are talking to.
- The Fundamental Data Themes have been agreed and are common between NZ and Australia, although they are called “Foundational” in Australia.
- The ten themes as they are currently known in New Zealand are: Positioning, Cadastre and Property, Address, Transport Networks, Geographic Names, Elevation and Depth, Imagery, Administrative Boundaries, Water, Land Use and Cover.
- Core data standards were also agreed, e.g. several versions of storm water presented in one consistent way
 - There is continuous discussion needed to reach a consensus. Need a champion as high as possible – someone with the authority to make a decision

- The fundamental datasets were defined including an awareness of value and assignment of ownership
 - Decisions made to just get the data out there with the necessary guidance on use. This philosophy actively encourages conversations to take place about improvement. Leads to continuous improvement in an iterative fashion rather than having to achieve perfection before doing.
 - Pragmatism over idealism
- Everything was ITIL'ised in order to have a common language.
 - There is still the need for pragmatism here...don't get lost in the methodology for the sake of it

Personnel

- Need people with confidence to go around the politics and processes which may create barriers. In this example, the sharing of staff resources was done without the knowledge of the legal department – a simple SLA was put in place and a cost sharing model.
- Need to develop a belief that it will work – you find plenty of nay-sayers on the journey – human aspect.
- Giving resources time to do the work is necessary. It can't compete with BAU – that just causes delays to the process of implementation.
- When people have no perception of benefit, they don't want to play
- Need to establish a trust relationship backed up with an appropriate set of rules and processes. Does not need to be a tome – you can do it on a few sides of A4
 - CEs may need to instruct the levels below to do what needs to be done – people have to have a big picture mentality as it is no longer just about “your patch”
- The trust relationship is still key – these other things go in behind that
- Need someone who can wear the “everybody” hat
 - They need to be able to act on behalf of different people and have the SS Organisation in mind
- Having people involved in the SS Organisation who come from “within the family” is preferable.
 - This ensures that they work for the collaborative good of the SS Organisation and don't become an independent provider who makes decisions on lack of knowledge or incorrect priorities.
- Most people involved in establishing shared services already have a fulltime role. SS is additional work and is often not part of their accountability. People need to have enough time to make SS work by wearing the SS hat:
 - Second someone in to the role. That time is not available for anything else. The SS Organisation pays the “owner” for that staffs time.
 - Treat as a career progression for an intermediate member of staff for 2 years. Rotate through the organisations involved. They go back stronger people than they were.
- Projects require domain experts and these exist within the organisations involved. Avoid creating huge overheads for the SS Organisation – get work done across the Councils as part of those staffs day job
- A lot of communications takes place to effectively run the SS Organisation
 - 40% of the budget was admin overhead during projects;
 - Project Director and PMO
 - Audits
 - QA

- Legal etc.
 - In a normal project this is sunk in to the PM. On a collaborative project this gets split out.
 - Normal overhead is 15% and once a SS Organisation goes in to BAU this is an appropriate amount to consider.
- Ego can be an issue. It is up to the facilitator to deal with that. Having to deal with individuals who are not direct reports or who work for a different organisation adds to that challenge!
- The concept of a single team dealing with Shared Services has worked very well. These people do not have another day job so focus on the service delivery. People through the organisation are aware of the team.
- Managers need to have business acumen. It should be viewed as a commercial business, not a GIS project. Understand the impact of the things that you do and look to understand opportunities delivered by change.
- There is a requirement to understand the skills needed to make Shared Services work.
 - The team was too large – high overheads – and not the correct balance of skills; lacking in core IT
 - Trying to rebalance and push the GIS expertise through the business rather than centralise it in the Shared Services team
 - Too large an overhead means that there is insufficient budget to push costs to Opex which is where the savings are to be made.
- People involved in the strategy for the implementation of Shared Services can miss the Business as Usual activities!
 - There was an agreement that resource would be provided from the Council's on an as needed/ad hoc basis.
 - Took more resource than was previously understood.
 - Need to ID really early if the resource is going to be internal that the resource is available.
- Councils struggle to get enough GIS resource in to them anyway – impacts the seconded team option.
- Falling behind on the timeline due to lack of resource – 9 to 12 months behind they thought they would be
 - Additional money for resource has been secured to get it done
 - Staff sharing; change management – some objection from Councils – like to have people in their building! Education overcomes this...conversations with the right people. No clear vision across the councils for shared GIS outside of the GIS team. Pushing the work wider to everyone that is impacted.
 - This should have been done earlier; making sure that people understand the change outside of GIS
 - The same was for the data schema; people responsible for other areas...needed to get people in to a workshop to explore this.
 - Workshops were really effective – get people together, discussing gaining people rather than using them
 - Engagement with people is critical
- Nothing of significance has caused a U-turn from initial decisions
 - Relying on resource within Councils is slowing the process down.
 - Position Descriptions are written for roles within the Council.
 - Made a decision to bring in external resource to accelerate this.

