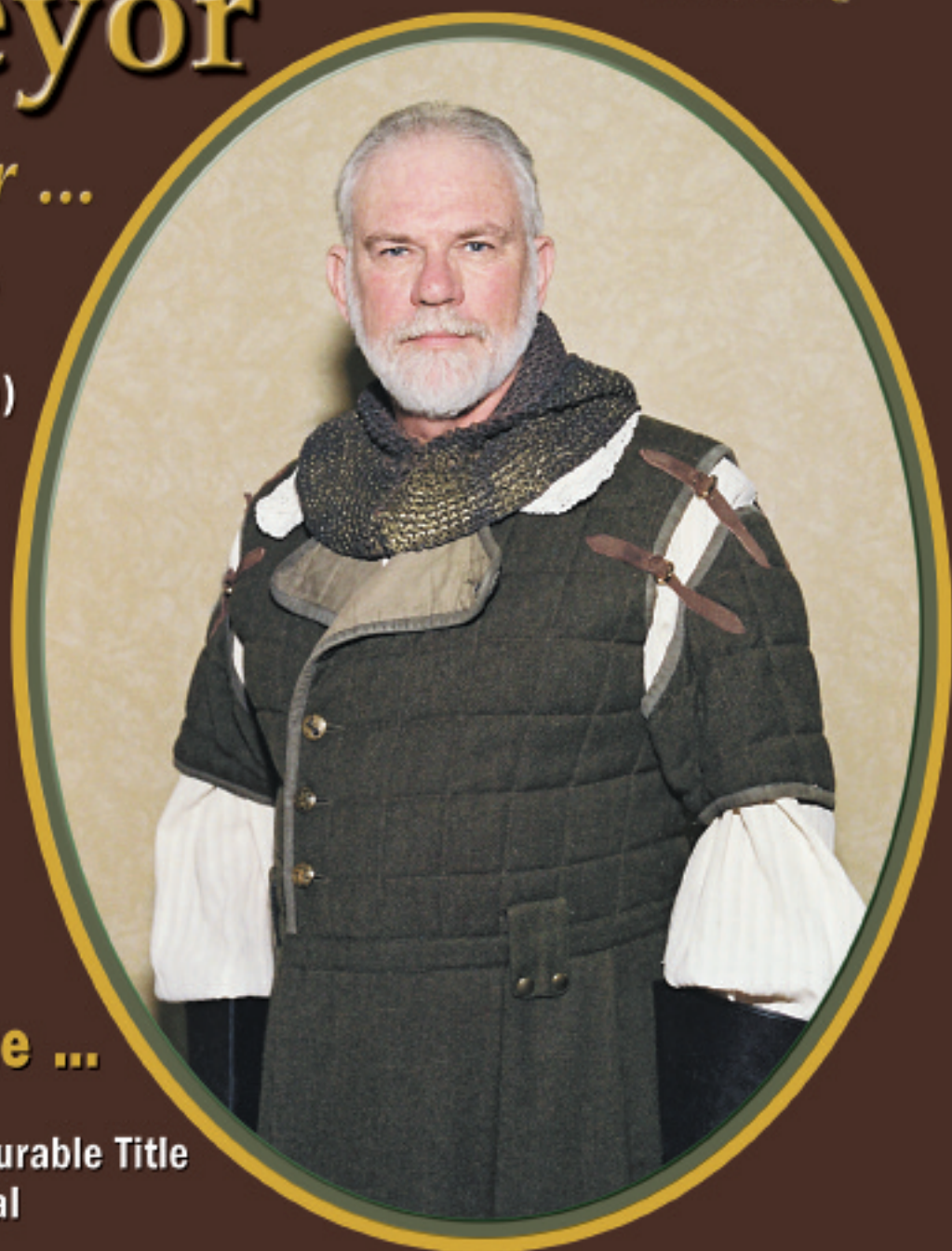


Ontario Professional Surveyor



on the cover ...

**Sergeant-at-Arms,
Tim Hartley**
(Sir Andreas de Harcla)
presided over the
**119th AGM in
London, ON**



also in this issue ...

119th AGM photos
Marketable Title vs. Insurable Title
Ontario Digital Cadastral
Feasibility Study
PPP Accuracy Analysis for
Integrated Surveys
The Role of the AOLS Insurance
Advisory Committee

plus our regular features:

Educational Foundation
News from 1043
Industry News • Book Reviews



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ON THE COVER ...

Sergeant-at-Arms, Tim Hartley chose to portray his ancestor Sir Andrew Hartley anglicized from Andreas de Harcla. He was an important English military leader in the early 1300s and was thought to have been one of the first to have made use of maps in battle. See the article on Sir Andreas de Harcla in The Last Word on page 48.

*Professional
Surveying
in
Ontario*

*encompasses
the
Disciplines of*

*Cadastral,
Geodetic,
Hydrographic,
Photogrammetric
Surveying
&
Geographic
Information
Management*



President's Page

By David Brubacher, O.L.S., O.L.I.P.



The Annual General Meeting in London will be known as a landmark event for many reasons, but there are two highlights that I am especially excited about. The first is very satisfying personally and sends an important message of inclusivity and engagement, and clearly demonstrates the modernization of the surveyor's role in society and in the future. I am referring to, of course, the installation of your first non-cadastral president! The second highlight is the endorsement of the report on the Digital Cadastral Database and the unanimous vote to continue the process. By far, this is the most important thing we have done in many, many years and not only comes with fantastic challenges, but offers even greater rewards.

Land Professionals (including those from other industries such as the utilities sector, financial services sector, public administration sector and many more from across Ontario) need reliable information in order to do their jobs. Often, they cannot obtain sufficiently accurate information in a fast and cost effective manner, so they generally insure over the risk. That neatly defines the problem we are trying to solve and leads to our goal to deliver on the four 'A's; Affordable, Accurate, Accessible and Authoritative data. The steering committee of the Ontario Digital Cadastral Database has met three times since the AGM, including an all-day, face-to-face meeting in which we made great strides in narrowing the scope of the opportunity before us, developing strategies to execute on the opportunity, defining financial business models, defining ownership and governance options and identifying what kind of help we need in these areas.

Since the AGM, Blain Martin and I have received numerous emails and messages from members and we have been directly contacted by those who are clearly excited about this endeavor and are eager to help in any way. While we aren't quite yet at the point of being able to hand out jobs to those of you who are offering help, I ask that you take every opportunity to speak to your peers about your views and to share your enthusiasm. Moreover, if you could seek out those who did not attend the AGM, please use the opportunity to discuss your thoughts with them. Most importantly, I would like to receive your input on the concept

whether you attended or not. Please send your comments, questions and suggestions to me through the Association website. We will continue to work on these issues over the next two months and are looking forward to the end of May for a Special Meeting of the Association where we will present our findings, recommendations and options in detail, provide ample opportunity for discussion and then ask for a vote to begin execution. Date and location will be announced as soon as possible so that you can make plans to attend.

In other news, Blain and I have been hard at work on reviewing our committee structure and in fact have extended our scope to include many other aspects of Association governance. This effort will better define the roles and responsibilities that dictate expectations and improve accountability and service levels, both at the Association office and from our fantastic and dedicated volunteers.

As if that's not keeping us busy enough, some members of the Strategic Plan working group have a '100 day check-in' coming up towards the end of March. During the check-in, we will review and report on the progress of the current initiatives that will help us achieve our 2011 objectives. In addition to those I've already discussed, the initiatives are:

- Enhanced quality of service, which currently means implementing Professional Development, adding a new staff member to support Professional Development, Continuing Education and recruitment efforts and enhancing our relationships with Universities, Colleges and Business schools;
- Improved competencies for entry into the profession, including input into the revisions to high-school geography curricula, developing hands-on recruitment programs for each region and forming an 'under 30' focus group;
- Improved member support and service, which is primarily focused on creating and launching our new website; and
- Expanding our membership by developing a GIM membership package and recruitment campaign and exploring a fast-track option for some potential members.

These initiatives will surely evolve over time and I will endeavor to keep you up-to-date on our progress.



Marketable Title vs. Insurable Title: What will it mean for land surveyors?¹

By Izaak de Rijcke, LL.B., O.L.S.

Real estate lawyers in Ontario generally understand what is meant by the expression “marketable title”. It is an expression that has been referred to in many court decisions and arises from a couple of centuries of conveyancing. Today, the conveyancing context is defined by the Agreement of Purchase and Sale (APS) that is in widespread use for residential real estate transactions. The language of the APS simply requires a seller to convey to a buyer title that is deemed to be “marketable”.² To some extent the concept of a “marketable title” can be compared to the land surveyor’s SRPR product insofar as both rely on research, investigation, and the formation of an opinion by a qualified professional.³ Obviously, the practitioner in law was qualified to give an opinion as to the marketability of title in the former context of title evidence being found in a *Registry Act* search and off-title searches. A Surveyor’s Real Property Report (SRPR) is surprisingly similar in the sense that it too constitutes an opinion, but by an Ontario Land Surveyor as to the location of the boundaries of the property, together with improvements and other features in relation to same. Both opinions can be qualified and, ultimately, are no more than just that: opinions valid at the point in time when made.

This presentation borrowed two slides which were included in a presentation a year ago at the Annual Meeting in Huntsville. The slides appeared in an article found in this periodical which followed that annual meeting. The point of the two slides from the presentation in Huntsville was to highlight the continuing convergence of information and data about the parcel fabric and, in particular, the underlying foundation which is the survey fabric. It was suggested that a reduced frequency of survey work on the ground through SRPRs, reference plans, and other work which involved a retracement of parcel boundaries, would eventually lead to a reduction in the quality of the “ground truth” of the survey fabric. The relationship of survey work on the ground in maintaining a survey fabric to buttress a digital parcel fabric is generally understood by professional land surveyors. However, this proposition is often overlooked by other professionals and certainly by the public which seems all too ready to seize upon a map

or any other digital representation as being an accurate or a faithful representation of reality.

Legal conveyancing may be referred to as an activity which involves transacting in a commodity which is the ownership or title to a parcel of land. That title can be traded like any other commodity. The value of the commodity (namely title information rather than the land to which the title applies) is a function of the quality and the completeness of that data. It is a basic economic fact that systems for transacting in a commodity seek efficiencies and cost savings. Accordingly, the search for greater efficiency in legal conveyancing in Ontario became readily apparent when repeated 40 year searches under the *Registry Act* could be replaced by a search of a parcel register under the *Land Titles Act*. The register stood for the state of title for that parcel. Not only was it more efficient to transact in title which was recorded in a *Land Titles* system, it also became more efficient to transact electronically – especially a *Land Titles* based electronic conveyancing system.

These efficiencies were accompanied by the appearance of title insurance in Ontario over the past two decades – which has added yet a further efficiency. One might say that it ultimately redefined the subject matter of conveyancing into something unrecognizable from the practice only a few decades ago. While title and marketable title were concerned with the completeness of information about ownership and relied on a degree of completeness in that information, title insurance placed a premium on what was not known and focused on the management of the risk which the unknown information represented. As a result, the elimination of the necessity of conducting the usual research and other investigations⁴ (even when transacting off title searches in an electronic land titles based system), many other savings could be experienced by insuring over the risk of not obtaining all of the other traditional searches formerly done by a lawyer.

One of those searches was an up to date SRPR. In fact, the “creep” of title insurance in Ontario has moved even further in recent months by eliminating the necessity of *any* survey information for residential transactions below a certain monetary threshold. This means that the profes-

sional surveyor's reliance on the SRPR product as a core source of business has become untenable. Likewise, the survey fabric on which the parcel fabric has been built is at risk of being seriously undermined. The culture of transacting in a title insurance environment means that the "non-information" forces the boundary and survey data about a parcel to remain unknown. If, after a purchase has been completed through the use of title insurance, it is subsequently repeated - but this time with all of the usual searches undertaken, and a defect is uncovered, the title insurance policy responds by further insuring over – and not necessarily repairing or solving the defect. This is in fact mandated by new language in the standard form APS⁵. The consequence of this new paradigm will mean a perpetual placement of the title non-information in a title insurance home – much like placing the vehicle of title conveyancing in a cul-de-sac. Once the vehicle is parked in the cul-de-sac it is never again to return to a "marketable title" culture.

The implication of these anticipated changes for the future of professional surveying is most interesting. One might speculate on how title insurers will welcome an opportunity to define the information that they will require from surveyors on a future SRPR product. If insurers' loss experiences begin to mount, insurers typically respond by attempting to eliminate or otherwise manage that loss experience and reduce the risk through insurance exclusions, etc. Ultimately, the public interest may call for more than insuring over the risk of not knowing, once the general public begins to appreciate the full implication as well as the long term consequences of such a new paradigm.

