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GeoNOVA Initiative - 5 Year Strategy

Trends & Technology Workshop 4

Geo-Spatial Information Systems in BC A Case Study

(February 13th, 2002)

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Workshop Objectives

- To Provide Overview of BC INCOSADA and Tantalis projects including Current Situation, Future Direction and Lessons Learned.
- To Share Findings and Recommendations from Resource Inventory, Registry and Corporate Base Map Review Projects
- To Provide an Overview of Current Situation and Future Direction of these Programs

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The INCOSADA Project

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INCOSADA
(Integrated Corporate Spatial & Attribute Database)

BC Ministry of Forests

- Steward of BC Forest Resources - one of the Largest Forests in the World (130 Million Acres).
- About 4,500 Staff (1,200+ require access to Spatial Data).
- 40 Districts, 6 Regions and 18 Branches.

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The Problem

Existing Spatial and Attribute Data Sets:

- Had Department or Project Orientation (i.e. No Corporate View);
- Lacked Proper Standards (CAD vs. Geographic Information);
- Did not Meet Standards (were they existed);
- Were Inconsistent across Business Areas;
- Were Not GIS Ready;

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The Problem (cont.)

Existing Spatial and Attribute Data Sets:

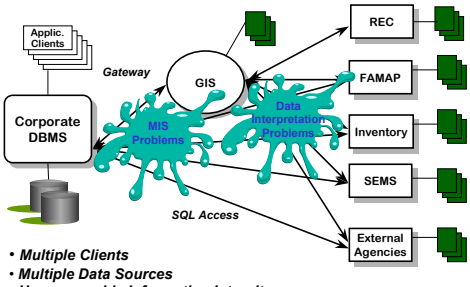
- Had Data Structures that were Difficult to Manage;
- Lacked Common Data Management Processes and tools; and
- Were Inadequate to Meet New Business Requirements.

(Other than this, everything was OK)

Magnitude of the Problem

- Map Data contained in 7000 Map Tiles @ 1:20K scale.
- 18-20 Themes (e.g. Topographic Base, Cadastre, DEM, etc.).
- Over 500 GB of Spatial (Map) Data.
- Over 12 GB of attribute data.

The Result

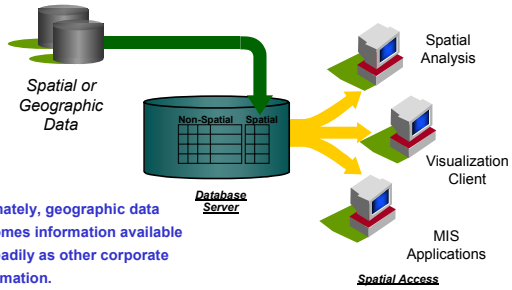


- *Multiple Clients*
- *Multiple Data Sources*
- *Unmanageable Information Integrity*

The INCOSADA Vision

"A Fully Integrated (Spatially Enabled) RDBMS, Managed at the Operational Level"

The INCOSADA Vision



Ultimately, geographic data becomes information available as readily as other corporate information.

The INCOSADA Goals

- **Well defined Standards.**
- **Fully Integrated "analysis ready" Spatial and Attribute Information.**
- **Controlled Data Integrity & Security.**
- **Common Data Management & Analysis Tools that are Extensible to meet changing Business Requirements.**
- **Improved Access to Information.**

The INCOSADA Phases

Phase I - ***Data to Information***

- Define Information Standards.
- Database Clean Up.
- Implement Common Data Management Processes and Tools.

Phase II - ***The Information Empowered Ministry***

- Procurement of New, Integrated (Spatially Enabled) RDBMS technology.

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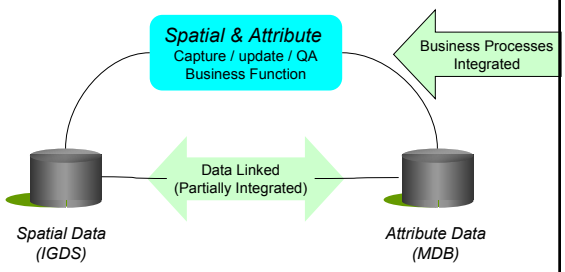
Migration Strategy - Phase 1



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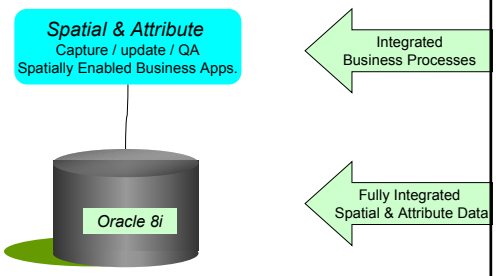
Migration Strategy - Phase 2



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Current Situation

- INCOSADA dB & System moved to new MSRM
- Data Standards, Custodians and Stewards Defined
- CAD / Access Based Tile / File Management System Complete and Operational on WAN
- Integrated Spatial & Attribute Edit, Update & QA Applications Complete & Implemented at Approximately 75% of District Offices
- Data Conversion Complete for Approximately 75% of Districts
- INCOSADA Data Replicated to Reporting SDE / Oracle dB Daily

