

**WHITE PAPER**

**ALBERTA SPATIAL DATA  
INFRASTRUCTURE INITIATIVE**

**AN OVERVIEW**

**Spatial Data Warehouse Ltd.**

**April, 1998**

# ***INTRODUCTION***

## **Alberta's Digital Mapping Infrastructure - A History of Cooperation**

In the early 1970's, Albertans recognized the need for standardized, high quality, digital base maps to support planning, development and management activities in a collective and cost effective manner. In consultation with municipalities, utilities and private industry, the Government of Alberta (GOA) initiated a series of base mapping programs that have resulted in an Alberta digital base mapping infrastructure that is the envy of most other jurisdictions in the world. It is estimated that the replacement value of this mapping infrastructure is in the order of \$50 Million.

As this mapping evolved, all levels of government, industry and others have collectively invested upwards of \$100 Million in Alberta building Automated Mapping/Facilities Management/Geographic Information Systems (AM/FM/GIS). These systems rely heavily upon the continued availability of a standardized, reasonably priced, easily accessed and up-to-date provincial base mapping infrastructure. The rate at which these new systems are being developed and implemented is increasing exponentially. Digital base mapping and the new technologies which use it (such as AM/FM/GIS) are key to the efficient delivery of many government and industry services as well as to the international competitiveness of a growing high technology Geomatics services industry in Alberta.

As Alberta's base mapping infrastructure was compiled, it also had to be updated to reflect changes resulting from on-going development. Additionally, the mapping and its updates had to be stored and distributed to Albertans in an increasingly complex and rapidly evolving technological environment. In 1996, upon completing the geographic coverage of Alberta's digital mapping infrastructure, Alberta Environmental Protection (AEP) decided that it should not continue to be in the business of updating, storing and distributing and funding this mapping. At this time the GOA sought a third party who could assume financial and operational responsibilities for these on-going tasks - protecting Alberta's mapping infrastructure investment in exchange for the revenues collected from distributing the digital mapping.

By 1996, Alberta's major utility companies had contributed in excess of \$5 million dollars towards the initial compilation of Rural Cadastral mapping in an unprecedented cost-sharing arrangement with the GOA. These utility companies constitute the largest non-government users of Alberta's digital mapping infrastructure. They also currently represent the largest single non-government stake in the continuance of this mapping. Out of this historic partnership and mutual, strategic need for the continuance of Alberta's digital mapping infrastructure, Spatial Data Warehouse (SDW) was formed as a not-for-profit partnership.

## **What is Spatial Data Warehouse?**

Spatial Data Warehouse is an Alberta-registered, not-for-profit company created on June 25, 1996 to take over and fund digital mapping activities which were previously undertaken and funded by the Government of Alberta. Since that date, the SDW has been funding the on-going updating, storage and distribution of Alberta's digital mapping infrastructure with no interruptions in service or increases in mapping pricing. These services have continued to be provided under contract by the GOA and contractors previously employed by the GOA.

***SDW's objective is to provide for the long-term management (updating, storage and distribution) and associated funding of digital mapping "data sets" which collectively, constitute Alberta's digital mapping infrastructure. SDW's core purpose is to maintain and promote the broadest possible distribution of the base mapping data to meet the needs of the Alberta market place and preserve the mapping data for the long-term benefit of Albertans. We call this "the Alberta Spatial Data Infrastructure Initiative".***

SDW is made up of the following participants:

- Canadian Western Natural Gas Company Limited
- Northwestern Utilities Limited
- The Government of Alberta (Alberta Environment Protection)
- TransAlta Utility Corporation
- Alberta Power Limited
- TELUS Advanced Communications Inc.

Each SDW participant has a member on the SDW Board of Directors and each board member has one vote.

The mapping data sets SDW is responsible for are called the “Urban Cadastral”, “Rural Cadastral”, “Topographic” and “Small Scale” digital mapping data sets. SDW’s assessment of the GOA’s management of these data sets determined that more cost effective and modern technologies and processes were essential in order to make the digital mapping more accessible, affordable and useful to Albertans and, in order to make the SDW venture a self-sustaining, long-term initiative. In January 1997, SDW undertook the development of a long-term business plan that would describe how this digital mapping infrastructure could be managed in the future.