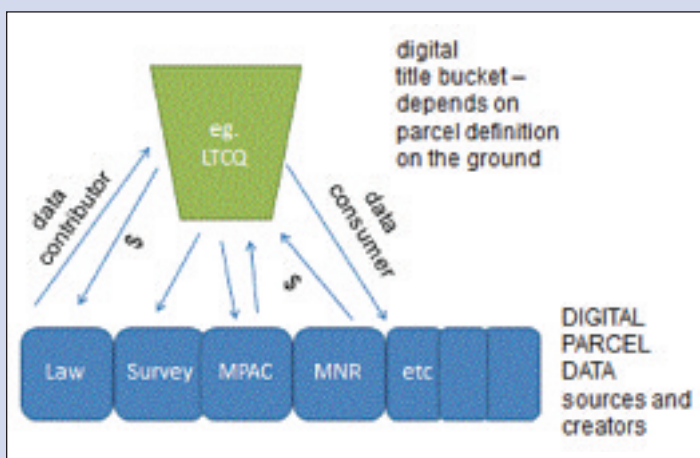
The presentation concluded by recognizing the opportunities which exist in revising our understanding of the traditional SRPR as no longer being responsive to the new paradigm of title insured conveyancing. Instead, recognizing the potential interest for parcel fabric data that goes far beyond supporting a title conveyancing practice may well open new doors. In particular, there may be recognition that the real value in a surveyor's SRPR kind of

product does not lie in a "one off" transaction that has been commoditized but rather, a long term contribution to value added integrity of the parcel fabric itself. These are interesting concepts to build upon since the model presupposes a willingness or financial platform for land surveyors to share and collaborate with respect to survey fabric data and information. This would also facilitate the uploading or making a contribution to the parcel information repository which relies on a parcel fabric whose credibility is robust. In turn, surveyors then become, along with the legal profession and many other potential consumers, purchasers of parcel data. The cycle continues as the field work results add value because the data has greater credibility, is reality based, and is integrated with other data sets to become a reliable foundation for further uses and applications. A slide which was used to illustrate this model at the presentation appears below left.

The reference to a "bucket" is a metaphor for any repository – from filing cabinet to digital file – which can serve as a container for information about a parcel. The contents of the bucket include far more than just title attributes. Ultimately, traditional survey work may shift away from lay consumers (who are not and never have been in the market for boundary information) towards a foundation for value added products that depend on parcel certainty. Future purchasers of digital SRPRs may well include title insurers who see the value of such a product as essential to managing risk. How that digital product is generated presents new and exciting opportunities.



Izaak de Rijke is a licensed surveyor based in Guelph, Ontario. He is a practicing lawyer, focusing on boundary and land title related issues. He has written numerous articles, co-authored books and taught seminars and courses for lawyers and land surveyors. He can be reached by email at: Izaak@izaak.ca.



¹ This paper is based on a presentation made at the Annual General Meeting of the Association of Ontario Land Surveyors at London, Ontario on February 23, 2011. It is modified or edited from the presentation itself. The comments and observations are only those of the writer and do not necessarily represent the position of the Association of Ontario Land Surveyors.

² The threshold for what constitutes a "marketable title" is surprisingly low. It can be simply a possessory title in a *Registry Act* context and may find evidence or support in deposited declarations of possession.

³ That, of course, being the real estate licensed solicitor and the practicing cadastral surveyor respectively.

⁴ There remain, of course, certain basic searches that must still be made when using title insurance for a home buyer. Title insurance is not intended to be a substitute for, say, obtaining the discharge of a registered mortgage from a seller's title.

⁵ Please refer to paragraph 10 of the APS. A requisition by a home buyer made to a seller may be contractually addressed by the seller's purchase of a title insurance policy for the buyer.

Ontario Digital Cadastral Database Feasibility Study

By Ed Kennedy, A.L.S. (Ret), and Gary Kirstine, O.L.S. (Ret)

Introduction

The **Feasibility Study for the Development of an Ontario Digital Cadastral Database (ODCD)** arose from a motion passed by the membership at the 2010 Annual General Meeting (AGM) of the Association of Ontario Land Surveyors (AOLS). The objectives of the study were to:

- identify the market demand for a high quality digital cadastral database
- evaluate alternative locations for the creation of a high quality digital cadastral database
- assess the resource requirements and costs of such an endeavour
- assess the benefits and income generation potential of such an endeavour
- assess the risks of creating a high quality digital cadastral database

The rationale for AOLS sponsorship of this feasibility study was twofold. Firstly, the Association was responding to the interest of its members in contributing to the development of a higher quality digital cadastral database for the province. Secondly, and as importantly, the AOLS believed that such an initiative will produce many benefits that will enhance its role in serving the public interest.

Market Assessment

A Market Assessment was conducted, which identified the composition and approximate sizes of ten market segments that make use of digital cadastral data. The primary uses of and benefits to these market segments of the ODCD can be summarized as follows:

- *Finance and Insurance* – reduced risk, increased transaction speed and lower costs
- *GIS/Geospatial Information Services* – operational efficiencies, broadened application opportunities, reduced duplication, improved reliability and lower costs
- *Land/Cadastral Surveying* – reduced risk, increased quality of work, cost savings, operational improvements, better service to customers, and new business revenue
- *Law* – improved information, reduced risk, increased transaction speed and lower costs
- *Property Development* – improved information and lower costs
- *Public Administration* – reduced duplication, better decision-making, operational improvements and lower costs
- *Real Estate* – improved information, reduced risk, increased transaction speed and lower costs
- *Resource Development* – quicker and better decision-making, operational improvements, facilitated

communications with stakeholders

- *Utilities* – reduced risk, improved safety and lower costs
- *Value-Added Resale of Cadastral Data* – broadened data product opportunities and new business revenue

Location Assessment

The Location Assessment identified seven organizational options for the development of a high quality digital cadastral database, of which the following three are considered feasible by the Study consultants and the Digital Cadastral Database Task Force:

1. The *NewCo-Teranet Contract Option* will involve the formation of a new corporation (NewCo) and negotiation of a contractual relationship between NewCo and Teranet, under which Teranet will contract with NewCo for the supply of a cadastral database. NewCo will maintain the cadastral mapping database, which will subsequently be used by Teranet to maintain the ownership and assessment mapping databases.
2. The *NewCo Option* will involve the formation of a new corporation (NewCo) that will independently develop and supply a cadastral database.
3. The *Teranet Option* will involve the negotiation of some type of partnership between the land surveying community and Teranet for the development and maintenance of a high quality digital cadastral database.

Resource/Costs and Income/Benefits Assessments

The resources that must be developed or put in place for each of the feasible options were identified, and the costs of each option (i.e., for start-up, upgrading of existing mapping database and annual operations) were estimated. Detailed pro forma profit and loss statements over five years were developed for each option. These figures will only be released to parties that are committed to moving the ODCD initiative forward. It is important to note that the study estimates are preliminary, and have not yet benefitted from discussions with Teranet. They are meant as a starting point for discussion by whichever entities decide to move forward with the ODCD initiative.

Public Interest Benefits:

- *Facilitated data integration* – The ODCD will be easily and properly integrated with other layers of data, for improved sharing of data, value-added product development, better decision-support tools, and less overlap and duplication.

- *Improved day to day operations* – The ODCD will provide improvements to day to day operations, such as reduced data updating and adjusting other data layers, lower risks, improved safety and lower liability profiles.
- *Public interest* – The interests of the general public and major user communities will be better served, for example through better services at lower costs, more effective government decision-making, and better access to more information of use in the purchase of a home.
- *Continuous quality improvement* – The ODCD data maintenance model will ensure that the digital cadastral database is current to within a few days, and improves in accuracy over time.
- *Speedier property transactions* – Convenient access will enable the real-time integration of data about properties for sale with other data that will allow property transactions to be completed more quickly, at reduced levels of risk.

AOLS Member Benefits:

- Possible provision of access to the ODCD at no or minimal cost (AOLS to initiate and contribute to negotiations on this matter)
- Possible receipt of payment for digital submission of surveys (AOLS to initiate and contribute to negotiations on this matter)
- Possible receipt of ongoing royalty payments on ODCD data sales (AOLS to initiate and contribute to negotiations on this matter)
- Possible receipt of contracts for services to bring existing parcel mapping up to the ODCD standards and to upgrade the ODCD over time
- Opportunity to develop value-added services based on the ODCD and offer these services to third parties
- Benefits in carrying out their work:
 - Productivity improvements
 - Quality improvements
 - Reduced research time
 - Resulting cost savings

Risk Assessment

Risk assessment involved the identification of the following possible risks of this initiative, and the Study report includes the rating of their level of importance to its successful implementation, the evaluation of the probability of those risks occurring, and the development of strategies to mitigate the impact of the risks:

- Inability of the AOLS to move quickly enough to maintain leadership of the ODCD initiative
- Significant opposition from Teranet
- No support or cooperation from the Government of Ontario
- Significant opposition within AOLS membership
- Inability to raise necessary financing
- Inability to bring partners together
- Inadequate market take-up
- Inability to deliver ODCD on a timely basis
- Unacceptable liability risk profile


Conclusions, Recommendations and Considerations

Based on an analysis of the data and viewpoints gathered during the study from a document and literature review, interviews of key informants and two electronic surveys, a number of conclusions were drawn, and six recommendations and two considerations to address the substance of those conclusions were proposed. The recommendations and considerations can be paraphrased as follows:

Recommendations:

1. That the AOLS provide the leadership to proceed with the ODCD initiative
2. That the AOLS champion the formation of NewCo and support the development of a business relationship between NewCo and Teranet
3. That the AOLS move quickly and decisively to establish a process for identifying an organization(s) that is prepared to form NewCo
4. That the AOLS set standards for digital plan submissions in consultation with the Government of Ontario
5. That the AOLS assume a governance role in the ODCD
6. That the AOLS's governance role include assisting with the finalization of ODCD database content and specifications design, and pricing and licensing model development

Considerations:

1. That the AOLS work with the chosen ODCD organization to explore means of providing market access to an integrated set of draft plan data
2. That the AOLS negotiate privileged member access to the ODCD for internal use purposes, and a royalty model that provides a modest ongoing stream of revenue to members that have contributed cadastral data. 

Ed Kennedy is Principal, Kennedy Geoinfo Consulting, a Senior Associate with Hickling Arthurs Low Corporation, and Managing Director of Canadian GeoProject Centre, a business network hub that develops international spatial data infrastructure (SDI) and spatial information applications projects. Prior to forming Canadian GeoProject Centre in 2003, Mr. Kennedy's previous positions included President of the Geomatics Industry Association of Canada (GIAC), and Assistant Deputy Minister with Alberta Forestry, Lands and Wildlife. He holds an undergraduate degree in Surveying Engineering and a Masters degree in Business Administration. He was commissioned as a Canada Lands Surveyor and an Alberta Land Surveyor and is a former Director of Surveys for the Government of Alberta. Ed has participated in a broad range of management consulting projects in the geospatial information sector and a number of other sectors, such as IT, space, astronomy, environment, agriculture, and biotechnology.

Gary Kirstine is a self-employed consultant. Gary has a Bachelor of Applied Science Degree in Civil Engineering (Survey Option) and is an Ontario Land Surveyor (Ret). His working career commenced in 1969 in the public sector at the Municipality of Metropolitan Toronto, where he held the position of Manager of the Central Mapping Agency. For the past 34 years Gary has worked with the Land Surveying and GIS firm, J.D. Barnes Limited. Gary held a number of positions at J.D. Barnes, including that of President for 7 years. He has participated in a wide range of land surveying and mapping projects including a number of digital cadastral mapping undertakings. Gary has been responsible for initiating a number of value-added reselling arrangements with Teranet as well as other data providers. He is completely familiar with the Land Surveying and GIS industries in Ontario.

Industry News

“Big Becky” TBM Breakthrough, Niagara Falls, March 1, 2011

Dr. Ahmet Unlutepe, P. Eng., who is the Survey Manager of the Niagara Tunnel Project for Strabag Inc., reported that on March 1, 2011 at 2:00 P.M. “Big Becky”, the world’s largest hard rock Tunnel Boring Machine (TBM) broke through into the grout tunnel under the Niagara River after a 10.2 km journey. Dr. Unlutepe is the author of an article titled “Overview of the Niagara Tunnel Facility Project and Surveying Activities”, which was published in the Winter 2008 issue of the Ontario Professional Surveyor, Vol 51, No.1.