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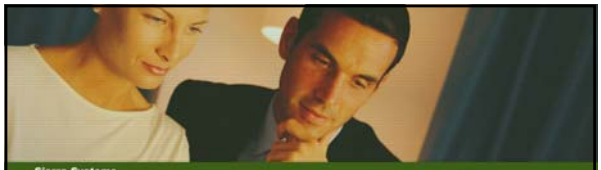
Future Direction (Speculative)

- Complete Data Conversion & Implementation by March 2003
- Development of Visualization, Reporting & Business Applications in ArcIMS / SDE
- Develop Red Line Format (Likely Arc Shape) & Processes for Update by Forest Licensees and Contractors
- Forest Industry to Take Over Stewardship of this Data by 2005



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The Tantalis Project
Crown Land Management

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Tantalis Objectives

- Re-engineering of Business Processes
- Replace Legacy System
- Enhance Business Functionality through the Integration of Spatial and Attribute Data
- Establish a Foundation for a Unified Window to all Provincial Land Records
- Provide Foundation for eGovernment Delivery of all Crown Land Registry Functions

Public Private Partnership

PUBLIC SECTOR

- Funding
- Business Knowledge
- Legacy System Expertise
- Opportunity

PRIVATE SECTOR

- System Integration
- Marketing Expertise
- Technical Skills
- Investment

COMMON GOALS

- Successful Project
- Efficiency Gains
- Business Development
- ROI
- Updated Skills
- Long Term Business Relationship

Business Functions

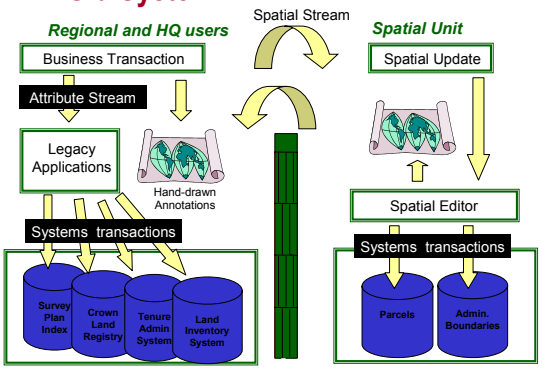
- Disposition Management
- Registry Management
- Financial Management

- Rental Calculation
- Tenure Billing
- Invoices and Statements
- Payments
- Interface with CAS

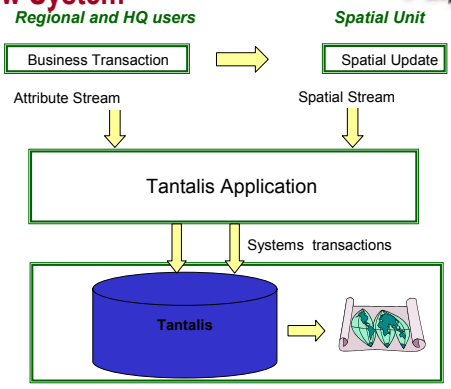
Why A New System?

- To Consolidate the Disparate Legacy Applications.
- To Reduce Backlog of Applications.
- To Provide Current Data to all Users via the WEB.
- To Produce Data Products to meet Private Sector Business Needs
- To Streamline the Business Processes

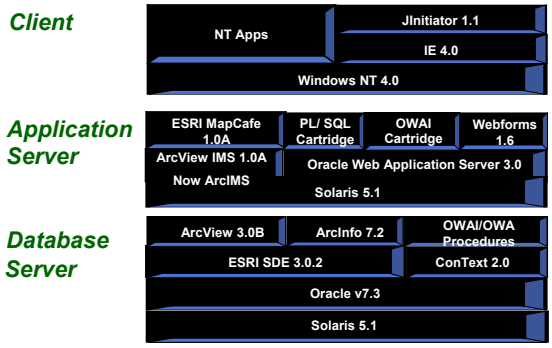
Old System



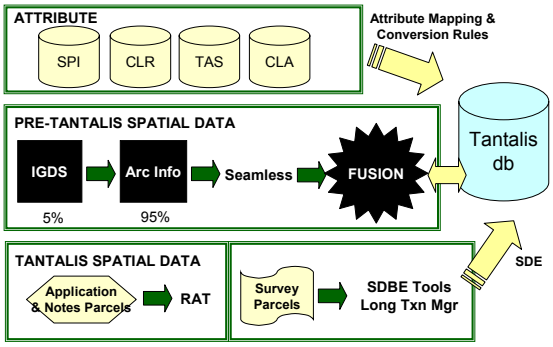
New System



Web Architecture



Data Migration



Current Status

- New System Operational Since March 1999
- Map Objects IMS Ported to ArcIMS in 2000
- X-Tantalis Warehouse for External Users – Automatic Transaction Based Replication Daily
- Fusion "Hit Rate" Approximately 70% - Some Spatial Data Not Yet Converted

Future Direction (Speculative)

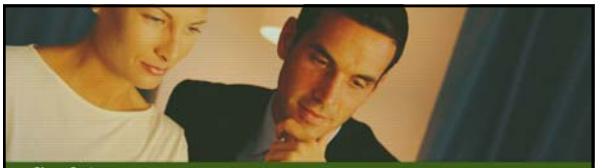
- Back Fill of Missing Spatial Data
- Tantalis as Foundation for New Consolidated Registry
- Development of Business Applications for New Registry Information

Lessons Learned INCOSADA & Tantalis

- Make Sure Executive Buy In
- Focus on Data and Data Standards
- Only Process Data Required for the Business
- Establish Data Custodians & Stewards Early
- Enforce Information Resource Management Principals
- Resist Temptation to Fix Longstanding Business Issues during Data Migration
- Keep Metadata to a Minimum
- Provide Early Wins!! – 80 / 20 Rule!!