ANNEX B – RECOMMENDATIONS FROM ALGIM SHARED SERVICES REPORT

Credit for these recommendations goes to Jeff Shaw, Consultant, Destin Consulting Limited. The full report is available online at

<http://www.algim.org.nz/Documents/2010%20Conference%20Presentations/ALGIM%20Research%20into%20Shared%20Services%20in%20New%20Zealand%20Local%20Government%202010.pdf>

In the same way that an enterprise GIS can only be as good as the enterprise IT environment upon which it is based, so a GIS Shared Services initiative needs to be based on best practice in the broader shared services context. ALGIM commissioned a research paper in 2010 which reviewed six shared services initiative within New Zealand in order to assist in the success and sustainability of future shared services initiatives.

The key learnings from the report were structured into three areas. These were:

- Structure and Governance
- Shared Service Design
- Plan for Success

These findings are reproduced below and are relevant to any GIS shared services initiative.

Structure and Governance

Selecting the right business structure and supporting that with good governance is critical for the success of a shared service. The research indicates the following attributes of structure and governance are essential to the success of a shared service:

- There must be Chief Executive commitment to a regional focus, matched with commitment from the politicians and each local authority management team.
- There must be passionate advocates for the shared services approach within each local authority.
- There must be a willingness to invest time and energy into building relationships with the key staff from the other local authorities.
- The shared service entity needs a culture of its own, separate from the individual local authorities, preferably written.
- The business structure selected must enable the shared service to conduct business with external parties from a position of strength.
- There must be equal rights in decision-making and influence over the activities of the shared service.
- The governance group must meet regularly with a key focus on monitoring performance and evaluating strategic direction and new opportunities.
- The governance group must be prepared to be proactive and drive the strategic vision and thinking on new shared services opportunities.
- The members of the governance group must view their work on the shared service as just an ordinary part of their job.
- Use professional external support in the drafting of key documents.
- Use third party facilitators when establishing a new shared service structure, adding new members or when considering strategic direction.

- Foster transparency and trust across the board. Share the goals, activities and performance of the shared service with politicians, management teams and staff.
- Match great ideas for shared services with a structured project management methodology and resource.

Shared Service Design

A shared service must be well designed if it is to achieve its potential and be self-sustaining. The following needs to be considered during the design of a shared service:

- Don't rush into a shared service; be very clear about the drivers, the expected benefits and the costs.
- Follow a structured process of capturing the requirements of all parties and document the shared requirements along with any unique requirements.
- Use the governance process to agree the scope of the service based on the captured requirements.
- Follow standard procurement processes such as issuing an RFI and RFP, based on the agreed requirements.
- Look to standardise where possible. A key benefit of a shared service is standardised processes that produce consistent business and customer service outcomes.
- Be willing to give up some autonomy in the name of standardisation and sharing.
- Share the risk and reward on an equitable basis.
- Recruit the right people, with the right attitude and continually foster a culture of sharing, regional focus and customer service.
- Construct normal business arrangements and agreements such as service level agreements, budgets and annual plans.
- A full shared service requiring significant capital expenditure will require an alignment of investment/replacement cycles to make a business case work. Prepare to take a long term approach to alignment or design a shared service structure that will allow additional local authorities to join at a later time.
- Budget for post implementation costs that may be higher than expected.

Plan for Success

Finally, you need to give your new shared service every chance of being successful. There will be sceptics and doubters who question the benefit of this approach over the status quo, staff that are concerned that some rationalisation at the regional level may impact their job and politicians concerned that the decentralised nature of local authority democracy might be impacted. Taking the following actions will go a long way to addressing these concerns and giving the shared service a fighting chance of become self-sustaining:

- Undertake initial activities or 'low hanging fruit' that build confidence in a shared approach. This might include starting with a simple alignment of policies or processes or a shared procurement activity that delivers immediate real savings.
- Communicate the results of early activities and achievements to staff and management teams to ensure they understand the benefits.
- Continually communicate with the local authorities through user groups and regular scheduled meetings with management teams.
- Resource the shared service appropriately, giving it the right opportunities to be successful.

- Focus communications about the shared service on value based benefits such as improvements in customer service, training opportunities and career development opportunities.
- Don't underestimate the resources required especially if a service can be impacted by external factors such as the weather.
- Involve staff with the right attitude, expose them to staff from other authorities and continually communicate the benefits.
- Go with the movers; don't allow the shared service to deliver to the service level requirements of the lowest common denominator.
- A successful shared service will result in higher service expectations from external and internal customers. This should be anticipated and planned for to ensure service levels are not negatively impacted.