Very intensive control surveys were continued from the surface area (~11 to 15 km) to guide the boring operations until reaching the breakthrough location. Very small deviations were detected on the TBM position; the lateral offset was +4 cm and the vertical offset was 0 cm.

An official ceremony will be held on Apr 21, 2011. A video of the breakthrough can be viewed on the Internet at the following link: http://www.youtube.com/watch?v=T-G4te5Kv_0.



“Big Becky” can be seen in the tunnel behind Dr. Unlutepe (on the left) and surveyor Matt Aydin.

The Ontario Cadastre - An Opportunity of a Lifetime!

By Mike Power, O.L.S., O.L.I.P.

What do Genworth Financial, Union Gas, Risk Management Services and LawPro have in common? If you attended this year's Annual General Meeting (AGM) in London you heard that much of their collective core business is dependent upon the work of the surveyor. Mapping and geospatial correlation of their own data sets is fundamental to what each of their companies do, in one way or another, to protect the interests of the public. Sound familiar?

In the wake of the directive received at the 2010 AGM, which was to evaluate the feasibility and return on investment (ROI) associated with the building and maintenance of a new cadastre, the resulting Task Force took the notion to the streets, literally, to determine if there were industry or market segments that had an appetite to invest in an accurate and maintained cadastre if it were to become available. The result was an overwhelming and resounding yes. Of course it's one thing for the Task Force to report that back to the membership, it's quite something else to have industry leaders agree to travel to London at their own expense to be part of a panel to deliver the message at the AGM themselves.

Laverne Hanley from Union Gas has been involved in engineering and mapping for most of his career. A past President of the Ontario Chapter of the Geospatial Information Technology Association and Vice-Chair of the CSA S250 Technical Committee, he articulated the need for "One comprehensive cadastral fabric for Ontario, used by all stakeholders in the planning, design and operations of surface and underground infrastructure." The key, however, is that it needs to be of a consistent quality across the province, updated within 3 weeks of receiving a change notification, ideally available 'on demand' by end users from a single clearing house, affordable and complete. He went on to suggest the notion of a Data Sharing Collective, fundamentally a provincial map clearing house where your membership establishes you into a data sharing agreement with all the other members of the collective. Their respective membership fees address the ongoing operational costs making the data therein available for research and review across the collective.

Peter Robinson-Gray, Manager of Risk Technology at Genworth Financial, has been an extensive user of products derived from and bundled with mapping data. As he succinctly put it in his presentation; "Information is critical to making better and faster decisions. Gathering, managing and organizing trusted information is the challenge." As one

of the industry's leading suppliers of mortgage insurance to financial institutions, Peter's mandate is to develop processes and facilitate access to data that helps the underwriting teams manage Genworth's risk in either over or under insuring a property's mortgage. The key in any data management activity is in having an accurate and reliable base upon which other data can be commingled and business decisions arrived at quickly.

As the National Director of iClarify, a division of the country's largest service arm to the property insurance marketplace, Jeff Sutton echoed the sentiments of the other speakers. Known accuracy, currently maintained, readily available and affordable survey data would be of great benefit to their practice of risk management for property insurance underwriters. Furthermore, it would also help with delivering spatial relevance to the large repositories of environmental data that is currently accessed for the performance of Phase I and II environmental assessments. Much like Genworth, iClarify is a consumer of derivative or bundled products which owes its heritage to the raw survey fabric.

The final panelist, Ray Leclair, Vice President of LawPRO climbed the steps to the podium with a certain amount of trepidation. Not only was this likely the first time that an executive from the Title Insurance industry addressed a gathering of surveyors, but he did it knowing that Izaak de Rijcke was presenting a session on Marketable Title versus Insurable Title earlier in the morning. Ray discussed how, contrary to the beliefs held by many in the room, the Title Insurance industry actually had a need for an accurate cadastre, used not only to support their legal clientele, but to help them mitigate their risks when providing insurance. One might suggest that helping the entity that reduced the frequency of calls for retracements, or the sale of Surveyor's Real Property Reports (SRPRs) is done at your own peril and ultimate demise. Ray would suggest that time has changed the notion that if surveyors did a better job of indexing their surveys, making them easily accessible and uniformly affordable then they could help themselves stay a part of the property transaction by assisting in the mitigation of risk. Not every transaction requires the purchase of an SRPR, but perhaps every purchase could involve the viewing of one. A survey quality digital cadastre with supporting SRPR overlaid on orthoimagery might flag changes to a property for which a search for a permit might be conducted, an evaluation of the legality of a shared use


cont'd on page 12

driveway or perhaps a bylaw infraction due to an out building being too close to a property line. The fact is that there are lots of opportunities for a surveyor's work to be a part of the property transaction; it just may not be the same work that was done in the past.

While the panellists came from different industry groups, their message was consistent; "Stay the Course"; make the cadastral initiative work; put yourselves in a position to participate in value added service offerings based on the new fabric and help the rest of the land information professional community do their jobs in protecting the interests of the public as well. For this isn't a credo held exclusively by surveyors!

Without having shared notes with the panel members, Dan Mathieson, the Mayor of Stratford, Chairman of the Board of the Municipal Property Assessment Corporation and the AGM's keynote speaker eloquently spoke of the shared vision the survey community must have of its future. He spoke in terms of the developments that have occurred in Stratford over the past decade, being quick to place much of the credit at the feet of the City's forefathers. For at a critical juncture in the life of the municipality they made some very difficult strategic decisions in an effort to fulfill what they shared as a vision of the City for the future. The result, as he pointed out, under the tutelage of a successive string of City leaders who shared the same goals, is that a diverse

community, which has managed to seamlessly integrate technology, the arts, manufacturing and agriculture with a quality of life unsurpassed by many other jurisdictions emerged. Instead of it being a political commercial, he went on to address the challenges facing the profession as well as those whose work relied upon the work of the surveyor.

At a crossroads, we have a unique opportunity to establish our vision for the future, take responsibility for collaborating with other members of our profession and create a survey quality cadastre that can be relied upon by professionals in all industry groups. We should be careful not to let this opportunity slip through our fingers, if only for fear of being chided by our successors for being the generation of surveyors who could have changed the future - but deliberately chose to leave things the way they were. For contrary to popular myth, the meek shall not inherit the earth, and nothing comes to he who waits. An opportunity of a lifetime, by definition, comes along only once! 

Mike Power, O.L.S., O.L.I.P. is a Geographic Information Manager. He is the Vice President, Business Development at iLOOKABOUT Corp. He is responsible for managing the development of new business lines and sectors, strengthening the company's partnerships with channel providers of geo-spatial products and assist clients with visual database solutions. He can be reached by email at Mike.Power@iLOOKabout.com.

Insurance Advisory Tips for Members

The Role of the AOLS Insurance Advisory Committee

By Frank Mauro, O.L.S., O.L.I.P. on behalf of the Insurance Advisory Committee

As outgoing Chair of the Insurance Advisory Committee, I was asked to provide an overview of the role of the Committee, a recent change to its Terms of Reference, and some tips that our committee members have prepared for the membership based on our experiences reviewing claims over the past few years. The current Terms of Reference for the Insurance Advisory Committee is posted on the AOLS web site and therefore I will limit my comments to those items that are relevant to this article.

The committee has no legislative authority and only deals with issues regarding the AOLS professional liability group insurance plan. The committee is currently composed of the Executive Director, a member of council, four licensed members, the insurance broker and the adjuster. The licensed members of the committee review the claims presented by the adjuster at the meeting and provide advice to the adjuster on survey related matters. During this review, there are instances where the actions of the member submitting the claim may, in the opinion of the committee, represent a risk to the public.

Recently, the committee requested that its Terms of Reference be amended by submitting a proposed resolution to council for its consideration. Council reviewed this matter and passed Motion 10-41 that reads as follows:

The Insurance Advisory Committee at its discretion may refer a member and the reasons for their concern, to the Registrar when in the opinion of the Committee the issue may represent a risk to the public.

The committee debated this matter over several meetings before finally approaching council with the above request. This change is a departure to the current role of the committee and reflects the committee's concern that in certain and rare instances there are claims that reflect more than a member's error and/or omission. The actions of the member may represent a risk to the public and also to the AOLS group insurance plan. Either way, the committee felt strongly that remaining silent on these matters did not serve the public's or the membership's best interests.

Any information brought to the committee for review is strictly confidential and none of the information provided or discussed leaves the room after the meeting. Even in the instance of a referral mentioned previously, the claim

discussion is not relayed. Members can rest assured that reporting a claim to the adjuster will remain confidential and they should not be discouraged to do so when confronted with a potential claim. Contacting the adjuster immediately after learning of a potential claim is imperative. The adjuster's role is to resolve the claim as efficiently and expeditiously as possible and the committee's role when reviewing a claim is to assist the adjuster on survey related matters.

Over the years the committee has seen repetitive and similar claims from individual members. The committee has requested presentations from these members regarding these claims. This is an educational process requiring the member to present their quality control processes to the committee for review and discussion. Hopefully, this meeting leads to a better understanding by both parties on the reasons leading to the claim and the processes in place to avoid further claims of this nature.

Every professional surveyor dreads the call from a client having cause for an insurance claim. Some claims are without merit but the member should still report the claim out of an abundance of caution. Here are some tips from the Insurance Advisory Committee to consider when confronted with a potential claim:

- Do not admit liability. Many claims are not a result of the surveyor's actions and could have been avoided by the client or their subcontractors.
- Report the claim immediately to the adjuster and copy the AOLS Registrar.
- Be as specific as possible with the claim report as it will assist the adjuster and committee when discussing the claim and its resolution.
- Do not attempt to negotiate a settlement with the client unless directed to do so by the adjuster.
- Be particularly attentive to construction related work as this forms the overwhelming majority of claims.
- Be patient. Some claims take years to resolve and it is important to maintain professionalism when dealing with an irrational client.
- Finally, failing to report a claim for whatever reason could lead to the insurance company declining coverage later.

cont'd on page 16

The Insurance Advisory Committee is here to assist the membership with the AOLS sponsored group insurance program. Having served on this committee for several years and most recently as chairperson, I can assure the membership that the committee acts in a professional manner and in the best interest of the public and the membership when

discussing claims. It's been a learning experience for me and a pleasure to have served on the committee. I would recommend this committee to any member willing to learn while giving some of their valued experience back to the profession.



NEWS FROM 1043

Changes to the Register

MEMBERS DECEASED

Robert Bruce Stinson	737	Dec. 20, 2010
Grenville Rogers	750	Feb. 3, 2011
Richard H. Ross	1070	Jan. 30, 2011

RETIREMENTS/RESIGNATIONS

Al Koudys	CR65	Jan. 14, 2011
Bruce MacNabb	1101	Dec. 31, 2010
Bruce Fulford	1359	Dec. 31, 2010
Ian C. McLaren	1335	Dec. 31, 2010
Doug Culham	1520	Jan. 28, 2011

COFA'S REVISED

Was: MacDonald – Tamblyn Surveying Ltd.

Is: MacDonald Tamblyn Lord Surveying Ltd.

Cambridge, January 5, 2011

Was: P. Salna Company Ltd.

Is: Salna Surveying (A Division of P. Salna Company Ltd.)

Richmond Hill, March 11, 2011

Surveyors in Transit

Correction: It was erroneously reported in the Winter 2011 issue that **Graham Bowden** had retired his licence. Graham has resigned as President and retired from fulltime work at MMM Geomatics Ontario Ltd., but he maintains his licence as he works part time wrapping up projects while he pursues new interests.

Nancy Grozelle, Assistant Examiner of Surveys, is now located in the Brampton office of the Ministry of Government Services at 7765 Hurontario Street. Her phone number is 905-874-4008.

The address of the Dryden office of **Trow Geomatics Inc.** has changed to 56 King Street, Dryden, ON P8N 1B5.

Clarke Wilkinson Alton Surveying has moved to 43-D Industrial Street, Suite 3, Toronto, Ontario M4G 1Z2.

The St. Catharines office of **Matthews, Cameron, Heywood – Kerry T. Howe Surveying Ltd.** has closed. All notes and records have been moved to the Niagara Falls office.

Andrew Cameron is the new managing OLS of **Paul Wilson Surveying (A division of Matthews, Cameron, Heywood- Kerry T. Howe Surveying Ltd.)** in Haliburton.