Lessons Learned (cont.)

- Benefit of Phased Migration Strategy
  - Provides Early Wins!
  - Permits Staged Migration to New technology
  - Minimize Retooling & Retraining
  - Allows Spatial Data Updates Using CAD & ArcInfo
  - Continued Return on Capital Investment
  - Allows Time for Spatial RDBMS to Mature (e.g. Transaction Management, etc.)



Resource Inventory Review

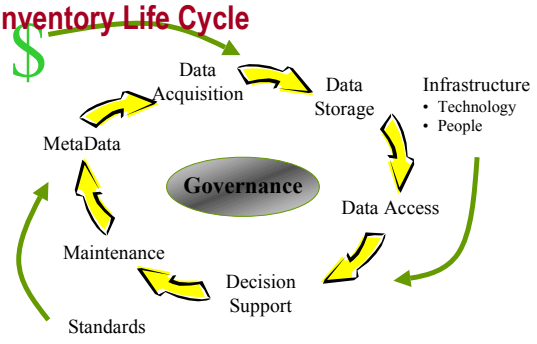
Objectives

- Complete a "Current Assessment" of Government Inventory Programs
- Review the Major Drivers of Provincial Inventory Programs
- Conduct an "Environmental Scan" of Factors that will affect Inventory Programs in the Future

Approach Used

- Conducted over 40 interviews, primarily with officials of provincial ministries and agencies
- Reviewed inventory interrelationships and dependencies across government
- Analyzed some of the forces affecting government and its inventory needs (current and future)

Inventory Life Cycle



Summary of Findings

- Current system is not sustainable in the future
- Resource inventory activities are based on models and structures that focus primarily on a single ministry's mandate
- Land and resource decisions involve a broad range of stakeholders and multiple ministry interests

Summary of Findings (cont.)

- Difficult to integrate resource data to provide a complete picture
- Demand for this information is growing both within and outside of government
- The cost of maintaining and enhancing necessary resource inventory data information in the future is likely beyond the ability of the government acting on its own – the involvement of outside players is probably needed

Recommendation

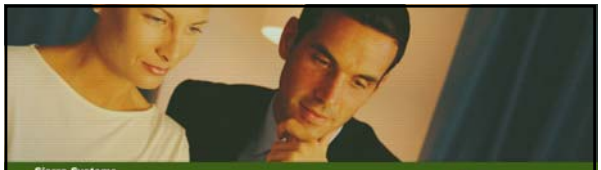
- Must meet both cross government and individual program needs
- Encourage better collaboration between government agencies
- Provide open, consistent access to resource inventory data
- Enhance the role of private sector

Recommendation (cont.)

- Achieve cost efficiencies and secure new sources of funding
- Data must be easily accessible by data users (i.e. web-based) and through a single portal
- Support expedited land and resource management decisions
- Attract executive support/senior level champions (ADM, DM, Minister)

Future Direction (Speculative)

- All Resource Inventory Programs moved to new Ministry of Sustainable Resource Management in June 2001
- Current Restructuring / "Right"-Sizing Resource & Registry Division
- Will Likely Rationalize what is being Inventoried
- Stewardship of Forest / Vegetative Inventory (and possible others) will likely be Transferred to the Forest Licensees



Legal Encumbrance (Registry) Review Phase I – Current Assessment

Objectives

- Develop an inventory of Provincial legal encumbrance programs
- Briefly describe the programs and supporting infrastructure
- Identify the major relationships between the programs, and with users of registry data
- Describe current challenges and future opportunities identified by registry owners and users

Terminology Used

Primary Registry
Major tenures on Crown lands

Secondary Registry
Authorized activities of lesser rights, or restrictions on activities

User
Major users of registry information

Scope – Primary Registries

Environment, Lands, Parks:
Lands, Water

Energy & Mines:
Mineral Titles, Petroleum Titles

Forests:
Forest Tenures, Forest Roads, Forest Administration Boundaries

Scope – Secondary Registries

Agriculture, Food & Fisheries:
Aquaculture Licenses

Land Commission:
Agricultural Land Reserve,
Forest Land Reserve

MELP:
Protected Areas, Angling Guide Licenses,
Guide Outfitters' Permits,
Traplines, Contaminated Sites

Scope – Secondary Registries (cont.)