SDW intends to be a “virtual” company. There is no intent to acquire permanent human or technical resources or, to compete with the private sector. However, the expertise and resources required to re-engineer the SDW business and make it viable over the long term far exceeded the original expectations and commitments of the SDW participants. The SDW Participants determined that they did not have the expertise, technology, financing, or business acumen available, which were required to make these data increasingly available, accessible, accurate and affordable to all Albertans. Accordingly, in mid 1997, SDW commenced a search for a private sector company that would assist with the financing of the SDW initiative as well as become responsible for the re-engineering and day to day management of the mapping data sets.

In December 1997, after a detailed search and evaluation process, SDW selected AltaLIS Ltd. as the private sector company who would assist SDW. AltaLIS is a joint venture comprised of QC Data Ltd. of Calgary and Martin Newby Consulting Ltd. of Calgary. SDW determined that AltaLIS has the best compliment of surveying, mapping, data storage, data distribution, data marketing, management, financial and legal skills, resources and experience to help SDW achieve its long-term objectives.

## **What is AltaLIS?**

AltaLIS Ltd. is a joint venture company formed by QC DATA and Martin Newby Consulting for the purpose of making Alberta’s base mapping infrastructure increasingly available, accessible, accurate and affordable to all Albertans. AltaLIS is an acronym for Alberta Land Information System. QC DATA and Martin Newby bring extensive experience and resources to the Alberta Spatial Data Infrastructure Initiative.

QC DATA is considered a world leader in all aspects of geomatics and geotechnical data management. This experience includes data and information collection, conversion, maintenance, management, integration, marketing, and distribution as well as systems and process re-engineering. The Company has also been a leader in developing and implementing new and innovative business and financial models for data management, data sharing and marketing initiatives worldwide, which are similar to the Alberta requirements. QC DATA acts as agent for other governments in North America and Europe for data

collection, management and distribution as well as working with many government and large industry groups to design, implement and operate data management processes and systems.

QC Data's head office is located in Calgary where almost 300 of its over 800 employees reside. Calgary is also the center for one of the most sophisticated geotechnical data management marketing and distribution facilities in the world. These facilities will be utilized to the benefit of the Alberta Spatial Data Infrastructure Initiative. QC DATA also has facilities in the United States, England, Scotland, Ireland, Netherlands and Russia and is working on projects in other countries.

Martin Newby Consulting is a geomatics consulting company with extensive experience working in Alberta with municipalities as well as with cadastral and topographic data for a variety of other clients. Martin Newby were instrumental in the development and implementation of the digital cadastral mapping updating process in the City of Calgary. It is the intention of SDW to generally model it's cadastral updating process on the existing City of Calgary cadastral updating process.

### **Addressing a Few of the Myths....**

The discontinuance of traditional GOA support for provincial mapping along with the subsequent formation of SDW and selection of AltaLIS to address the situation have lead to a number of speculations concerning the motives of the GOA and of SDW. The following points are intended to address some of the concerns we have heard:

- There is no intention of trying to recover any of the costs attributed to the initial creation of Alberta's digital mapping infrastructure - these costs were borne by the people of Alberta.
- SDW does not intend to try to recover the substantial cost overruns (over one million dollars to March, 1998) associated with continuing to manage these data sets on behalf of Albertans since June of 1996.
- SDW is not a mapping subsidy mechanism so it does intend to recover substantial and real costs associated with the on-going updating, storage and distribution of the digital mapping data sets.
- Unlike similar initiatives in other jurisdictions, under its license with SDW, the GOA does not seek any revenues or financial returns resulting from the sale of the SDW digital mapping data.
- Under the mapping data license agreement between SDW and the GOA, the copyright of the mapping data sets as well as of all updates to those data sets remains with the Government of Alberta.
- The SDW participants wish to point out that they have no intention of using SDW as a mechanism to get "free" mapping. The SDW participants currently obtain access to provincial mapping at a very high price. The eventual goal is for participants to acquire mapping at the same prices as anyone else, and not to continue to subsidize the present costly process.
- The mapping data sets that SDW manages are not in themselves "Geographic Information Systems". These mapping data sets are, however, a fundamental base requirement of a GIS and a host of other technologies and processes that rely on digital mapping as a core component. As soon as possible, SDW and AltaLIS intend to provide data to users via an 'open systems' approach that will facilitate users selecting technologies and service providers appropriate to their needs. Unlike some other jurisdictions, it is not the intention of SDW and

AltaLIS to dictate what technologies or service providers Alberta users will have to purchase or use.