Alex Marton Ltd. is now located at the following address: 160 Applewood Crescent, Unit 22, Concord, ON, L4K 4H2.

John D'Amico is now the Manager of the Oshawa office of **Donevan Fleischmann Petrich Limited.**

D. S. Urso Surveying Ltd. has moved to the following address: 10 King Street, Sault Ste. Marie, ON, P6A 2T1. All other contact information remains unchanged.

Tulloch Geomatics Inc. has acquired the business of **Paul F. Forth O.L.S.** located at 29 Miller Street in Parry Sound. **Paul Forth** is the managing OLS.

Murray Fraser has come out of retirement and is working for **FKS Land Surveyors** in London.

The notes of **I.C. McLaren Ltd.** are now with **Archibald, Gray & McKay Ltd.** in London.

Salna Surveying (A Division of P. Salna Company Ltd.) has relocated to 64 Industrial Road, Richmond Hill, ON, L4C 2Y1. Phone and fax numbers remain the same.

Sites to See

Open Data Pilot Project

www.data.gc.ca

The Open Data Pilot is part of the Government of Canada's commitment to open government, which is being pursued along three streams: open data, open information and open dialogue, and aims to drive innovation and economic opportunities for all Canadians.

The Open Data Pilot seeks to improve the ability of the public to find, download and use Government of Canada data. You are invited to search the catalogue, download datasets and explore the possibilities of Open Data.

Update on Pathways to Fairness and Equity Project

By Bruce Millar

The “*Pathways to Fairness and Equity*” project, funded by the Ontario Ministry of Citizenship and Immigration, is about to start its fourth and final year. This initiative by the AOLS is aimed at improving the process that Internationally Educated Professionals (IEPs) follow for certification as an Ontario Land Surveyor (OLS), but the tools, processes and other improvements to the certification process will also mean that all candidates, regardless of place of origin, will reap benefits.

There are two main elements to the project: Process and Courses.

Process:

The AOLS, like most other professions, has been using course-based assessment in an attempt to evaluate the level of candidates from off shore. This process is daunting. There are thousands of universities in the world¹. Courses are developed for different profiles and applications. Even a change in professor may profoundly change the direction and content of the course. Trying to compare courses is, therefore, an inefficient and time consuming task that can lead to the IEP having to take many more courses than may be necessary.

A team, lead by Dr. Michael Chapman, a Geomatics professor at Ryerson University, who is also an AOLS Assessor, has been working on documenting the continuum of competencies that an OLS needs to meet the requirements of the profession in Ontario. Other team members are Dr. Spiros Pagiatakis, Dr. Sunil Bisnath and Dr. Costas Armenakis all from York University. Survey Law is a further competency area that will ultimately form part of the competency continuum. For now that area is being developed by Izaak de Rijcke and integrated in the learning experience of the beta courses (described later). Each competency is described in detail and a determination of how to assess the acquisition or mastery of the competency is also included.

The competency continuum has, at present, 11 groupings. It is always a work in progress as new technologies, processes and regulations are introduced. The continuum is also formatted into 2 levels of *Self Assessment* tools.

The Level 1 assessment is a reduced list with representative content from each of the 11 groupings. This tool is designed to allow potential candidates to rate themselves against the general competency platform that they will face. The Level 1 tool facilitates the candidate’s ability to make an informed decision as to whether or not he/she has enough

knowledge and experience to make it worthwhile to pursue the goal of becoming an OLS.

The Level 2 Self Assessment tool contains all the competencies in the continuum and is designed to serve as a tool for both the candidate and the Assessor to reach an understanding of where the candidate believes he/she is compared to the professional placement by the Assessor.

During this last year of the project, it is the AOLS’ goal to develop, collect and rate resource modules for each of the competencies and competency groups so that independent study can be facilitated.

Once a person becomes an official candidate, the AOLS Case Manager will monitor, track and support him/her during the process. If required, certified advisors can be assigned to assist the candidate with documenting his/her qualifications and competency attainment, preparing competency matching portfolios for consideration by the Assessor and to refer the candidate to other resources and agencies as appropriate.

An interview between the Assessor and the Candidate, prior to the preparation of an official report to the AERC is now added to the process. During this interview, the Assessor is able to make a determination as to the relationship between the Candidate’s perceptions of readiness and reality.

The Assessor then prepares a report to the AERC outlining courses required and competency gaps that exist. This report will be more accurate and rigorous than previous reports using the older method.

Once the AERC has reviewed the report and made any modifications it deems required, the candidate receives notification of their decision(s). The candidate will then work with the AOLS support team to develop a Learning Contract, outlining which courses are required, which competencies have to be acquired and what elements of proof and documentation will be required to satisfy the Assessor and the Registrar. The Learning Contract will also identify elements of support available to the candidate during the time frame of the Learning Contract.

Dr. Chapman will continue to be the Lead Assessor for the AOLS, but is joined by Doctors Pagiatakis, Bisnath and Armenakis as Assessors, who will be called upon for appeals, consultation and reviews.

Courses:

The AOLS will be offering new courses. These courses will have delivery and offering features that are designed to

be Adult Learner Friendly. Many will be continuous intake and most will be offered with “in person” and remote participation options. All will be supported by the AOLS’ new Learning Management System (LMS), <http://learning.aols.org>. The LMS will handle registration, resource access, collaboration functions, student support systems and evaluation administration.

A new course, *Introduction to Canadian Common Law* is already being offered in a beta test format. This course is a precursor to a main Survey Law Course scheduled to be offered in beta version early in the spring. The Common Law Course is aimed at those students who may not be familiar with Canadian or British Common Law systems.

The Canadian Common Law and Survey Law courses are being taught by Izaak de Rijcke, who is both a lawyer and a licensed Ontario Land Surveyor. Municipal Planning, Professional Communications and Capstone Technical Writing are being taught by Dr. M. Chapman.

It is intended that the AOLS website will have

added functionality to provide ready access to all of the features, tools and processes that have been developed over the past 4 years.



More information can be requested through Bill Buck, the AOLS Registrar.



Izaak de Rijcke teaching the course to a group of learners, including 4 remote learners participating through GoToTraining software. Note the AOLS’s new SMART Board behind Izaak.

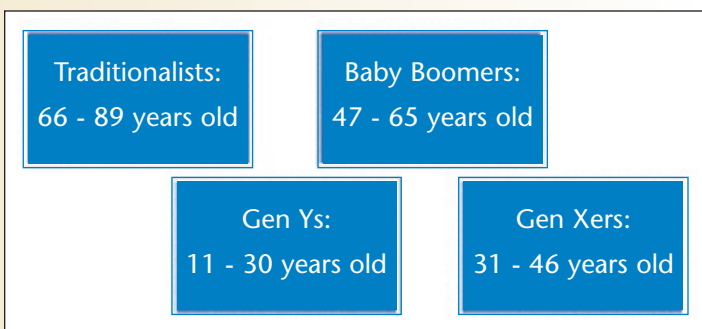
¹ According to International Journal of Scientometrics, infometrics and bibliometrics, total *number of universities in the world* is counted to 17,036.

Four Generations of Customers: How to Boost Sales

By Giselle Kovary and Adwoa K. Buahene, co-founders of n-gen People Performance Inc.

The Association of Ontario Land Surveyors (AOLS) is a long standing institution, which was founded in 1892 to protect and serve the public interest. As with any organization or company that has deep roots and imbedded traditions, remaining relevant with changing economics, regulations and customer expectations is paramount to professional sustainability. However, the sustainability challenge is not only rooted in remaining internally relevant with employees; but also externally relevant with customers and other professional stakeholders. Given dynamic world influences, life-defining events and political and economic movements, younger customers may have different ideas on how your company can best serve them in fulfilling their needs. In this reality lies another challenge to your company - ensure that you are able to sell to and service effectively all four generations of customers.

You have four generations of customers – Traditionalists, Baby Boomers, Gen Xers and Gen Ys. In the spring of 2010, n-gen described in the Ontario Professional Surveyor magazine some of the life-defining events, values, behaviours that have shaped each generation of employee. Those life-defining events and values have also shaped the behaviours and expectations of customers. In this article, we want to highlight some considerations that will allow you to evaluate whether or not you are able to effectively engage all four generations of customers.



Four Generations of Customers

Given that there are four generations of customers, it's important to consider how each cohort wants to interact with you as a customer. The way a Traditionalist wants to be sold to is not the same as the way a Gen Y wishes to experience the sales cycle. So it's important that sales and service people remember to provide service in the way in which the customer wants to receive it, rather than in the way in which the employee wants to provide it. It's the old sales adage of "ensure that you are selling the way the customer wants to buy, not the way you want to sell". For example, if a Baby Boomer

is trying to sell to a Gen Xer and is constantly asking for face-to-face meetings in order to share information or build a relationship, this is less likely to be successful, then if the Baby Boomer were to send the information in advance via email, and then request a meeting that focuses on clarifying information and action-planning. Gen X customers are going to evaluate you and your company on the results that you can offer that are professional, guaranteed and cost-effective. Conversely, younger sales people should recognize that for Traditionalists and Baby Boomers face-to-face meetings are important to building relationships and credibility. Traditionalists need to feel like they can trust you, and that you have the required years and level of expertise. Baby Boomers will want to know that the company that they select is well-ranked in the industry and has a strong reputation.

It is somewhat natural for each generation of customer to have a greater affinity to a sales or service person who is from their own generation. So a Traditionalist may initially feel a quicker or greater rapport with another Traditionalist or older Baby Boomer, just as a Gen Y customer may feel a closer affinity to another Gen Y. So within your sales and service team, it may be prudent to have representatives from all four generations within the team, or to pair up a more experienced colleague with a younger colleague when meeting with a new customer. If that's not possible, then it is important for each salesperson to evaluate where in the sales process s/he might have the greatest challenge with a customer, and to plan to mitigate that challenge by engaging others. To increase customer engagement, you must layer on a generational perspective to the sales and customer service process to ensure that you are tapping into the values, expectations and motivations of all customer groups.

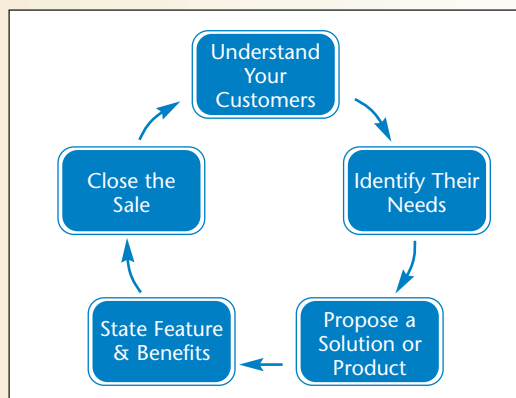
Customer Loyalty

With respect to Traditionalist customers, often companies experience a type of 'unquestioned loyalty' after they have made their decisions to purchase your product or service. There is a high degree of repeat business, and to acquire business a second, third or multiple times takes less effort on the part of the salesperson. Traditionalists are inclined to continue to purchase from, and recommend, a company for decades, without evaluating whether or not there may be a better option.

Therefore, some companies may still have a culture that relies on this type of loyalty from their customers but also from employees who are selling or providing service. In today's market, many companies might be surprised by the extent to which they had to justify their services and work approach to younger customers. Given younger customers'

viewpoints on what gives someone authority, they are not inclined to give a salesperson expert credence just because they have been in the business for 20+ years. They will expect your company to prove its expertise through testimonials, references or factual descriptions – any external validation that reaches beyond the words of the salesperson. Also, it's important to remember that your company should be prepared to offer evidence of your authority each time you deal with a customer, whether it be repeat business or a referral. The younger consumer is constantly doing research on the Internet and comparing services with their social network. They are vigilant in ensuring that they are receiving the best value proposition from a company, and will switch brands quickly. Regardless of age, all customers want a positive and collaborative working relationship with their surveyors. However, be aware that the grace period that Gen X or Gen Y customers give your company to get this relationship right, is much shorter than that of Baby Boomers or Traditionalists. Customer loyalty - what it means and how long it remains, differs across the generations.

In today's environment, you cannot be guaranteed unquestioning customer loyalty. However, there is a direct link to building customer loyalty through employee loyalty. In some companies, managers and owners might be surprised if younger employees ask or question the way service is being provided or the types of products you offer. In fact, for many Gen Y employees, unless they understand and believe in the value proposition of the company, they will have a very difficult time (or may even refuse) to sell that value proposition to customers. Since we all know that our best ambassadors in sales are our own people, it is imperative that we focus on engaging internally, while engaging externally as well.