Oil and Gas Commission

Small Business Tourism & Culture:
Heritage & Archeological Sites

Scope - Users

- BC Assets and Land Corporation
- Aboriginal Affairs
- LUCO
- BC Assessment Authority (Land values)
- Attorney General (Information for Litigation)
- Small Business Tourism & Culture: Tourism
- MoTH: Transportation Financing Authority
- Finance and Corporate Relations

Scope – Also Considered

- Regional Offices
- Wildlife Management Areas
- Land Title Branch
- Tourism BC
- MoTH/TFA – Provincial Road System

Approach

- Established list of ministries and contacts
- Communicated understanding of purpose of the project
- Established interview template and approach
- Conducted interviews
- Provided draft meeting notes for confirmation/correction
- Followed up on suggestions for contact with other organizations
- Compiled a summary of results

Matrix - Registries, Owners, Users

Registry / Agency	Crown Lands	Water License	Mineral Tenures	Petroleum Tenures	Forest Tenures	Parks	Aquaculture Licenses	Land Reserves	Angling Guides	Guide Outfitters	Traplines	Oil & Gas Commission	Contaminated Sites	Heritage Sites
Aboriginal Affairs	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use
Ag/Food/Fisheries	Use	Use			Use		**Own**	Use	Use					
Land Commission	Use	Use			Use	Use		**Own**						
E&M Minerals	Use		**Own**										Use	
E&M Petroleum	Use		Use	**Own**	Use	Use		Use				Use	Use	
Oil/Gas Commission	Use		Use	Use	Use	Use		Use		Use	Use	**Own**		Use
Forests	Use	Use	Use	Use	**Own**	Use		Use	Use		Use			Use
Finance	Use		Use	Use										
BCAA	Use		Use	Use				Use					Use	
MELP:														
Lands	**Own**	Use	Use	Use	Use	Use		Use	Use	Use	Use	Use	Use	Use
Water	Use	**Own**	Use			Use		Use	Use					
Wildlife - regions	Use			Use	Use	Use			**Own**	**Own**	**Own**			Use
Wildlife HQ	Use		Use	Use	Use	Use			Use	Use	Use			
Contaminated Sites	Use		Use										**Own**	
Parks	Use	Use	Use	Use	Use	**Own**		Use	Use		Use		Use	Use
BCAL	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use		Use	Use
SBTC - Tourism	Use		Use	Use	Use	Use	Use	Use	Use	Use				Use
SBTC – Arch Sites														**Own**
Attorney General	Use	Use	Use	Use	Use	Use				Use	Use		Use	Use
MoTH, TFA	Use	Use	Use		Use	Use		Use		Use			Use	Use
LUCO	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use

Common Challenges

Common themes to responses of current challenges, problems, and issues, grouped as follows:

- Data and System challenges
- Operational Challenges

Common Data and System Challenges

- Multiple sources of data
  - Statusing process involves multiple referrals
  - Requires considerable effort and time
- Spatial data
  - Not always available
  - Multiple standards and formats
  - Not always linked to associated attributes
  - Availability not always known

Common Data and System Challenges

- Attribute data
  - Often needs to be summarized, reformatted or analyzed to be useful
- Meta data
  - Users must have an understanding of data received
  - Meta data may not be available

Common Data and System Challenges

- Outdated data
  - Data becomes outdated quickly
- Inconsistent data quality
  - Decisions are made on data of differing quality
  - Spatial data in different map projections

Common Data and System Challenges

- Currency of data
  - Considerable energy spent on keeping data current
  - Impacted by multiple data sources, and lack of meta data
- Access to registry information
  - Access is often difficult
  - Direct access is not available to all agencies
  - Impact on time and effort
  - Communication and training

Common Data and System Challenges

- Outdated systems
  - Some are heavily paper-based
  - “The systems drive the business, rather than vice-versa”
  - Timeliness and responsiveness challenges
  - Lack of modern, user-friendly tools

Common Operational Challenges

- Labour-intensive data management
  - Time spent managing data takes away from conducting business activities
  - Time spent responding to external requests for data detracts from their own program responsibilities and activities
- Referral process
  - Time consuming, labour-intensive, and slow
  - Data may have changed by the time a decision is made

Common Operational Challenges

- Duplication of effort
  - Effort and cost involved in establishing and maintaining systems and databases
- Limited budgets
  - Legacy systems may be operated after their ideal lifespan
  - Unable to take advantage of new tools and technologies

Common Operational Challenges

- Pricing policy
  - Pricing is a barrier to obtaining data for some agencies
- Technology skills
  - Limited user skills in current technology, especially in the regions
  - Difficult to implement new technologies

Common Needs for the Future

Common themes to responses of future requirements:

- Access to integrated attribute data
  - Ease of identifying all encumbrances on a parcel of land
  - Allows for screening – rapid "no" or follow-up required
- Geo-referencing of registry information
  - Linking of spatial and attribute data
  - Simple, accurate, common access method
  - Allows overlay of any type of encumbrance information

Common Needs for the Future

- Improved standards
  - Essential tool for data integration
  - Applicable across ministries
- Improved access to data
  - Direct access by Government and non-Government users
  - Reduced need for referral data gathering

Common Needs for the Future

- Improved data extraction and analysis tools
  - End user tools, allow users to conduct their own analysis
  - Effort is spent on business activity rather than data management
- Improved data quality
  - Consistent, accurate data
  - Understanding of the data being used