## **The SDW Mapping Data Sets:**

The following sections provide a brief description of the SDW digital mapping data sets. More information on these mapping data sets is available from AltaLIS, which is now acting as agent for SDW.

### **Cadastral Mapping**

The cadastral mapping is a continuously evolving compilation of all plans of survey registered with Alberta Land Titles. This mapping depicts lot lines, lot numbers, road limits, right of way limits and other information found on plans of survey. The primary source of updates for cadastral mapping is the official records submitted to Alberta Land Titles. With the exception of the cities of Calgary and Edmonton as well as of Federal and Metis lands, SDW manages cadastral mapping for the entire Province of Alberta. This mapping is updated thousands of times each year as new plans of survey are registered at Alberta Land Titles. These data are an essential base component of a number of existing and planned AM/FM/GIS initiatives throughout Alberta.

SDW does not have any responsibility for cadastral mapping in the cities of Calgary and Edmonton. However, it is the intention of SDW and AltaLIS to co-operate with these two cities where possible in an effort to ensure that the mapping users of Alberta can access and use cadastral mapping data in a consistent and cost effective manner, on a province-wide basis.

The SDW Cadastral Mapping consists of two cadastral mapping data sets being:

- Urban Cadastral (formerly called “MISAM”) mapping is survey control-integrated, 15cm accuracy, urban cadastral mapping covering 67 Alberta Municipalities (excluding the cities of Calgary and Edmonton).
- Rural Cadastral (formerly “Parcel”) which covers all areas outside of the MISAM coverage with 3m accuracy.

### **Topographic Mapping**

This primary data set provides 1:20,000 scale topographic data for approximately 95% of the province at an accuracy of approximately 5m. This mapping depicts information such as administrative boundaries, transportation networks, hydrography, townships, and contours. This mapping was created from air photography using photogrammetric mapping techniques. Unlike the cadastral mapping, the GOA had no rigorous updating program for the topographic mapping. Therefore, the usefulness of the topographic mapping is decreasing as time passes. In recognition of this limitation, SDW is planning to explore efficient ways and means to update this valuable mapping data set in the future.

There are two “subsets” to the topographic data set:

- A “Digital Elevation Model” (DEM) from which the two dimensional contours on the topographic data set were generated. This DEM consists of 2,684 ASCII files (“DMDF” format) containing three-dimensional coordinate information representing grid points, break lines and spot heights. The DEM can be considered to be a three dimensional surface model of

the entire Province of Alberta and is extremely useful in a wide range of GIS, mapping and resource analysis applications.

- The 1:20,000 City/Town Digital Base consists of two-dimensional road centre line mapping of 125 Alberta municipalities.

### **Small Scale Mapping**

The small-scale mapping provides province wide coverage at three different scales. All small-scale mapping depicts Geo-administrative boundaries, Transportation facilities, Hydrography, Townships and nomenclature. The level of detail available on the maps depends on the scale. There are three “subsets” to the small-scale data set:

- 1:250,000 Digital Base which covers the province with 50 files using the National Topographic System (NTS) naming convention
- 1:1,000,000 Digital Base which covers the province with one file.
- 1: 2,000,000 Digital Base, which covers the province with one file but contains only major features.

### **Other Digital Mapping Data Sets**

SDW has had discussions with the Government of Alberta concerning the transfer of additional Government of Alberta mapping data sets in the future. In general, additional data sets will be considered on a case-by-case basis upon the request of either party.

## ***ALBERTA’S MAPPING INFRASTRUCTURE - THE CURRENT SITUATION***

In recent years, revolutionary advances in communications technologies (such as the Internet), computing technologies and AM/FM/GIS applications have resulted in dramatic increases in the need to use and exchange base mapping and related data. Digital mapping data is in very high demand as an enabling core component for a broad and diverse range of information technology applications including: municipal management; resource extraction and management; land development; emergency response; agricultural management; economic development; lands management; insurance; real estate; marketing; vehicle navigation and management; utility plant design and management and many others.

As these technologies and applications mature and flourish, Alberta finds itself in the enviable position of having a standardized, province-wide, high quality digital mapping infrastructure in place. Unfortunately, for a number of reasons, Albertans are not making optimal use of the mapping which the GOA has put in place and which SDW/AltaLIS are trying to continue. Instead, there is currently a proliferation of isolated, non-standard digital mapping bases being created and used in Alberta.