The Sales Process

Within the sales process it is important that salespeople layer on a generational perspective. Above, we have highlighted factors that contribute to understanding your customers by understanding how each generation attributes authority and where they go to get their information (colleagues, friends, Facebook, Yellow Pages, etc.). Recognizing that, in particular for younger generations, customers are typically already well informed because they have done a lot of research on the Internet.


In identifying customer needs, active listening skills, strong analysis and communication skills are paramount. It is impor-

tant to listen to the questions and to gauge your interaction appropriately – is the customer seeking advice, or are they already well informed and are looking for you to present choices? If they are new to the experience, how can you help educate them? How closely are their needs and expectations aligned with what you are able to offer? This is an important stage because this is where you are able to manage your customers' expectations and help guide the sales process.

In proposing a solution, you have to be careful to balance providing too much choice vs. not providing enough. If you offer too many options and choices, some Traditionalists may question your expertise, and may think “you're supposed to know what the best solution is in this situation”. Conversely, if you try to persuade a Gen X or a Gen Y customer into a singular option, they may question why there are no options or will propose an option to you.

In stating the features and benefits of a solution, younger generations of customers will tend to trust you more if you are also able to highlight any drawbacks to one proposed solution versus another. They are more likely to build trust and confidence with a sales or service person who is transparent. Obviously, if there are more drawbacks than benefits, your company wouldn't offer the solution; however, if there are any limitations to offering the service to a particular client, in their particular situation, then it is best to highlight those upfront. These drawbacks could be about the service itself, the possible outcome, or even the timeframe in which the service can be offered. In this day and age of viral marketing and younger customers who can post messages that reach hundreds or thousands of people in seconds, it is imperative that your company reduce the possibility of 'buyers regret' up front, before the sale.

In closing the sale, remember that there are different vehicles by which you can follow-up with customers. Judge whether a face-to-face meeting, a phone call or an email might be appropriate, and also ask when your customer might want you to follow-up.

In selling to the four generations of customers, keep in mind who you are selling to and the best sales process to engage each customer. Whether you are a younger salesperson selling to more mature customers, or you are an experienced salesperson selling to a younger customer, the one-size fits all approach to sales no longer works. While the sales process doesn't change, by layering on a generational perspective, you are likely to have greater success in building relationships and ultimately in being able to close sales. 

*Adwoa K. Buahene and Giselle Kovary are the authors of **Loyalty Unplugged: How to Get, Keep & Grow All Four Generations** and co-founders of **n-gen People Performance Inc (www.n-genperformance.com)**. n-gen is the training partner of choice for industry leaders, providing solutions for managing generational differences in the workplace.*

By focusing on the root causes of customer service, sales, leadership, teambuilding and HR practices, we deliver training programs that measurably improve performance within a multi-generational workforce.

Dr. Roger Tomlinson, the “Father of GIS” becomes an Honorary Member of the Association of Ontario Land Surveyors

On February 25, 2011 at the President’s Luncheon at the AOLS Annual General Meeting in London, Ontario, an Honorary Membership in the Association of Ontario Land Surveyors (AOLS) was presented, in absentia, to Dr. Roger Tomlinson, who is generally recognized as the “Father of GIS”. He was unable to attend the presentation therefore Alex Miller, the President and founder of ESRI Canada, graciously accepted the award on his behalf.

As Geographic Information Managers comprise almost 20% of the AOLS membership, it is fitting that Dr. Tomlinson be recognized by the Association for the leadership that he has provided in the area of Geographic Information Systems (GIS). He changed the face of geography as a discipline when he conceived and developed geographic information system technology in the late 1960s.

Dr. Tomlinson was born in Cambridge, England and was a pilot with the Royal Air Force before he attended Nottingham University to study geography. He came to Canada in 1957 to study at Acadia University, where he received a B.Sc. in geology and then continued on to obtain a Master’s degree in geography, specializing in the glacial geomorphology of Labrador, from McGill University in 1961. He returned to London, England to complete his doctorate at University College in 1974.

His academic recognition includes being made a fellow of University College London and receiving honorary Doctorates of Science from the University of Nottingham, Acadia University, and McGill University. It is the first time that McGill has given an honorary doctorate to a geographer.

Dr. Tomlinson’s contributions throughout his career include chairmanship of the International Geographical Union’s GIS Commission for 12 years where he pioneered the concepts of worldwide geographical data availability. He is a past president of the Canadian Association of Geographers and a recipient of its rare Award for Service to the Profession. The Association of American Geographers in the United States awarded him the James R. Anderson

Medal of Honor for Applied Geography in 1995. Dr. Tomlinson is an Honorary Fellow of the Royal Geographical Society and winner of its prestigious Murchison Award for the Development of Geographic Information Systems. In 1996 he was awarded the GIS World Lifetime Achievement Award for a lifetime of work with geographic information systems, and he was the first recipient of the ESRI Lifetime Achievement Award in 1997. Dr. Tomlinson was awarded the Order of Canada in February of 2004.

As reported in the Ottawa Citizen, in July 2010 Dr. Tomlinson’s vast body of work was recognized by the National Geographic Society, which awarded him the Alexander Graham Bell Medal at a conference in San Diego. Along with the Hubbard Medal, given for exploration and discovery, the Bell Medal is the highest honour bestowed by the society. It is a very rare medal, only three have been awarded since its inception in 1980. The medal inscription reads: “for transforming the field of geography through the development of GIS technology, and for the dynamic cultivation of the field of geographic information science over four decades.”

Dr. Tomlinson also received the Geospatial Information & Technology Association’s 2010 Lifetime Achievement Award, the highest honour the association can bestow, which recognizes an individual’s lifelong contributions and long-standing commitment to the geospatial industry.

Dr. Tomlinson is the principal of Tomlinson Associates, Ltd., Consulting Geographers, which was established in 1977 in Ottawa, Ontario. He has advised clients such as the World Bank, United Nations Food and Agriculture Organization, the U.S. Departments of Commerce and Agriculture, U.S. Geological Survey, U.S. Forest Service, U.S. Bureau of the Census, the Canadian Forest Service, and numerous U.S. State and Canadian Provincial and Municipal Government Agencies. The members of the Association of Ontario Land Surveyors are very proud to welcome Dr. Tomlinson as an Honorary Member.



Photograph by: Jana Chytilova, the Ottawa Citizen.
Reprinted by permission.



119th Annual General Meeting



Dan Mathieson, who is the Mayor of Stratford and the Chair of the Board of Directors for the Municipal Property Assessment Corporation (MPAC) was the Keynote Speaker.



Graham Bowden delivered the charge to the new surveyors at the Convocation Luncheon and offered the following advice in his concluding remarks. "From this moment forward you are no longer the "new" surveyor. You are the surveyor with the new ideas."



The 119th Annual General Meeting at-Arms, Tim Hartley laid down the gavel which was used to control the accuracy of the meeting.



Left: Incoming President David Brubacher (right) presented the Past President's gavel to Wally Kowalenko.



Members Commissioned in the Last Year

Back Left: Daniel Robinson, Tania Batchvarova, Peter Feren, Mel Recoskie, Robert Wannack, Steven Davidson, Vineetha Rathnayake, Yordanka Zaharieva, M Christopher Oyler, Thomas Gondo, Khairul Amin, Blake van d



Brian Maloney (right) was presented with a Professional Recognition Award, one of the highest awards of the Association, by Wally Kowalenko.



A Centenary Award was presented to Ron Berg (right) by Wally Kowalenko.

“Setting Our Sights on Education”



was called to order as the Sergeant-Standard Measure, which historically surveys in Upper Canada.



Izaak de Rijcke



From left to right: Laverne Hanley, Union Gas; Mike Power; Peter Robinson-Gray, Genworth; Jeff Sutton, iClarify and Ray Leclair, Lawpro.



Ed Kennedy



Mike Power



Gary Kirstine

Presenters of the seminar on the “Cadastral Fabric Feasibility Study”



Michael Fisher. Front left: Jeff Fee, Peter Veen, Jamie Leslie.

Helen Kowalenko (right) presented the AOLS medallion to Lee Anne Lane.



A Centenary Award was presented to James Ferguson (right) by Wally Kowalenko.



Alex Miller (centre), President of ESRI Canada Limited, accepted an AOLS Honorary Membership on behalf of Dr. Roger Tomlinson from David Brubacher (left) and Wally Kowalenko.

Platinum Sponsors



Cansel



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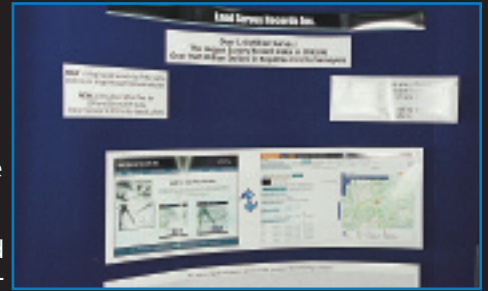
Sokkia Canada



Teranet Inc.

Welcoming Party

Welcoming Party-goers (below left) watched Master of Ceremonies, Peter Moreton (centre) call the "Pig Races" while Jim Nicol moved the pigs. Below right, Leslie Morrow, Lena Kassabian and Keron Cato were some of the volunteers who sold the tickets. Thanks to everyone who participated. All proceeds were donated to the AOLS Educational Foundation.



Land Survey Records Inc.



Hockey at the AGM!

The annual hockey game with Sokkia was well attended this year with 19 players. Thanks to Harry Kalantzakos, this perennial event was graced with a goaltender for the first time. Thank you, Harry! And thanks again to Pat Hills and Sokkia for hosting what has become an AGM tradition.

Veterans' Dinner



Back left: Jack Young, Drew Annable, Mike O'Sullivan
Front left: Jack Monteith, Jack Gray

Veterans' Dinner continued



Left to right: Doug Culbert, Ardon Blackburn, Murray LeGris, Gord Good, Cindy Kliaman, Jim Hill



Left to right: Blain Martin, Wayne Brubacher, Bob Clipsham, Ron Jason, Gary Phillips, Tim Hartley, John Ward



Left to right: John Hiley, Murray Fraser, Peter Moreton, Bill Buck, Helmut Grander, Bob Tomlinson



Left to right: Kim Clement, Maureen Mountjoy, Neil Simpson, Duncan Ashworth, Larry Maughan, Paul Forth, Dan Dolliver



Left to right: Al Worobec, Mark Watson, Paul Wyman, Kenneth Ketchum, Bruce Johnson, Brian Maloney, Marvin McNabb



Left to right: Gary Auer, John Gutri, Andy Cameron, Bill Bennett, Rob Harris, Ed Grenkie



Left to right: Ron Stewart, Al Roccaforte, Alex Wilson, Steve Balaban, Paul Gregoire, Bernie Bezaire



Left to right: Eric Ansell, Rick Miller, Paul Torrance, Steve Gossling, Dave Urso, John Goltz, Dan Vollebakk, Bob Fligg

SRD - Back to Basics

Peer Competence Review Revised!

By David Raithby, O.L.S., Member of the Survey Review Department Committee

Recent revisions to the Surveyors Act, and O. Reg. 216/10 and Regulation 1026, have brought many changes to the surveying profession in Ontario. While the changes appear to be made in an attempt to make the act and regulations comprehensive with regard to the expanded profession, a number appear to have the possibility of great impact on traditional cadastral practices.

The introduction of integrated surveys has become a hot button topic of conversation with many surveyors, and for a time has overshadowed some of the other changes in the updated regulations. Integration has brought much discussion and theoretical explanation, but very little thought regarding the practical application. Integration is sure to be on our radar screens for some time to come.

Equally as important as the concept of integration will be the definitions in Regulation 1026, being the definitions of a FIRM, and the concept of a PROJECT. Section 40 of Regulation 1026 deals with the inspection program, and introduces the terms “firm”, and “project”.

Inspection Program

40 (4) At least once each year, the member or members appointed by the Council shall inspect at least one plan or project prepared by each firm. R.R.O. 1990, Reg. 1026, s. 40 (4).

Essentially, firm is the object to which the systematic and comprehensive reviews by the Survey Review Department (SRD) will now be applied.

Section 40 defines a firm in two parts, namely

- (a) any professional member or group of professional members that undertakes professional land surveying, or**
- (b) a government department or agency, that undertakes cadastral surveying, whether or not it is a service offered to the public;**

By definition then, in section (a) a firm is “any professional member or group of professional members...” This portion of the definition appears to reflect the direction of successive councils of the AOLS that ALL OLS’s be subject to the Peer Competence Review (PCR) process.

