

Geographic Information Standards In Nova Scotia:

In 1989 while developing a corporate land related information strategy areas of critical need respecting geographic information standards were identified. These were built upon in 1992 when a study specific to geographic data and technology standards was commissioned. Geographic standards were looked upon as a critical building block for the successful implementation of a corporate land related information system. The underlying principles in carrying out such standards development work was that government would be developing and promoting efficient collection, use and management of geo-referenced information.

Some 40 standards were identified under 12 general headings. (See Table 1 for general headings and brief status report). Prior to 1993 defacto standards were emerging and it was recognized that a formal standards process was critical. From 1993 until 1997/98 a great deal of effort was placed on these standards development. The Province had an interagency committee with more than 120 people participating in all aspects of standards development. As well the Province was actively represented on many of the nationally and internationally emerging efforts in the geomatics standards arena¹. Through its participation within these external works, the Province of Nova Scotia was able raise the profile of its concerns on the national and international agendas as well as present larger industry concerns at the provincial level. It was a two way communication with both the Province and Federal efforts benefitting.

Standards however are not flashy, nor are they glamorous, but they are necessary. The people who have participated in the standards work represent far more interests than the 1992 study had targeted. It is note worthy that the Provincial standards developments, moved outside the confines of the Province organizations so as to include federal and municipal government interests as well as those of the private sector and academia. All facets of the geomatics industry of Nova Scotia had opportunities to be involved in the geographic information standards developments. All participated recognized the costs associated with developing and implementing the standards, but they chose to participate because the benefits of implementing this work far outweighed the costs.

¹ The Province of Nova Scotia has and continues to be represented on the Canadian General Standards Board and the International Standards Organization, both as a technical support agency and as a voting member.

Table 1.0

Geographic Information Standards within the Province of Nova Scotia			
	First Developed	Updates	Notes
Data Schema and Dictionary	May 1999	Ongoing as part of specifications for field data collection	Standards within this category are specific to the Civic Addressing Initiative
Spatial Reference System	October 1994		Standards related to map sheet references only. Minor efforts to investigate coordinate referencing system standards. As of January 2002 we have moved to a defacto standard of NAD'83
Data Quality and Accuracy	March 1997		
Terminology	October 1994	Additions March 1997	Complete Dictionary presented
Feature Definition and Coding	October 1994	There have been informal updates made to feature coding standards as part of ongoing pilot work fiscal 2001/02 with the federal GeoBase initiative	Focused on the foundation / structure for feature coding.
Linkage	October 1994	Additions March 1997	The parcel was established as a common unit of measure for future land use classification system. PID linkages established as first common database standard. 1997 - addition of Corporate Database Identifiers and the introduction of a comprehensive Land Use Classification System
GIS Hardware, Software and Communications (Otherwise referred to as Data Analysis Tools and			This item was not addressed in the history of standards development. In the early to mid 1990's it was viewed as becoming too vendor specific.

Communications)			i.e. a consensus was reached that standards must remain vendor independent.
Data Collection	Yet to be investigated		Technical specifications are the only source such material at this time.
Cartography	Yet to be investigated		
Database Directory and Catalogue	March 1997		First metadata standard developed in conjunction with efforts in other jurisdictions (e.g. ACZISC, and the CGSB) DNR - Minerals Branch is doing a great deal of work in this area - they would be considered the leaders in NS for Metadata efforts.
Data Interchange Formats	Yet to be investigated		Industry efforts in relation to Interoperability will great impact any future efforts here.
Data Security	Yet to be investigated		There has been a great deal of “casual” discussion around this subject as it pertains to specific data sets, however little or no formal documentation has been put into place.

Opportunities and Opportunities Lost:

In 1997/98 the standards efforts changed direction. The Program moved away from its original work plan of broadly based standards development so as to concentrate on developing data standards for specific program efforts, such as the emerging civic addressing initiative. The civic standards effort took far longer than anticipated. Momentum and more importantly resources for the more general standards work was lost. And while not specifically tied to the civic efforts, the Province’s participation and resources within the national and international arena also was soon lost². Specific to lost momentum: participants had lost focus and in fact because their programs did not stop and their data issues continued to need attention they began looking at other options in order to meet their data / standards needs.

Unfortunately as with most standards work not all agencies adopt all of the standards developed (not only in geomatics). In some instances agencies outside of the local jurisdictions are more

² Fiscal 2001/02 has seen the Province recommit itself within the national and international standards bodies.

incline to adopt or at least consider the provincial standards with their governance. For example, the land use classification system developed in 1997 was a well received standard with many of the smaller municipalities of Nova Scotia but it was also of great interest within the United Nations Environmental Protection Agency. The UNEPA followed this standard development with great interest and were eager to obtain the resulting material for consideration in work they were undertaking. Of interest as well is the government's own assessment office reaction to the newly developed standard. While active participants in defining the standard they have continued to work with their own land use classification system.