This unfortunate situation:

- entails significant and costly duplication of mapping effort - often amongst people who have limited capabilities, resources or qualifications to undertake effective mapping activities;
- is inefficient - directing human and financial resources towards mapping and away from core business responsibilities;
- severely limits or negates the abilities of map users to exchange geographic data;
- stifles the effective use of (and benefits to be achieved from) new information technologies and ultimately, stifles the development of a high-tech industry sector that will be based upon the effective exploitation of these technologies;

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- constitutes an ineffective use of a valuable and unique mapping infrastructure that Albertans have paid many millions of dollars to establish; and,
- provides inadequate funding for updating and maintaining a standard digital base mapping for the province, which will benefit all users.

***The common use of Alberta's standard digital mapping infrastructure is key to the effective exploitation of new geographic information technologies and ultimately, to the province-wide realization of the benefits to be achieved from using these technologies.***

In an effort to understand problems with the current situation as well as to propose solutions to those problems, SDW has consulted with a broad number of mapping stakeholders. This consultation process included discussions with representatives from government, municipalities, utility companies, resource companies, the surveying and mapping profession, mapping retailers and value added service providers, exploration companies, information technology companies and others. These very revealing discussions exposed the following types of problems with respect to the current state of Alberta's digital mapping infrastructure:

- Mapping data pricing is inflexible and considered to high to attract most potential users;
- It takes too long to acquire the mapping data;
- People are not aware the mapping data exists;
- Mapping data is not available in the required digital mapping format;
- Mapping data is not available in the required mapping coordinate system;
- Mapping data is not being delivered using modern electronic means;
- Mapping data requires significant and complex post-processing to make it useful;
- Cadastral mapping data updates are not available in an cost effective and technically efficient manner;
- Cadastral mapping data updates are not made during the development process - only after;
- Mapping data licensing is inflexible;
- Value added mapping re-distribution mechanisms do not exist.
- There are limitations, imperfections and incomplete components to Alberta Cadastral and Topographic data, which need to be addressed.

These and other problems not only lead to the unfortunate situation described earlier but also mean that there is not sufficient revenue available to recover the costs of managing and maintaining Alberta's digital mapping infrastructure. In the past, when the GOA funded the updating, storage and distribution of the mapping data, there were few incentives and limited flexibility available for the GOA to improve the level of mapping service to the public. Now, with the removal of traditional government funding and the transfer of management responsibility out of the GOA, SDW and AltaLIS must be much more responsive to mapping user needs to be successful as it is these users who will fund the continuance of Alberta's digital mapping infrastructure.

In addition to unrealized revenue potential, the costs for employing the GOA developed processes for updating, storage and distribution are very high. Since June 1996, SDW has taken over responsibility for updating the Cadastral mapping through sub-contracts with Alberta land surveying companies. Additionally, SDW has been paying the GOA, on an interim basis, to continue its traditional data quality control, topographic updating and provincial updating, storage, distribution and management activities

related to all SDW data sets. Modern technologies and processes exist which would allow management costs to be reduced while at the same time improving the quality of mapping data and service.

The combination of unrealized revenue potential and high updating, storage and distribution costs have resulted in the participants of SDW covering annual revenue shortfalls (even after accounting for data sales) of over \$1 Million. The participants of SDW are unwilling to continue to subsidize Alberta's digital mapping infrastructure. Instead, SDW has developed a business plan which has been designed to increase revenues, reduce costs and allow SDW to achieve its objective of providing for the long-term continuance and wider use of Alberta's digital mapping infrastructure. This plan constitutes a unique and significant opportunity for Albertans. **Keys to realizing this opportunity are the timely funding support from SDW and AltaLIS as well as Regulatory support from the GOA and general support from the mapping stakeholder community.**

## ***SDW'S BUSINESS PLAN - ALBERTA'S MAPPING INFRASTRUCTURE OPPORTUNITY***

### **Re-Engineering of Mapping Data Management**

The prospects of continued financial shortfalls means that SDW can not continue without substantially re-engineering the processes for updating, storing and distributing the mapping data sets it manages. This re-engineering would be designed to reduce costs and increase revenues. Unlike the previous government funded mapping arrangement, SDW and AltaLIS must be user-focused to become and remain financially viable. The mapping users must benefit from base mapping data products and services or, they will simply avoid them. The focus is to make these mapping data increasingly available, accessible, accurate and affordable.