With regard to the existing review process, to date the SRD has responded to this direction of Council by changing departmental processes to include all surveyors who certify plans in firms with more than one OLS. As the department continues to evolve the process, all members will now be subject to review, whether or not they are certifying plans.

With this widening of the scope of definition, questions arise as to the application to “all members”. The obvious application with the recent expansion of the profession is that this is intended to apply to both the Cadastral and the CR (Certificate of Registration) membership. In so doing, however, the application has applied to many in the profession who have not been subject to the peer competence review process in the past, and includes members who do not regularly certify plans.

How then might a review take place for classes of surveyors who are not certifying plans? A number of situations might arise from this section, from the ridiculous to the sublime, and might include semi-retired or honorary members, or members who are working on the staff of companies that do not certify plans or perhaps even staff members of our own Association who are OLS’s.

With regard to government departments, in section (b) of the definition of “firm” government departments or agencies themselves are now also defined as firms. These departments then will be reviewed and possible conflicts might arise in the varied situations of government offices that employ OLS’s. It is foreseeable that conflicts between managers of departments who are not OLS’s may occur if being required to submit projects for review. Would a reluctant upper level manager require a subordinate OLS to give up his/her commission to avoid departmental review?

What sort of review process might be applicable to the Surveyor General, or the AOLS Registrar, or for that matter the Manager of the SRD itself? All are persons who do not regularly certify plans, but who are OLS’s.

The review process as it relates to Certificate of Registration (CR), must apply in a like manner to the cadastral side of the Association. All CR members must be reviewed, with submissions for Systematic and Comprehensive review.

PROJECT

40 (4) At least once each year, the member or members appointed by the Council shall inspect at least one plan or project prepared by each firm. R.R.O. 1990, Reg. 1026, s. 40 (4).

From section 40 “project” means a plan, map, drawing, file, report or any other form of transmittal by which a professional member advises or gives an opinion as to,

- (a) the establishment or determination of boundaries delineating any right or interest in land or land covered with water, or

cont'd on page 30

- (b) the determination or analysis of spatial attributes of natural and artificial features on, above or below the surface of the earth, whether or not the surface of the earth is situated below water.


The new definition of project, while it at first blush appears to be an inclusive way to deal with the variety of reports and details that might make up the day to day business of the CR membership, also appears to widen the scope of reviewable items on the cadastral side of the association.

It is hard to imagine a cadastral job that would not fall under the auspices of “plan, map, drawing, file, report or any other form of transmittal”. This concept follows the direction given by successive Councils of the AOLS that all OLS’s be reviewed, and appears to widen the scope to include that all jobs prepared by OLS’s be available for the peer competence review process.

With this wider scope brought forward within the new definition of “project” all jobs will now be required to be tracked, and a number assigned to them to allow the possibility of review. Traditionally, stickers have been applied to plans providing both the opportunity to track files, as well as provide the departmental funding. While the sticker process is not necessarily required, it is a methodology that is currently well known. Will the system of stickers continue? At least in the short term I believe it will. Review of the process is currently being undertaken, with input from the CR branch of the association so that any changes will reflect a system that will work for everyone.

Care should be taken in review of the issues that relate to the terminology “Project”. Confusion may occur with the common understanding of the term and the definition from the regulation. The plain meaning, which in regular usage, will vary from surveyor to surveyor, should not be confused with the definition of Project from section 40 of Regulation 1026. An example of this might be a “project” to Surveyor “A” that might include all of a new subdivision, and include many plans. Surveyor “B” might believe that this is many smaller projects. Which one applies?

The definition of *Project* also specifically relates to the advice or opinion about “boundaries” and “features” of land. A clear distinction of the application of the term *Project* is required. In as much as the expected update of the Interpretive Guide will help to address this issue, it would seem that opinions relate in much the same way that they always have and that if you present your client with multiple opinions in one project (common usage) you should be expected to have each of these multiple opinions available for review by the SRD.

On a go forward basis, as the tracking and funding model evolves, changes will undoubtedly be brought to the membership in the form of a new SRD By-Law for approval. 

David Raithby is a partner in the firm of Baker & Benedict Surveying Inc. in Woodstock. He can be reached for comment by email at dave@bakersurveying.com.

Precise Point Positioning Accuracy Analysis for Integrated Surveys

By Ron Berg, M.A.Sc., O.L.S., and Trevor Holliday, B.E.S.

Introduction

Historically, GNSS (Global Navigation Satellite System) surveys required at least 2 geodetic-quality receivers, simultaneously tracking common satellites, to produce centimetre-level positioning results. This can be done by post-processing data from static surveys, or by operating a base station and rover receiver in a Real-time Kinematic (RTK) mode, which provides position corrections as the survey is being conducted.

A GNSS user can now compute high-accuracy geographic coordinates from a single receiver through Natural Resources Canada's (NRCAN) on-line Precise Point Positioning (PPP) service. PPP may be used to correct both static and kinematic GNSS observations, and provides results in the NAD83 CSRS (North American Datum 1983, Canadian Spatial Reference System), and the ITRF (International Terrestrial Reference Frame).

The Ministry of Transportation Ontario (MTO) Geomatics Office submitted numerous control survey data files for PPP processing to analyze the accuracy of PPP-derived position solutions.

Precise Point Positioning Service Overview

NRCAN provides two methods of obtaining PPP corrections. One is online through their CSRS Online Database Service. A free NRCAN account must be set up in order to use the PPP corrections service. Go to:

http://www.geod.nrcan.gc.ca/online_data_e.php

A new version, called PPP Direct, allows the user to drag-and-drop multiple files onto a desktop icon that automatically submits the files for processing. The executable file can be installed from the CSRS Online Database Service. With either method, PPP returns results via e-mail. RINEX (Receiver INdependent EXchange) format files must be used for PPP processing.

The accuracy of PPP-derived coordinates is a function of the length of observation session, the type and quality of equipment used, and the availability and geometry of satellites during the session.

Figure 1 shows achievable accuracies at CACS (Canadian Active Control System) stations, which are very stable, pillar-mounted, geodetic-quality receivers in locations with virtually unrestricted visibility to the sky.

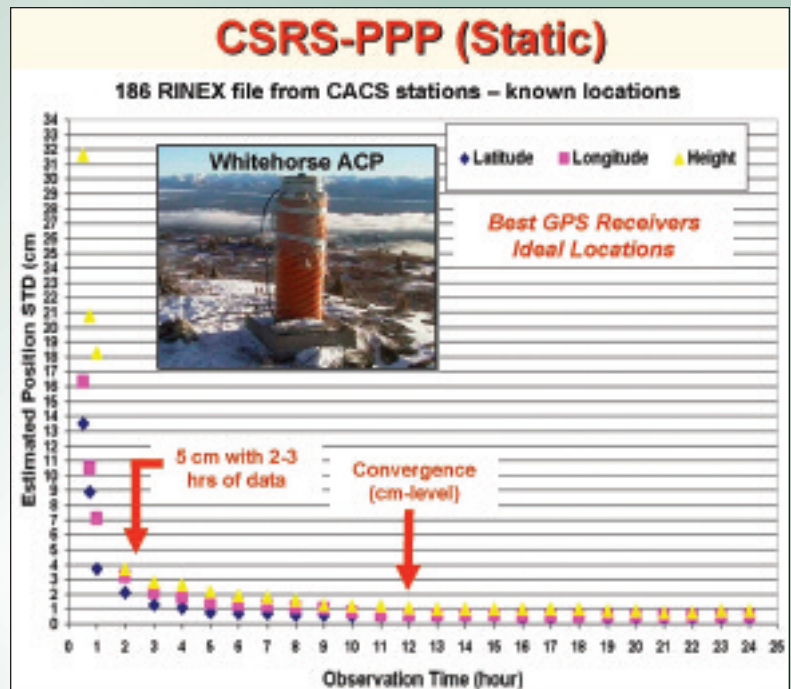


Figure 1 (Natural Resources Canada, 2010)

NRCAN has done limited testing with single-frequency receivers. Mapping-grade receivers can provide results accurate to approximately 20 cm under ideal conditions. Recreation-grade receivers are unreliable and are not recommended for sub-metre positioning. Users are advised to conduct independent testing with their receivers at known CSRS control monuments to determine achievable accuracies.

Accuracy of PPP Solutions

The Ministry of Transportation Ontario (MTO) Geomatics Office submitted numerous files for PPP processing to analyze the accuracy of PPP-derived position solutions. All sessions were submitted for PPP processing from March to July, 2010. Controlling factors for these submissions were that the original surveys used **dual-frequency, geodetic-quality** equipment and were conducted according to MTO specifications for GPS Control Surveys. Stations were chosen across a broad geographical area as shown on the accompanying map (Figure 2). Most stations have more than one session processed for comparison. The observations were from control surveys conducted between 2000 *cont'd on page 34*

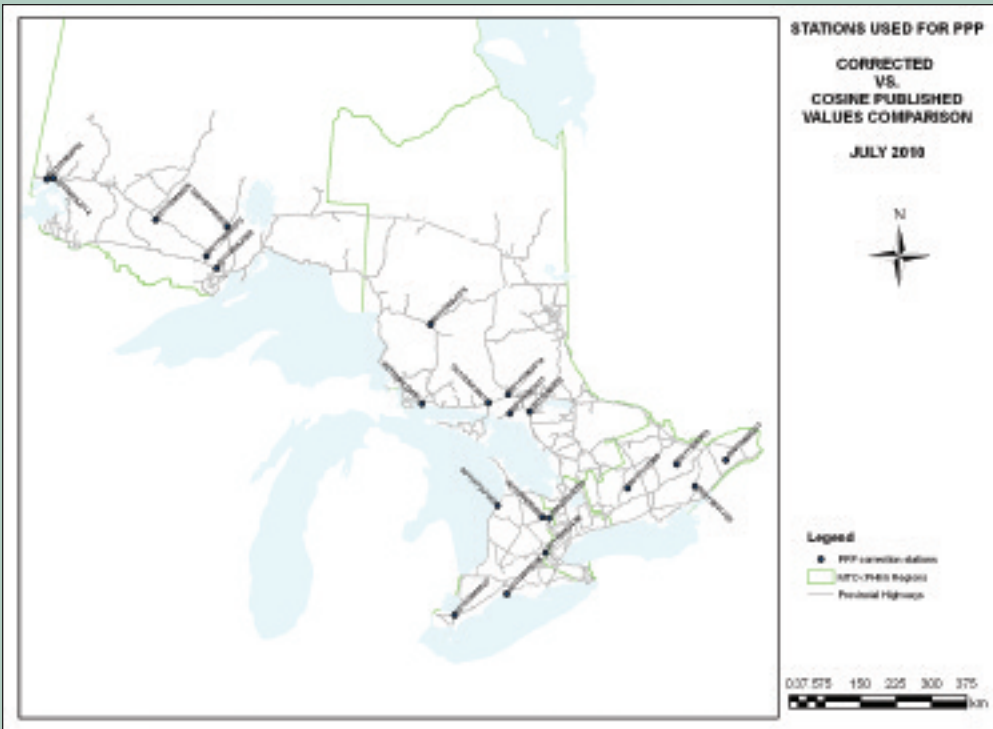


Figure 2

and 2009 and range in length from 30 minutes to four hours.

When submitting files to NRCAN for PPP processing, the user must select the reference system – either NAD83 CSRS or ITRF. Ontario’s current published geodetic survey data is related to the NAD83 CSRS datum – 1997 epoch. The user must select **epoch “1997.0”** in order to derive values directly comparable to current **published NAD83 CSRS values in Ontario** available through MNR’s COSINE database.

In the graphs below (Figures 3 and 4), the vertical bars show the 2-D coordinate difference between the PPP-derived UTM values and the published NAD83 CSRS UTM values in COSINE. The line graph represents the 2-D error estimate (Sigma) from the PPP processing software for each session. Sessions range from approximately 30 minutes to four hours. Figure 4 is an enlargement to clearly show the coordinate differences.

The coordinate differences generally decrease with increasing session length, although there are notable inconsistencies throughout the dataset. With a few exceptions, the coordinate differences are within 10 cm after 30 minutes and 5 cm after 60 minutes. There is a noticeable improvement in coordinate comparisons (PPP accuracy) and error estimates (PPP Sigma values) after about one hour of data collection.

There is good correlation between the coordinate differences and the Sigma values for the longer sessions, especially from 1 hour 41 minutes onward.

For sessions under one hour the Sigmas are generally far worse than the actual coordinate differences.