Common Needs for the Future

- Common technology services
  - Users concentrate on their business, using common tools
  - Reduced costs for maintaining multiple data sources
- Flexible, business-driven processes
  - Improved response to legislated/business change

Common Needs for the Future

- Streamlined statusing and referral processes
  - Reduced effort for determining status
  - Applies to agency conducting referral, and receiving referrals
  - Referrals then concentrate on the business questions
- Increased automation
  - Allows users to concentrate on business activities
  - Increased productivity

Project Team Observations

- Regional Offices

  Scope of project limited to HQ staff

  Regional staff have important perspective
- Inter-Ministry Scope

  Program/Registry focus has been within an agency

Project Team Observations

- Geo-referencing of Registry Information
  - Fundamental need across all programs/registries
- New Electronic Processes
  - Significant opportunities for enhanced IT support
  - Systems and tools
  - Spatial data management and tools

Project Team Observations

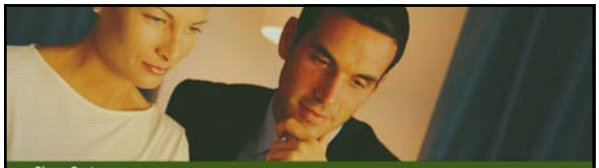
- Cost Reductions/Service Delivery Improvement
  - Significant opportunities in many agencies
  - Agency control of program and data
  - Common access to integrated data
  - Improved service levels, requiring reduced effort

Project Team Observations

- Administrative Boundaries
  - There are a number of administrative related designations on the land which are similar to registries, and can also be overlaid on a base map
  - Non-registered areas of interest
  - Access shared information
  - Common definition of boundaries
  - Examples:
    - Land use designations, landscapes, common community walks
    - Traditional use boundaries, ministry regional/management boundaries, etc.

Project Team Observations

- MoTH / TFA
  - A link exists with the legal encumbrances addressed during this project
  - However, rights of way registry was not investigated
  - User of registry info when buying land
  - This topic should be considered as integrated land use planning activities move forward



Legal Encumbrance (Registry) Review Phase II – Current Assessment

Objectives

1. Build on the Current Assessment phase results.
2. Define a legal encumbrance corporate business strategy.
3. Develop a vision and guiding principles to drive the development of an implementation plan.

The Corporate Vision

Registry Management:

- Assigned to a separate organizational body
- Provides an overall picture of all encumbrance registry information
- Program managers retain responsibility for program management
- Enable the digital record to become the official record

The Corporate Vision

Business Processes:

- Streamlined business processes, which drive the technology
- Supports e-government solutions
- Responsive to business change
- Streamlined data collection and management
- Serves all users

The Corporate Vision

Registry Data:

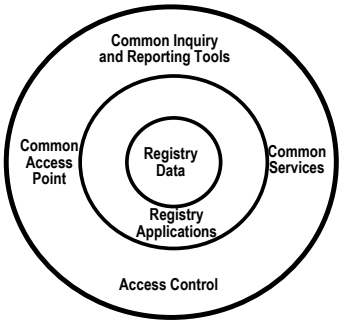
- Integrated data, from multiple sources.
- High quality data – current, accurate, timely, reliable, and understandable
- Common access to all registry data, with simple, powerful, end user extract and reporting tools.

The Corporate Vision

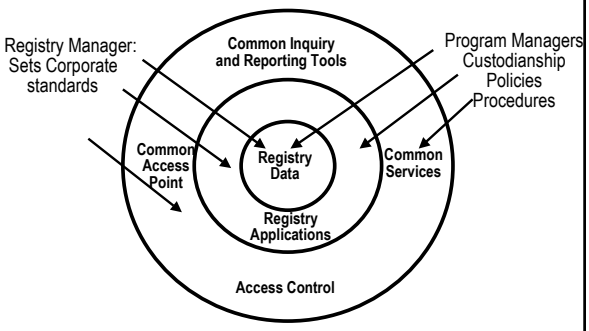
Technology and Services Infrastructure:

- Simple, powerful, end user extract and reporting tools
- Common base map
- Spatial reference to all registry data
- Common tools, infrastructure, and standards.

The Corporate Vision



Management



Guiding Principles

1. Senior executive support
2. Clear decision-making authority
3. Consistent with government policy and objectives
4. Governance leads to results
5. Clear delineation of roles and responsibilities
6. Ease of access
7. Build on current strengths

Guiding Principles

8. Integrity of programs is maintained
9. Common Technology standards
10. Promotes new e-government services
11. Cost-effective
12. Minimal, easily and widely available training
13. Visible, early results

Alternative Solutions Considered

1. Status Quo
2. Land Status Summary Database
3. Consolidated Registry

Alternative 1- Status Quo

No specific new initiatives of consequence involving many or all agencies would be undertaken

Alternative 1- Status Quo

More specifically:

- Retain existing infrastructure of registries and access methods.
- Allow for development/redevelopment initiatives to occur as they do today, based on the needs & priorities of individual programs.
- Establish a working group of registry managers to encourage collaboration of registry activities e.g. standards, sharing of common data, technology, and systems.
- Promote awareness of existing registries, through training and communications.