With input and assistance from a wide variety of stakeholders, SDW has developed a re-engineering plan, highlighted below. This plan must be implemented as soon as possible in order to avoid the significant and on-going cost overruns which currently plague the status quo operations. It is estimated that the re-engineering plan will cost about \$1 Million to implement with proposed funding and financing to be provided jointly by SDW and AltaLIS. This constitutes an opportunity which **is contingent upon and bundled with proposed regulatory support from the GOA as well as timely support from the stakeholder community.** The following sections briefly describe the main components of the re-engineering plan as well as the regulatory support that forms part of this plan.

#### **Re-Engineering of Mapping Storage and Distribution**

From June, 1996 until very recently, SDW has been paying the Resource Data Distribution Unit of AEP to act as its mapping data storage and distribution agent. In March of 1998, SDW commenced migrating the storage and distribution function out of AEP and into a modern storage and distribution centre. AltaLIS will utilize QC DATA's existing Information Hub<sup>®</sup> facilities in Calgary thus reducing the cost and risk, and hastening the speed of migration. This migration, which will take a number of months to complete, will encompass a number of re-engineering sub-initiatives designed to increase revenues by making SDW products and services more attractive to the user community. These re-engineering sub-initiatives which SDW intends to introduce at little or no additional cost to mapping users, are briefly described as follows:

### ***Initial Migration***

The updating, storage and distribution functions were moved to AltaLIS from the GOA at the end of March to meet an internal deadline of Alberta Environmental Protection (AEP). Currently, and for the next few months, AltaLIS will provide services with only limited improvement to the existing GOA service levels. No effort will be made to expand or improve marketing of digital mapping data until new licensing, pricing and value added distribution arrangements are in place as outlined below.

### ***Combined Cadastral Mapping Specification***

Currently the Urban (MISAM) and Rural (Parcel) cadastral mapping data sets reside in two different digital mapping specifications. A combined or, "common" mapping specification will be adopted into which both data sets may be migrated. Notwithstanding accuracy considerations, a user need not be concerned about whether he or she is dealing with urban or rural data. The ability to export data from this new specification back to existing specifications will be required where demand exists. At this point AltaLIS and SDW will complete documentation of deficiencies in the cadastral data developed by the GOA. A new database structure will allow for more detailed tracking of data elements and metadata (e.g. source, accuracy, time, adjustments etc.). This will also allow users to order updates based on temporal criteria (as opposed to the current situation where a user simply receives all of the mapping all over again when only the changes are required).

### ***Continuous Mapping***

Currently, mapping data users are forced to deal with arbitrary mapping limits imposed by the spatial limits to existing mapping files. These limits add cost to all aspects of data acquisition and usage. A continuous mapping ability will be created so users may access and use data conveniently in accordance with **their** specific spatial requirements. This is an important element in restructuring data pricing and marketing to make data more accessible and affordable.

### ***Various Delivery Formats***

Currently, there are many different formats into which users must translate mapping data before they can actually use it. This adds complexity and cost to using the mapping data and also imposes an artificial obstacle - preventing many potential users from even acquiring mapping data. SDW and AltaLIS plan to simplify the process by allowing users to access mapping data in commonly used formats including AutoCAD, MicroStation, ESRI and possibly others (on a demand basis).

### ***Various Coordinate Systems and Mapping Projections***

Similarly to the case with the various delivery formats, users require mapping data in different coordinate systems and mapping projections such as NAD27, NAD83 and, 3TM, UTM and 10TM respectively. This adds further complexity and cost to using the mapping data and also imposes further obstacles to mapping users and potential mapping users. SDW and AltaLIS plan to simplify the process by allowing users to access mapping data in commonly used coordinate systems and mapping projections.

### ***Web Based Data Viewing***

Currently, it is difficult to find out about the SDW mapping data sets and once aware that the data exists, it is difficult for people to understand the nature of the data and its potential applications. An AltaLIS/SDW Internet Web Page will be implemented to

address this need and eventually, allow people to view the data to determine the suitability of the data for specific applications. Such viewing should be low or, “no cost” and should be implemented through low or “no cost” off-the-shelf mapping data viewers.