Of significant importance to the user is the fact that the PPP-derived positions were closer to the actual published NAD83 CSRS values than the Sigma values in almost all cases. Thus the Sigmas likely indicate a worst-case accuracy scenario and are not overly optimistic error estimates. Sigmas for sessions of 1 hour 30 minutes and longer were generally close to the calculated coordinate difference between PPP-derived and published CSRS values. Sigmas generally improve with increased observation time, provided no other problems exist during the session i.e. poor sky visibility, cycle slips, too few satellites, poor satellite geometry, and atmospheric interference.

From these results the following minimum observation times are recommended:

- Accuracy < 20 cm at least 30 minutes
- Accuracy < 10 cm at least 60 minutes
- Accuracy < 5 cm at least 120 minutes

This assumes good GNSS observation conditions. In all cases, redundant observations are required to independently verify the PPP results.

Carrier phase ambiguity resolution is the main factor affecting the convergence seen in the accuracy plots. Resolved ambiguities are the key to benefiting from the full positioning accuracy provided by the carrier phase measurements. Therefore it is essential to ensure the observation

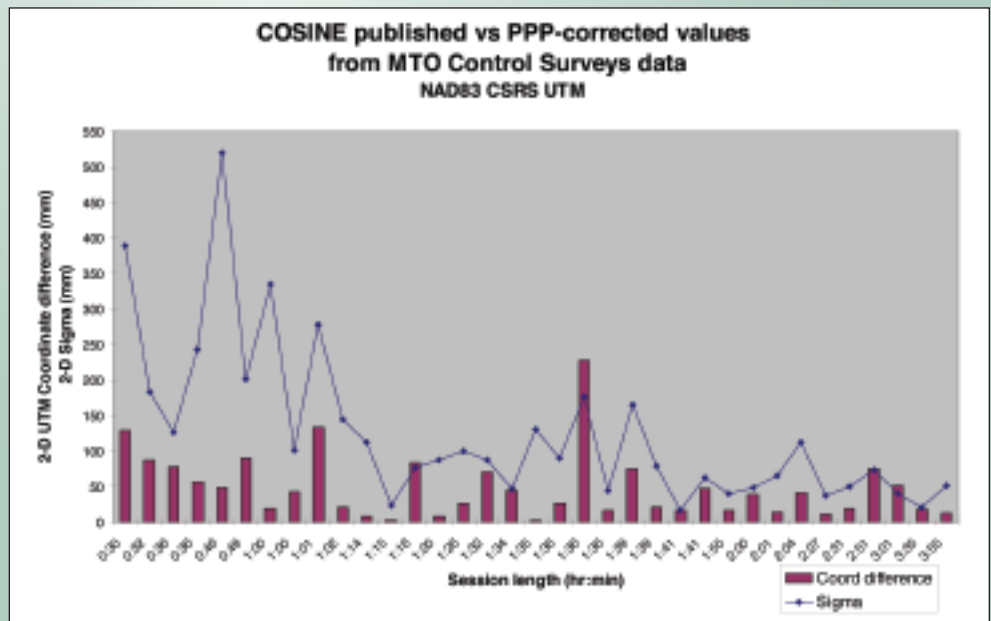


Figure 3

session is long enough for phase ambiguity resolution. Minimum observation times will depend on the accuracy required.

Testing Your Equipment

Users are advised to conduct independent testing with their receivers at known NAD83 CSRS control monuments to determine achievable accuracies. Ideally CBN (Canadian Base Network), OHPN (Ontario High Precision Network) or MTO Key Station monuments should be used since these are the highest-accuracy NAD83 CSRS stations available in Ontario. They are listed as Classes A, B and C in COSINE (COordinate Survey Information Exchange – MNR’s geodetic control database). Most of these monuments are in good locations for GNSS observations with few obstructions.

Testing should include different session lengths and different satellite constellations (observe at different times of the day) to get an idea of the accuracy that can be expected. All types of equipment (i.e. L1 only, L1 & L2) must be tested separately.

Users should test the accuracy of PPP-derived values by directly occupying geodetic control stations with published NAD83 CSRS values, and submitting those sessions for PPP processing to compare to the published values.

Collect several hours of data, carefully measure antenna heights, convert your raw GPS data to RINEX format, ensure that the correct antenna name is used and submit the RINEX files for PPP static processing using NAD83 CSRS epoch 1997.0. Compare the PPP results with published values. This will give an indication of achievable accuracy with your equipment at similar sites over similar time periods. The position difference plots are good indicators of the time needed for “convergence”.

When to Use PPP

PPP does not replace a proper geodetic control survey since it does not provide direct ties to surrounding stations to verify integration accuracy with respect to the monumented Ontario NAD83 CSRS datum. The MTO Geomatics Office will continue to establish high order geodetic control through sufficient direct baseline ties to existing control in a geometrically strong network. Geodetic control surveys are governed by the “Ontario Specification for GPS Control Surveys”, June 2004. Also, project control should be established from geodetic control by normal GNSS static or RTK surveys, not by PPP.

However PPP may be an option in other instances:

- to meet the cadastral survey integration requirements of Ontario Regulation 216/10 under the Surveyors Act
- in remote locations where no other control exists i.e.

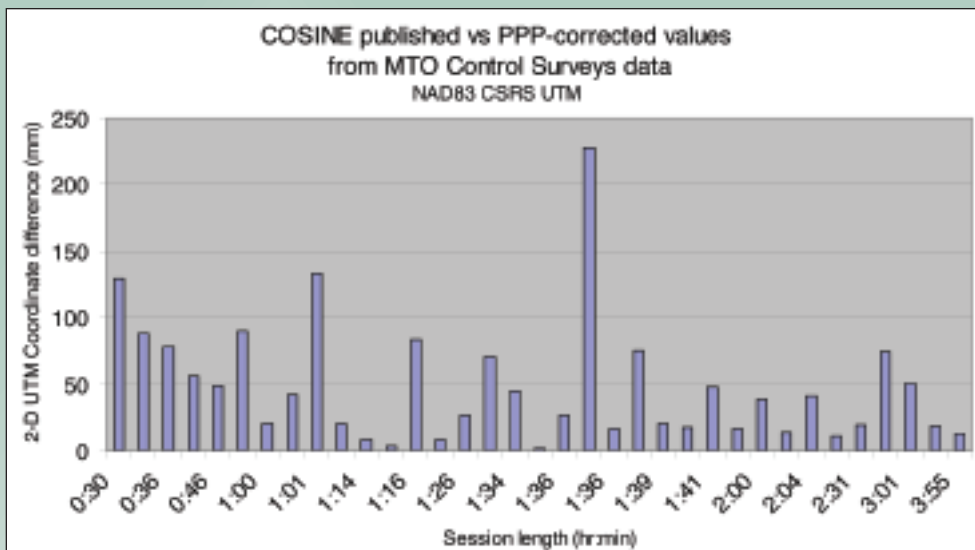


Figure 4

remote northern airports

- when NAD83 CSRS values are desired and no nearby published control exists
- to use in place of a local assumed coordinate system for other generic georeferencing needs i.e. pit surveys
- as a check on geodetic control coordinates

PPP use will increase, particularly for cadastral survey integration, as the observation time required to achieve a given accuracy decreases and as the NAD83 CSRS datum gains more widespread use.

Conclusions

A GNSS user can now compute high-accuracy geographic coordinates from a single receiver through Natural Resources Canada’s (NRCAN) on-line PPP service. The accuracy of PPP-derived coordinates is a function of the length of observation session, the type and quality of equipment used, and the availability and geometry of satellites during the session. Geodetic-quality, dual-frequency receivers must be used to obtain the best results.

MTO submitted numerous files for PPP processing to analyze the accuracy of PPP-derived position solutions. Results show that the 2-D coordinate differences between the PPP-derived UTM values and the published NAD83 CSRS UTM values in COSINE generally decrease with increasing session length, although there are notable inconsistencies throughout the dataset. With a few exceptions, the coordinate differences are within 10 cm after 30 minutes and 5 cm after 60 minutes. There is a noticeable improvement in coordinate comparisons (PPP accuracy) and error estimates (PPP Sigma values) after about one hour of data collection.

Of significant importance to the user is the fact that the PPP-derived positions were closer to the actual published NAD83 CSRS values than the Sigma values in almost all cases. Thus the Sigmas likely indicate a worst-case accuracy scenario and are not overly optimistic error estimates. Check the Sigma values of the estimated PPP position to ensure they meet the required survey accuracy.

Minimum observation times have been recommended for integrated survey accuracy requirements. Users are advised to conduct independent testing with their receivers at known NAD83 CSRS control monuments to determine achievable accuracies. Testing should include different session lengths and different satellite constellations (observe at different times of the day) to get an idea of the accuracy that can be expected. All types of equipment (i.e. L1 only, L1 & L2) must be tested separately.



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This article is derived from the research report “User Guide to the Precise Point Positioning Service”. The complete report is available for download from the MTO Research Library Online Catalogue at <http://www.mto.gov.on.ca/english/transrd/>. See

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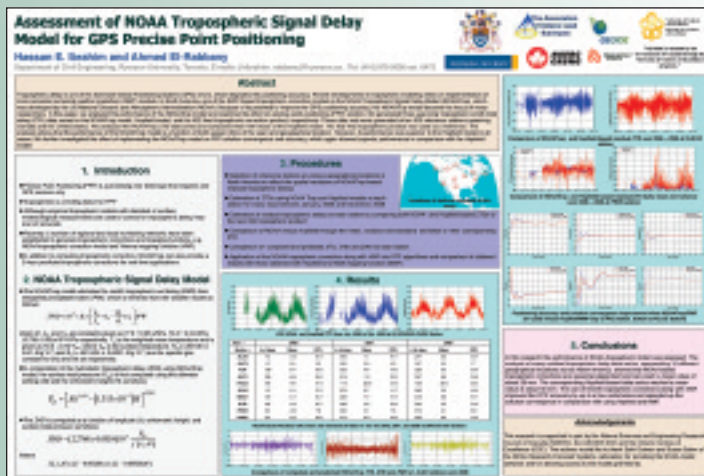
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FIFTH Annual AOLS Graduate Student Geomatics Poster Session Award Winners

FIRST PLACE: Hassan E. Ibrahim, Ph.D. Candidate in the Department of Civil Engineering, Ryerson University, supervised by Dr. Ahmed El-Rabbany.



Assessment of NOAA Tropospheric Signal Delay Model for GPS Precise Point Positioning

ABSTRACT

Tropospheric delay is one of the dominant Global Positioning System (GPS) errors, which degrades the positioning accuracy. Recent developments in tropospheric modeling rely on implementation of more accurate Numerical Weather Prediction (NWP) models. In North America one of the NWP-based tropospheric correction models is the NOAA Tropospheric Signal Delay Model (NOAATrop), which has been developed by the US National Oceanic and Atmospheric Administration (NOAA). Because of its potential to improve the GPS positioning accuracy, the NOAATrop model became the focus of

many researchers. In this paper, we analyzed the performance of the NOAATrop model and examined its effect on precise point positioning (PPP) solution. We generated a three-year-long tropospheric zenith total delay (ZTD) data series for the NOAATrop, Hopfield, and the IGS final tropospheric correction product, respectively. These data sets were generated at ten IGS reference stations spanning Canada and the United States. We analyzed the NOAA ZTD data series and compared them with those of the Hopfield model. The IGS final tropospheric product was used as a reference. The analysis shows that the performance of the NOAATrop model is a function of both season (time of the year) and geographical location. However, its performance was superior to the Hopfield model in all cases. We further investigated the effect of implementing the NOAATrop model on the PPP solution convergence and accuracy, which again showed superior performance in comparison with the Hopfield model. Email: hibrahim@ryerson.ca.

SECOND PLACE: Wai Yeung Yan, Ph.D. Candidate in the Department of Civil Engineering, Ryerson University, supervised by Dr. Ahmed Shaker.

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FIFTH Annual AOLS Graduate Student Geomatics Poster Session Award Winners... cont'd

Improving the Classification Accuracy of Airborne LiDAR Intensity Data by Radiometric Correction.