Alternative 2 - Land Status Summary Database

- Copy summary land status information from all Registries into a single database
- Automatic update of status from registries
- Provide read access to any interested and authorized user, government or non-government.
- Provide spatial access to the data

Alternative 2 - Land Status Summary Database

More specifically:

- Define summary status information for any piece of land.
- Create a summary status record from every registry, and populate the database.
- Create triggers in all registries to pass a summary status record whenever a defined status-changing event occurs
- Derived summary data for each area of interest

Alternative 2 - Land Status Summary Database

More specifically:

- One summary data record for each registry with an encumbrance on a parcel of land
- Spatially reference all attribute data, in a single, integrated format
- Provide common access methods and set of user tools to read the summary information
- Provide the appropriate controls to ensure the appropriate privacy concerns are addressed

Alternative 2 - Land Status Summary Database

More specifically:

- Provide Access to:
  - the general public
  - provincial government agencies who need to reference registry information but not change it
  - users within the program management areas.

Alternative 3 - Consolidated Registry

- Information from all registries would reside in a single, consolidated registry
- Responsibility for program management would remain with the program managers
- Management of the associated data transferred to a body authorized to manage the consolidated registry

Alternative 3 - Consolidated Registry

More specifically:

- Create a repository of all registry information, to replace all existing registries
- The registry will use a single set of technology, tools, and standards.
- "Owner" agencies retain program management responsibility.
- Registry management responsible for management of program data

Alternative 3 - Consolidated Registry

More specifically:

- Provide common access methods:
  - user inquiry and analysis tools
  - no update capability
  - access to all registry information
  - spatially referenced
  - fully integrated
  - common format
  - government and non-government users
  - access controls

Assessment of Alternative Solutions

Assess each alternative solution against the *Corporate Vision* and *Guiding Principles*

Assessment of Alternative Solutions

			Status Quo		Land Status Summary Database		Consolidated Registry	
	Solution							
	Corporate Vision	Weight	Assessment	Score	Assessment	Score	Assessment	Score
Registry Management:								
1	Provides an overall picture of all registry information	0.9	1	0.9	4	3.6	5	4.5
2	Retained responsibility for the program management	1.0	5	5.0	5	5.0	4	4.0
3	Official registry	0.8	2	1.6	3	2.4	4	3.2
Business Processes:								
4	Streamlined business processes and service delivery	0.9	2	1.8	3	2.7	4	3.6
5	Supports e-government solutions	0.7	2	1.4	3	2.1	4	2.8
6	Responsive to business change	0.9	2	1.8	3	2.7	4	3.6
7	Streamlined data collection and management	0.8	1	0.8	3	2.4	4	3.2
8	Addresses the needs of all users	1.0	1	1.0	3	3.0	4	4.0
Registry Data:								
9	Integrated data from multiple sources	0.8	1	0.8	4	3.2	5	4.0
10	High quality data - current, accurate, timely, reliable, understandable	0.9	2	1.8	3	2.7	4	3.6
11	Common access to all registry data	0.9	1	0.9	3	2.7	5	4.5
Technology and Services Infrastructure:								
12	Powerful end-user data extract and reporting tools	0.9	2	1.8	3	2.7	5	4.5
13	Common base map across all registries	0.9	2	1.8	3	2.7	4	3.6
14	Spatial reference to all registry data	1.0	2	2.0	3	3.0	5	5.0
15	Common tools, infrastructure, standards	0.9	2	1.8	3	2.7	5	4.5
	TOTAL			**25.2**		**43.6**		**58.6**

Assessment of Alternative Solutions

			Status Quo		Land Status Summary Database		Consolidated Registry	
	Solution							
	Guiding Principles	Weight	Assessment	Score	Assessment	Score	Assessment	Score
1	Senior executive support across ministries, with a single "champion"	1.0	1	1.0	3	3.0	4	4.0
2	Clear decision-making authority	0.8	1	0.8	2	1.6	4	3.2
3	Direction consistent with broader government policies/direction	0.8	1	0.8	3	2.4	5	4.0
4	Results-based governance model	0.8	2	1.6	3	2.4	5	4.0
5	Roles and responsibilities clearly defined and published	0.9	2	1.8	3	2.7	4	3.6
6	Ease of access to registry data to all users	0.9	1	0.9	4	3.6	5	4.5
7	Build on current areas of strength	0.8	2	1.6	3	2.4	5	4.0
8	Maintain integrity of program operations	1.0	4	4.0	4	4.0	3	3.0
9	Common technology standards	0.9	2	1.8	3	2.7	5	4.5
10	Promote e-government solutions	0.7	2	1.4	3	2.1	4	2.8
11	Implement the solutions in the most cost-effective manner	0.8	1	0.8	2	1.6	4	3.2
12	Training – minimal, simple, easily and widely available	0.7	1	0.7	3	2.1	3	2.1
13	Visible, early results	0.9	2	1.8	4	3.6	3	2.7
	TOTAL			**19.0**		**34.2**		**45.6**

Comparative Assessment

Identified *Advantages* and *Disadvantages* of each *Alternatives*

Recommendations

1. **A Consolidated Registry Solution should be Implemented**
   - This solution provides the maximum benefit to the Provincial Government and non-government users.