Competing Interests:

In some instances local standards developments are overshadowed by other efforts either at a regional, national or industry level. These efforts certainly meet the needs of the special interests, such as geologists, foresters, social scientists, etc. however they do not necessarily meet the needs of the local, more general user community. Take for example the high profiled metadata efforts underway both provincially, nationally and within the sectoral interests such as the mines and energy fields. In all instances there is a sense that each effort are meeting the metadata needs of their target audiences, however are they ? Unless there are ways of integrating the common efforts of each of these individual pieces of work, the user is still the one who loses. Imagine a user wanting to find data for an environmental study. They approach the Provincial metadata catalogue in search of data applicable to their region. They find only a portion of the data available for that area - Why - because some agencies have elected to provide their metadata on national metadata protocols, while others have provided their data access and metadata within their respective industry site. The user, unless they are directed to reference these disparate sites never finds all the relevant information for their study. As well suppose they do find all the metadata they may still be unable to differentiate applicable data from non-applicable because each metadata source documents these various databases to a point that comparisons are difficult or impossible.

What does the future hold:

As with policies there is a need to educate the geomatics community with respect to the difference between policies, procedures, guidelines, standards, specifications, etc. There is in fact a logical hierarchy for many of these items. Specifications are generated based upon standards; standards are developed based upon the directions set by a policy; guidelines are the softer side of standards development and are used when a specific standard will not necessarily be deployable in a broad context; and procedures are documented steps on how to achieve the implementation of a policy, a standard, a guideline or a specification.

For the most part the standards developments within Nova Scotia between 1993 and the present focused most of its attention on the Primary databases. Thematic data developers recognized their need for primary data and as such recognized the need to adopt standards that came along with the primary databases, however they have yet to fully accept the application of these same standards within their own thematic data developments. Today many of these same agencies are now turning their attention to standards effort within their own sectors of the industry. They are recognizing a need to adopt their sector's efforts as it is their respective interest groups, etc. who

have a need to communicate and share data more effectively (one thought here is the development of seamless national data sets to a common industry standard). More effort must be put into understanding sectoral needs and as well there is a need to bring those sectors together at a provincial level so as to ensure the local industry as a whole is able to access the individual parts of the data. There are still problems for the average user in accessing disparate data sets. This issue might better be addressed as a policy issue as opposed to a standards development issue.

While standards developments as of late have not necessarily been on the workplan of many agencies of this Government, on occasion the standards needs continue to be raised. In recent months the Province has been approached and has agreed to participate in a national metadata effort. Under the direction of the GeoPortal initiative and in cooperation with the Atlantic Coastal Zone Information Steering Committee, the Provincial contributors to past metadata directories are now being approached to update their metadata content. This material will eventually see its way into the federal GeoPortal web site and mechanisms will be in place to ensure long term updating of metadata records. There is however one missing piece to this effort. This work and that of the Nova Scotia Standards Program have yet to be reconciled. The formally adopted standards for metadata within the Province of Nova Scotia has not been changed and must be investigated for conformity to the national efforts. As well there needs to be additional discussions with sectoral agencies within this government so as to ensure all metadata work is coordinated and that the results are easily accessible to all data users of the Province.

In the last year there has also been a great deal of discussion, and now work has begun, in relation to the issue of data warehousing. To this point however there has been little consideration as to the standards which will need to be addressed as part of such work. Pilot projects are underway, but standards do not appear to be foremost on the minds of these projects. As a simple example, there has not been a clear definition given as to what encompasses a data warehouse thus there is a potential for differing projects to duplicate efforts or never share development opportunities.

Another item requiring serious consideration in the coming year is how does the Province intend to deal with standards issues. There is no longer a coordinating resource for this work and the Standards Committee has not met for several years. In essence should the government recommit itself to the development and application of geographic information standards the standards effort will need to be built up from the ground up again. New participants will need to be sought, commitment of organizations will need formalization and a new decision process will need to be implemented.

Another area of consideration - as the standards efforts were winding down there was evidence that data providers and data users were wanting direction in the area of data retention. This too will need to be investigated and should such a standard be required it will need user consult and refinement.

The Standards Program from its inception had a communications strategy. It had formal processes in place for the review and consultation of standards issues and dissemination

mechanism for standards material. In 1997 the standards program moved from a paper based means of dissemination to the Internet. A web site housed the standards content and all updates were to be included in that site. With the loss of the standards resource the site received little attention. Some defacto standards have now found their way to other web sites and other documentation (e.g. specifications documents). There no longer is a central location for standards material nor are there pointers to other related material. Communications must therefore be addressed.

Some areas where standards have evolved, but have yet to be ratified include: spatial referencing; feature coding; coastal mapping (product specific standard); source identification (e.g. provincial keys; attribute development. In all cases, the material will need to be collected, additional user consult will be required, approvals sought and finally communicated to the geomatics community.