#### ***Geographically Indexed Data Ordering***

Currently, once people know what type of data they require, it is difficult for them to translate that requirement into an order for mapping data. A simple to use, Web-based mapping data ordering capability will be implemented to allow people to define their data requirements and then generate an order (data acquisition cost and contractual terms presentation) for the viewer’s review. The viewer could then submit a data order, re-generate a new order or, scrap the order all together.

#### ***Electronic Data Delivery***

Currently, users order data and then receive it days or weeks later on CD’s by courier or other form of delivery. A process will be established wherein certain, appropriately equipped mapping data users will be able to order data and then receive the data electronically using FTP or electronic mail technologies.

### **Re-Engineering of Cadastral Map Updating Processes**

The currently employed processes for updating SDW’s cadastral mapping are expensive, dated and constitute by far, SDW’s largest single expense. This component of the SDW re-engineering plan is the primary area where SDW has focused in terms of reducing costs and is also the component where Government regulatory assistance and timely stakeholder support is required. Without this governmental regulatory assistance and stakeholder support, the entire Alberta Spatial Infrastructure Initiative will be unable to proceed.

SDW has modeled it’s proposed cadastral mapping updating process similar to that of the existing process currently being successfully employed by the City of Calgary. Further details of SDW’s cadastral mapping re-engineering plan can be found in a document entitled “***SDW Cadastral Mapping Reform - A Partnership Approach***”. Highlights of this plan are as follows:

- Re-engineering of the cadastral mapping updating process to a methodology that will be based upon digital plan of survey submissions at the tentative and registered stages of development. The re-engineered process will allow SDW to provide updates at two stages of the land development process (currently, updates are only done at the registered stage) at a cost approximately 50% of current cadastral mapping updating costs.
- Province-wide introduction of digital plan submissions to municipal authorities (by an appropriate date) at the tentative stage and to Alberta Land Titles (no later than September 1998 - regulatory assistance required) at the Land Titles plan registration stage. Submission Standards modeled on the proven Calgary standards are being adopted in conjunction with representatives from Alberta Municipal Affairs, the Alberta Association of Municipal Districts and Counties, the Alberta Land Surveyors Association and the cities of Calgary and Edmonton.
- A redirection of the reduced cadastral mapping updating costs (i.e., those updating costs remaining after re-engineering benefits have been achieved) by December 1998, or sooner. It is proposed that the costs will be redirected to those who are necessitating the change in the cadastral mapping (developers, utilities,

municipalities, etc.). Those changing the fabric will in most cases receive offsetting benefits from the re-engineered process equal to or greater than the amount of the fee.

- Introduction of a “temporal capability” to the cadastral mapping which will allow processing of data by temporal (i.e., date of creation or modification) characteristics. This will allow SDW to deliver only the cadastral mapping updates which users require as opposed to the current practice of repeatedly delivering the entire mapping base to users each time a part of it is changed.
- The provisioning of topologically “cleaner” cadastral mapping data. The removal of “undershoots” and “overshoots” and unnecessary points in the mapping will facilitate an easier migration of the cadastral mapping data and updates thereto into certain structured environments that many users employ.
- Completion of documentation of deficiencies in the cadastral data developed by the GOA, so that these deficiencies can be corrected over time. A plan will be developed to address deficiencies on a priority / just in time basis given adequate funding is available.

### **Re-Engineering of Topographic and Small Scale Mapping Updating Processes**

This component of SDW’s re-engineering involves having AltaLIS (and potentially others) take on the limited amount of updating of the Topographic and the Small Scale mapping data sets which the GOA is currently doing. In the case of the topographic mapping, this updating has generally been limited to modifications of geo-administrative boundaries and of geographic names.

SDW and AltaLIS have further committed to undertaking a detailed business viability assessment for updating the Topographic mapping data set in 1998 or 1999. This assessment is intended to review the current nature of the topographic data set within the context of logical technical evolutionary opportunities such as digital ortho and high-resolution satellite imagery as well as automatic change detection. In addition, this assessment will identify and quantify opportunities to establish partnerships or data sharing initiatives with other organizations (e.g. government departments at all levels, industry users, surveyors and value added service providers) as a means of obtaining topographic updates on a feature-by-feature basis at their source.