Recommendations

2. **The following registries should be incorporated into the consolidated registry:**
   - Crown Land Tenures
   - Mineral Tenures
   - Petroleum Tenures
   - Forest Tenures
   - Water Licenses
   - Guide Outfitters' Permits
   - Angling Guide Permits
   - Registered Traplines
   - Oil and Gas Well Sites
   - Heritage Sites
   - Contaminated Sites
   - Administrative Boundaries,
     - Parks
     - Agriculture Land Reserve
     - Forest Land Reserve
     - Regional District/Municipal

Recommendations

3. **Other registries that should be considered (following further exploration) include:**
   - Park Use Permits
   - TFA/MOTH Leases & Rights of Way
   - Aquaculture Licenses

Recommendations

4. **The government should undertake a business review of base mapping to define the key elements of a corporate base map and to determine appropriate governance of the program.**

Implementation Strategy – Key Initial Actions

Organizational Readiness:

- Identification of a project "champion", or corporate project sponsor
- Creation of an organizational unit with the authority and resources to manage the registry data

Common Base Map

- Undertake Business Review to Identify Components of a Common Base Map & Governance Model
- Establish a common Base Map

Sierra Systems

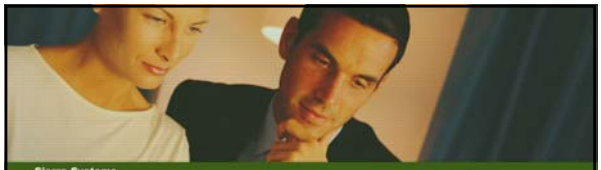
Implementation Strategy – Transition Steps

1. Assign Overall Corporate Responsibility for Implementing the Consolidated Registry to an ADM
2. Identify the Staff, Infrastructure and Budget associated with each registry.
3. Develop a Detailed Transition Plan leading to the transfer of all registries to the organization responsible for the Corporate Registry.
4. Implement the Transition Plan
5. Develop a Detailed Implementation Plan to achieve Consolidation of all Registries

Sierra Systems

Future Direction (Speculative)

- All Registry Programs moved to new Ministry of Sustainable Resource Management in June 2001
- Current Restructuring / "Right"-Sizing Resource & Registry Division
- RFI for Consolidated Registry – January 2002
- Will Move to Consolidated Registry by 2005
- Will Likely Integrate with ICI



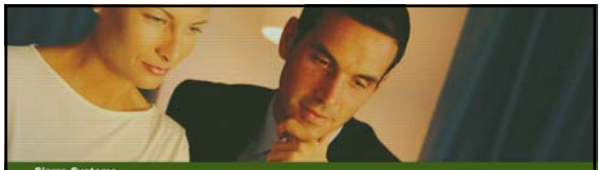
Sierra Systems

Corporate Base Map
Content, Standards & Governance Review

Sierra Systems

Project Objectives

- **Phase 1 Objectives**
  - Identify Key Components of a Corporate Base Map.
  - Provide Recommendation on Changes to Base Map Content & Standards.
- **Phase 2 Objectives**
  - Review Current Governance Issues Regarding the Management of Corporate Base Map Data.
  - Provide Recommendations on Changes to the Current Governance Model.



Sierra Systems

Phase 1 - Content & Standards Review

Sierra Systems

Approach

- 4 Workshops
- Registry, Resource Inventory & Other Users
- Representation from:
  - 6 Ministries (22 Program Areas)
  - 6 Crown Corp. / Private Organizations
  - 3 Federal Government
  - 1 Local Government
- Reviewed:
  - Current and Future Needs
  - Standards & Currency

Key Findings & Observations

- Broad User Community for Base Map Information
- 3 Separate Base Map Types Identified (Topographic, Ortho-Image & Cadastre)
- Transportation, Hydrographic & Cadastre Features Most Important / Broadest Use
- GDBC (BMGS) Expected to Set & Enforce Standards, Maintain Currency & Provide Easy Access.
- Base Map Currency Very Important for Most Users – Particularly for Transportation & Cadastre Features
- Base Map Information Expected to be GIS Ready

Recommendations (Phase 1)

1. Recognize Base Map Information as a Mission Critical Corporate Asset of the BC Government, & Manage It in Accordance with Good Information Resource Management (IRM) Principles.
2. Establish a Formal Base Map Update Program that Includes Updates from Source Data Providers, and Ensures the Corporate Base Map Database is Sustainable & Continues to Meet User Requirements.

Recommendations (Phase 1)

3. Establish Custodianship & Clear Lines of Responsibility for Base Map Information to Ensure It Continues to Meet the Needs of the Province & Other Users.
4. Establish an Effective Governance Model for the Management & Funding of Base Map Information.
5. Establish a mechanism for notifying clients of base map updates.

Recommendations (Phase 1)

6. Establish Formal Data Exchange Agreements, Procedures & Standards that will Facilitate On-going Update of the Corporate Base Map Database from Source Data Providers (i.e. Regions, Districts, Other Programs, etc).
7. Update Transportation & Cadastre Features on an On-going Bases (at Least Annually). Other Corporate Base Map Features Should be Updated on a 5 Year Cycle, or as Available from Source Data Providers.