### **Re-Engineering of Value Added Redistribution**

SDW recognizes that the most effective means to increase both the volume and range of applications for digital mapping data sets is to enable the cost-effective exploitation of the mapping data within the “value added sector”. SDW’s business case relies heavily on increasing revenue generation from proposed value added sources. QC DATA, one of the AltaLIS team members, has an existing base of business which also utilizes and relies on value added relationships. Existing expertise and relationships will be leveraged to quickly develop a value added marketing and distribution capability.

A value-added re-distributor is any person or organization that will acquire SDW mapping data and re-distribute it to third parties in a value added format for specified third party uses. Although the demand for this type of mapping data activity has been growing for a few years, this type of mapping data re-distribution is not currently legally possible due to a lack of appropriate data licensing arrangements. The “value added” must be substantive and could be in a number of forms including, but not limited to:

- merging and repackaging SDW data with other valuable data;

- integrating SDW data with other technologies (such as GPS and electronic viewers);
- embedding SDW data within software applications and;
- production & distribution of standardized and custom hard-copy maps.

Currently, there is no process for the value-added re-distribution of the SDW data sets so technically, this is not a “re-engineering” initiative. However, there is a critical need to develop a “pro-business value added interface”. By this, we mean a set of standardized tools (legal, administrative, technical and financial) which will get SDW data sets into the hands of value added re-distributors in a way that makes business sense for all parties involved. Although the specific nature of SDW VAR agreements has yet to be defined, key principles being proposed for the value added interface concept include:

- a pre-defined, published set of value-added interface rules which establish a “level playing field” for anyone who wishes to be an SDW value added re-distributor;
- collection of royalties based upon a combination of initial fees and direct revenues;
- revenues from VARs is meant to support SDW operations and data quality improvement - not to pay the GOA or SDW back for their investment in building the spatial data infrastructure;
- low entry barriers to allow re-distributors to focus financial resources on bringing SDW data and their value-added product to market;
- copyright protection for SDW data sets (which are the property of the GOA);
- simplicity of value added re-distributor agreement administration;
- protection of SDW and value added re-distributors from unfair competition and from unauthorized re-distribution of SDW data sets; and,
- long term data stability for value added re-distributors.

### **Creation of External Advisory Group(s)**

SDW’s preliminary business plan has been developed with input from its stakeholders. It is the intent that AltaLIS and SDW to continue to operate in this manner by establishing and working in conjunction with a formal “External Advisory Group(s)” who will represent the interests of those who have a legitimate stake in SDW data sets. AltaLIS team members have background and experience working with similar external advisory groups which, should assist in the effective utilization of the Advisory Group(s)

A stakeholder is defined as an organization, business or person who holds a legitimate existing or future business interest in the SDW data sets. SDW and AltaLIS envision that the External Advisory Group(s) will include representation from the government, municipal, utility, surveying, resource, development and other sectors. The External Advisory Group(s) will advise the SDW board of directors and where appropriate AltaLIS, on a wide range of matters including mapping data content, distribution, quality, maintenance, effectiveness and others.

### **Data Quality and Continuous Improvement**

SDW is an Alberta-registered not-for-profit company. This means that any revenue surplus can not be distributed to participants. A surplus must be addressed through some combination of re-investment, data improvement and access cost reductions. Although SDW is currently far from a surplus situation, there are plans to address a surplus if and when it occurs.

SDW is working on a long-term plan that will see the establishment of funds to support on-going data quality work as well as continuous improvement of processes. The SDW mapping sets are generally of a high standard but are subject to defects. It is important that SDW establish a mechanism to identify, catalog and quantify defects and ultimately repair these defects over time. Equally, it is important that the Alberta Spatial Data Infrastructure Initiative not stand still.

Continuous improvement of services and lowering of costs are essential to the long-term success of the SDW initiative and more importantly, beneficial to the mapping users of Alberta. Funds generated by the sale of data alone are unlikely to be sufficient to meet all the requirements for the continuous improvement of SDW data. Additional funds and joint efforts of other interest groups as described above under the heading '*Re-engineering of Topographic and Small Scale Mapping Updating Process*', will be likely required. SDW and AltaLIS will work with the External Advisory Group(s) to lead and coordinate activities aimed at the continuous improvement of the Alberta Spatial Data Infrastructure.