Recommendations (Phase 1)

8. Establish Common Corporate Standards for Base Map Information, Including:
   - Geo-Reference Framework Information
   - Base Map Content & Feature Definitions
   - Positional Accuracy
   - Topology Rules (Point, Line, Polygon)
   - Metadata & Attribute Linkage
   - Ortho-Imagery Products

Recommendations (Phase 1) Cont.

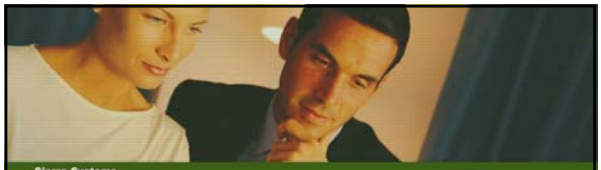
9. Convert the TRIM Base Map Data from the Current Line-String / File Based System to an Integrated, Seamless (Province-Wide), Feature Based Corporate Base Map Database.
10. Establish & Maintain Both Transportation & Hydrographic Feature Networks as Integral Components of the Corporate Base Map Information.
11. The Transportation & Hydrographic Feature Networks Should Include a Standardized Attribute Linkage that can be used by all stakeholders

Recommendations (Phase 1) Cont.

12. Establish an Effective Intra/Internet Based System for the Management of the Corporate Base Map Database, Including Tools for:
    - Edit/Update, QA / QC
    - On-Line Access
    - On-Line Reporting & Analysis Services

Recommendations (Phase 1) Cont.

13. Undertake a Review of the Current Hydrographic Feature Atlas (TRIM Watershed Atlas) with Stakeholders to:
    - Identify Shortfalls, Issues & Concerns
    - Clarify Roles and Responsibilities
    - Recommend Changes to Content, Update Procedures & Standards to Meet User Needs.



Phase 2 – Governance Review

Phase 2 Scope

- **In Scope:**
  - Responsibility for Developing & Maintaining Base Maps
  - Authority to Set Standards for Base Map Information
- **Not in Scope**
  - Access to Base Map Information
  - Pricing Policy

Issues Considered

- **Base Map Clients**
- **Different Perspectives of What constitutes a Base Map**
- **Standards**
- **Relationship Between Standards & Base Map**
- **Coordination of Base Mapping Activities**
- **Funding**

Issues Considered

- **Data Exchange**
- **Drivers – Corporate or Program**
- **Custodianship & Lines of Responsibility**
- **Distribution of Base Maps**
- **Relationship Between BMGS & Surveyor General Branches**

Recommendations (Phase 2)

1. Corporate Standards Must be Established and Enforced for All Base Mapping carried out in the Province
2. Base Mapping Should be a Corporate Program Driven by Corporate Needs and should be situated in a Division with Corporate rather than Program Responsibilities
3. One Organization Should be Assigned Responsibility for Coordination and Management of Base Mapping Activity and base map data.
   - Where Another Organization has Responsibility for some Components of Base Map data, Clear Lines of Responsibility & Accountability Should be Established.
   - Changes to legislation and operating policy to support this governance model need to be identified and implemented.

Recommendations (Phase 2)

4. The Base Mapping and Geomatics Services (BMGS) Branch of MSRM Should be Assigned Responsibility for Base Mapping, including:
   - Establishment of corporate standards;
   - Management of all aspects of GSR (including geodetic control monuments and ACS)
   - Development and management of Topographic and Ortho-Images
   - Review of funding for base map activities with view to implementing central coordination (see Recommendation 4);
   - All base map data exchanges between the provincial agencies and external organizations; and
   - Provision of Topographic and Ortho-Image Base Maps and related data for distribution

Recommendations (Phase 2)

5. ICI Should Assume Responsibility for the Cadastral Base Map
   - A close relationship should exist between ICI and BMGS, with the Director of BMGS serving on the ICI Board of Directors.
   - A Medium term objective should be to enable clients to integrate data from the Base Maps managed by both organizations
6. Early Priorities for BMGS & the BIS Division should be to:
   - Upgrade the Electronic Distribution Systems for Base Maps & Related Data
   - Encourage Users to Use Digital Rather than Hard Copy Maps
7. Formally Establish TRIM as the Official Base Map for the Province to which all Resource Data must be Referenced

Recommendations (Phase 2)

8. Government Funding for all Base Map related Activities (including FRBC Funding), should be Coordinated through a single Organization to Ensure Corporate Standards are Applied, & the Data Collected is Provided to the Organization Responsible for Base Mapping
9. The Respective Mandates & Responsibilities of BMGS and the Surveyor General Branch Should be Clarified, & Consideration Should be Given to Merging the Two Branches

Future Direction (Speculative)

- **Base Mapping & Geomatics Services moved to new Ministry of Sustainable Resource Management in June 2001**
- **Current Restructuring / "Right"-Sizing Resource & Registry Division**
- **Plans for DRA 2 in the Works**
- **Plan for Digital Image Management System in Place – Should Start to Implement in April, 2002**
- **Management of Corporate Base Map and Digital Imagery may be Candidate for Outsourcing – Possibly with ICI**

Wrap Up

- **Questions & Answers**
- **Action Items and Follow-up**