### **Completing the Picture**

SDW's business plan contemplates an extensive re-engineering (to be funded and financed by the SDW participants and AltaLIS) of the way base-mapping data is to be updated, stored and distributed to Albertans. This extensive re-engineering is dependant upon the successful implementation of proposed regulatory changes (or equivalent mechanisms) as well as broad based and timely stakeholder support. Without these changes and support, the entire Spatial Data Infrastructure Initiative will be in jeopardy.

In addition to helping fund the re-engineering, and contingent upon the above noted changes and stakeholder support, the SDW participants have agreed to a five-year commitment to financially support the Alberta Spatial Data Infrastructure initiative. It is contemplated that the combination of reduced costs and increased revenues resulting from the re-engineering coupled with guaranteed financial support from the SDW participants will ensure the long-term viability of this important initiative.

As SDW's business plan matures, traditional updating, storage and distribution of SDW mapping data continues without interruption. At this time (April 1998) SDW and AltaLIS representatives are working to refine re-engineering cost estimates as well as overall cost and revenue projections. The initial transfer of the storage and distribution center from AEP to AltaLIS was completed in late March 1998 without interruption to service. Significant spending on remaining re-engineering initiatives is planned in conjunction with proposed regulatory changes and stakeholder support. If these changes can be implemented within the contemplated timeframes, it is anticipated that the remainder of the re-engineering initiatives described herein will be substantially implemented in the June to December 1998, time frame.

SDW is a direct result of the removal of traditional government funding of Alberta's digital mapping data sets by AEP. SDW and AltaLIS consider these data sets to be an essential component of Alberta's information infrastructure - one that could play a key role in promoting the "Alberta Advantage" into the future. It is important that Albertans seize the opportunity to preserve their mapping investment and promote the broadest possible use of this mapping infrastructure by supporting SDW's Alberta Spatial Data Infrastructure Initiative.

SDW believes that its business plan contains the essential ingredients required to preserve and promote Alberta's mapping infrastructure in an efficient and balanced way:

- SDW is a government/private sector partnership - specifically implemented to improve the efficiency and cost-effectiveness of what was traditionally purely a government service;
- Contractual steps have been taken to preserve the public interest by ensuring that ownership of these important data assets remains with the people of Alberta;
- The removal of traditional government funding mandates the requirement to improve services, reduce costs and increase usage - to the benefit of all mapping users.
- Investment and regulatory support has been designed to ensure that this initiative is supported by those who will directly benefit from it and, by those who cause changes to it - as opposed to tax payers at large.
- Direct involvement of the private sector in management and value added redistribution brings a much needed element of entrepreneurial spirit - one that will see a wider and fairer distribution of this mapping. One which will also result in a constant and competitive exploitation of new technologies and, the development of new applications for this mapping data.
- The SDW External Advisory Group mechanism will assure meaningful input from a broad and balanced array of mapping stakeholders in an environment balancing fiscal responsibility with business potential.

## ***CONTACT US!***

SDW's business plan is a unique and unprecedented opportunity to preserve and promote Alberta's digital mapping/spatial data infrastructure. However, this business plan is not assured. SDW will not be successful without the timely implementation of a province-wide digital plan submission at Alberta Land Titles as well as a province wide re-direction of cadastral mapping updating costs. These proposed regulatory measures are more thoroughly described in a document entitled *SDW Cadastral Mapping Reform - A Partnership Approach* that is available from SDW (this other document also describes a potential partnership with municipalities). Although the Government has indicated its willingness to work with SDW, broader and timely stakeholder support of these measures is essential to ensure timely implementation and ultimate success. Without the re-engineering, the SDW participants can not continue to fund SDW's substantial losses. Therefore, there is a limited "window of opportunity" within which SDW is trying to build stakeholder support for its plan.

We need your help! If you would like more information about SDW or AltaLIS or, you would like to know how to support this important Alberta provincial mapping data initiative, you are invited to view our Web site at "[WWW.ALTALIS.COM](http://WWW.ALTALIS.COM)" or, please contact:

General Manager	or	General Manager
Spatial Data Warehouse Ltd.		AltaLIS Ltd.
c/o 2500 Dome Tower		c/o 2500 Dome Tower
333 – 7th Avenue SW		333 – 7th Avenue SW
Calgary, Alberta,		Calgary, Alberta,
Canada T2P 2Z1		Canada T2P 2Z1
Fax: 403-716-3494		Fax: 403-716-3494

If you would like to order SDW mapping data, please contact our order desk at 403-716-3490.