ABSTRACT

Airborne Light Detection and Ranging (LiDAR) systems have been used effectively in digital terrain/surface modelling by measuring the range from the sensor to the Earth surface. However, the use of the LiDAR intensity data (the amount of energy backscattered from the ground object) is still limited because it requires a certain correction scheme to remove the signal noise due to the atmospheric effects and ground surface backscattering. This study demonstrates how to radiometrically correct the LiDAR intensity data to enhance the separabilities among different land cover types for surface classification. A physical model of radiometric correction is proposed by considering the parameters including the range, the scan angle, the footprint, the surface topography, and the atmospheric condition. The proposed model is applied to the entire point cloud which was captured on the campus of the British Columbia Institute of Technology in July 2009. The effects of radiometric correction are evaluated statistically by conducting experiments on both the original data and the corrected data for four different classification scenarios. The classified results are evaluated using high resolution aerial imagery acquired during the same flight. The results show an accuracy improvement of about 3% to 10% for the radiometrically corrected data. The significance of the work contributes to the LiDAR system manufacturer for developing data processing software and maximizes the benefit of using the intensity data for object recognition and surface classification. Further investigations are underway to validate this approach for terrestrial LiDAR data and the full-waveform LiDAR data. Email: waiyeung.yan@ryerson.ca.

THIRD PLACE: Nagwa El-Ashmawy, Ph.D. Candidate in the Department of Civil Engineering, Ryerson University, supervised by Dr. Ahmed Shaker.

High Resolution Satellite Image Classification for Hydrological Modeling.



ABSTRACT

Master planning and rainfall/runoff models require calculation of areas covered by pervious and impervious surfaces such as: roads, roofs and driveways. Remote sensing is a data acquisition technique that can provide information through processing of the high resolution satellite images. Image classification is a robust method for information extraction.

The main goal of this paper is to evaluate using the high resolution satellite imagery and image classification techniques for provision of land cover information that can be used as input by hydrological models. The data used in this paper is a stereo IKONOS satellite image for a highly urbanized area within the City of Toronto.

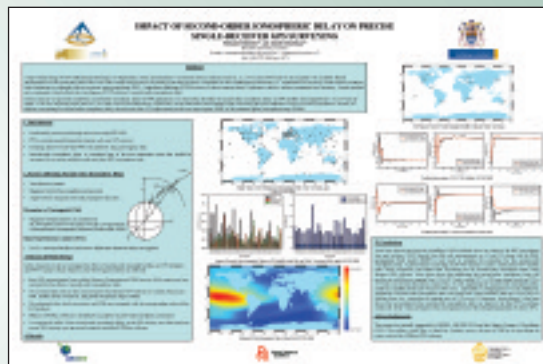
The evaluation is done by comparing the flooding and runoff volume

of a developed rainfall/runoff hydrological model based on land cover information extracted by manual and automatic classification. The high resolution stereo IKONOS is rectified and the 3D topographic features for the study area are extracted manually (manual classification). An Ortho-image is produced and used for land cover information extraction through supervised classification to the study area (automatic classification).

The results reveal that there are differences of 7 and 2% in the area of vegetation and impervious surfaces respectively when supervised classification method is used. The difference in the model-generated runoff volume between the two cases varies between 2 and 4% for the 2, 10, 25 and 100-year rainfall events. As a result, it is concluded that high resolution satellite image supervised classification can be used effectively in modeling the rainfall/runoff for a small urban catchment. Email: nagwa.elashmawy@ryerson.ca.

FOURTH PLACE: Mohamed Elsobeiey, Ph.D Candidate in the Department of Civil Engineering, Ryerson University supervised by Dr. Ahmed El-Rabbany.

Impact of Second-Order Ionospheric Delay on Precise Single-Receiver GPS Surveying.



ABSTRACT

Traditionally, in GPS PPP, ionosphere-free linear combinations of dual-frequency carrier-phase and pseudorange measurements are used. Unfortunately, with these linear combinations only the first-order ionospheric delay is removed. Higher order ionospheric delay terms are usually not accounted for, which leaves a residual error component. In this study, we investigate the effect of second-order ionospheric delay, which is much larger than all other higher-order ionospheric terms, on the determination of satellite orbit and clock parameters as well as on the PPP solution. Firstly, raw GPS measurements from a global cluster of international GNSS service (IGS) stations were corrected for the effect of second-order ionospheric delay. The corrected data sets were then used as input to the Bernese GPS software to estimate the precise orbit and satellite clock corrections. It is shown that the effect of second-order ionospheric delay on GPS satellite orbit ranged from 1.5 to 24.7 mm in radial, 2.7 to 18.6 mm in along-track, and 3.2 to 15.9 mm in cross-track directions, respectively. On the other hand, GPS satellite clock corrections showed a difference of up to 0.067ns (equivalent to 2 cm). To examine the effect of second-order ionospheric delay on the PPP solution, new data sets from different IGS stations were acquired. We updated NRCan's PPP GPSPACE software to accept the second-order ionospheric corrections. The modified GPSPACE software was then used to process all data sets. It is shown that accounting for the second-order ionospheric delay improved the PPP solution convergence time by about 15% and improved the accuracy estimation by 3 mm. Email: mohamed.elsobeiey@ryerson.ca

Geomatics – What is it? Where does land surveying fit in? Whose profession is it anyway?

By John M. Ward, O.L.S., O.L.I.P., P.M.P.

Geomatics – What is it?

Geomatics Professionals help ensure that every location-based system works. From the GPS ‘smart’ maps that guide our cars, to the satellite ‘apps’ that feed our phones or route our school buses, to the guidance systems that drop missiles down the bad guy’s chimney – there are geomatics specialists ‘inside’!

Geomatics is an unusual name for a profession and some even argue that we should change it. After all, other more conventional nomenclatures do exist like ‘Land Surveying’ and ‘Geospatial Engineering’. These names are fine but none of them encompasses everything that Geomatics Professionals do. These new professionals need a big name for a business that is basically the science of mapping, measuring and analysing the world and everything in it. This is a big job and it calls for a big name – a name with a shelf life – a name that encompasses all the known disciplines plus all of the emerging activities that we might need to name later.

Apparently, B. Dubuisson thought about that in 1969 when he combined the terms geodesy and geoinformatics and came up with ‘Geomatics’. The University of New Brunswick (UNB) has also thought about it. Their web site states that, “Geomatics is a term that has been adopted by governments and private industry across Canada and which is becoming accepted worldwide.” Since 1969 the term Geomatics has been adopted by the International Organization for Standardization, the Royal Institution of Chartered Surveyors, and many other international authorities. One exception is the United States - so far they prefer ‘geospatial technology’.

No matter what we call it the fact remains that if Geomatics Professionals are to help us meet the global challenges that we all share, then at some point all of the world’s information needs to be referenced and organized. In achieving this, Geomatics has a major role to play. To relate information we need both common and unique attributes. ‘Location’ has the potential to provide both. Everything is somewhere, and if that ‘somewhere’ is precise enough, it can be unique. If we think about the implications of that, we begin to see why Geomatics is a big job that calls for both the support of a strong professional organization and an appropriately big name.

Where does land surveying fit in?

The UNB ‘site’ explains that because the term “surveying” no longer accurately expresses all of the work they do and the knowledge they teach, they have updated their name to Geodesy and Geomatics Engineering.

In other words, professional land surveying, that business

that the American Congress on Surveying and Mapping (ACSM) defines as, “... the science and art of making all essential measurements to determine the relative position of points and/or physical and cultural details above, on, or beneath the surface of the Earth, and to depict them in a usable form, or to establish the position of points and/or details.”, remains a valid professional practice area; it just no longer accurately covers the whole range of knowledge areas and activities that a Geomatics Professional (or for that matter a Boundary (Cadastral) Professional) needs to deal with.

Boundary Professionals should be comfortable with this observation since they have always had knowledge areas, such as planning, municipal and boundary law, that fall outside the purview of the geospatial or ‘land surveying’ practice areas.

The Surveyors Act, R.S.O. 1990, Chapter S.29, seems to reflect the same perspective, defining the “practice of professional surveying” as “the determination or analysis of spatial attributes of natural and artificial features on, above or below the surface of the earth, whether or not the surface of the earth is situated below water, and the storage and representation of such features on a chart, map, plan or graphic representation, and includes the practice of cadastral surveying.”

It then goes on to define separately, the “practice of cadastral surveying” as activities that include “advising on, reporting on, conducting or supervising the conducting of surveys to establish, locate, define or describe lines, boundaries or corners of parcels of land or land covered with water.”

In fact this ‘land surveying + plus’ view of our rapidly evolving profession can be helpful as we grapple to understand this new broader profession that we call Geomatics. From a global perspective, land surveying is not really a profession but a set of core competencies that are shared by many practitioners including the cadastral and the geomatics professionals. The key question then is not what is professional land surveying but what additional competencies need to be added to land surveying knowledge areas, like the transformation of datums for example, in order for the practice area to be considered professional.

For the Geomatics Professionals most of these additional competencies are currently listed, or at least implied, in the syllabuses of the leading geomatics engineering programs. For cadastral surveyors they reside within their legislation, certification boards and the professional admission requirements of the various professional surveying organizations.

In Ontario this leads to the conclusion that although any qualified person can practice generic land surveying, only

registered or licensed AOLS members can hold themselves out as ‘professional’ surveyors and only licensed professional surveyors can provide cadastral (boundary) services.

Some members of the AOLS are registered as Geographic Information Managers (GIM) and there are also Geomatics Engineers registered with Professional Engineers Ontario (PEO) but so far, neither organization has designated any specific geomatics activities or practice areas that are restricted to professional surveyors or engineers. The Association of Professional Geoscientists of Ontario (APGO), however, has listed a significant number of restricted geospatial activities. Their act exempts all members of either PEO or the AOLS from those restrictions.

Land surveying remains a viable ‘stand alone’ professional practice area and a critical competency for both Cadastral and Geomatics Professionals. However, it represents only a portion of the dozen or so key disciplines that comprise a fully developed contemporary professional Geomatics practice. A practice that at this time remains largely unregulated and from the public’s perspective, uncontrolled.

Geomatics – Whose Profession is it Anyway?

Just a few decades ago, Geomatics was largely viewed as an emerging area of practice within land surveying. Today these new geospatial services have not only created new market opportunities but have also led to the emergence of a number of new professional specialties. These in turn have led to the development of a new expanded profession; a profession now known globally as Geomatics. According to the Schulich School of Engineering; “Geomatics is one of the fastest growing information sciences in Canada and throughout the World.” It seems that the profession is underway and its scope for the future is only limited by the vision, energy and creativity of its practitioners.

Over the past few decades, the growth of this new industry has caught the attention of professional bodies and fostered international societies, but so far, none has been prepared to step up and offer the geomatics practitioners or their public, a full ‘menu’ of professional support services. Some organizations help members network. Others may offer professional development and even make significant contributions towards global standards. But so far, no organization has provided all of the five essential services of member services (including outreach), professional development, standards, professional certification and peer review.

The lack of these services may be putting the public at some risk but they don’t seem to be a short term priority for the young Geomatics Professionals. Demand for their services is high; and even though they lack a globally recognised credential that fully reflects and promotes their capabilities, and a professional association that is prepared to stand behind them - the future looks bright. This is good news for the young professionals because if professional support was critical for their success, history wouldn’t hold out much promise.

In the past, despite risks to the public, new professional activities have often been left unattended and unregulated for

decades. For example the Association of Ontario Land Surveyors (AOLS) refused, in the 1920’s, to accommodate the Professional Engineers within their ranks. They concluded at that time that professional engineering did not belong within their mandate. Urban planning members received a similar response a few years later. Today PEO has one hundred times the membership of the AOLS and the planners have formed their own professional institute.

For the younger less patient Geomatics Professionals that insist on a more immediate global solution this latter ‘legislation free’ approach may be the option they are looking for. It worked for the international Project Management Institute (PMI). They responded to the question; “Whose Profession is this Anyway?” with the formation and promotion of their own organization. Their goal was not only to ensure that best practices were articulated, documented and followed but also that their credentials were valued and respected around the world. Members wanted both the project management community and their client organizations to not only recognise PMI credentials but also to attribute their success to them. In fact, over time, a version of that objective became more or less the PMI vision.

A few decades later, PMI is a successful global organization with hundreds of thousands of members. The organization issues numerous professional and paraprofessional credentials including the internationally acknowledged, Project Management Professional (PMP). In many sectors, industry and governments have begun to voluntarily endorse PMP credentials by calling for them whenever they issue projects or advertise for staff.

It remains to be seen what type of professional organization will emerge but it is clear that like Professional Project Managers in the 1980s, engineers in the 1920s and surveyors in the 1890s, these new Geomatics Professionals are ready.

What are the certification options now for new Geomatics Professionals?

In Ontario, there is currently no organization that offers a comprehensive certification process dedicated to the geomatics professionals. For graduates of recognised engineering schools PEO offers a Professional Engineering credential and does recognise Geomatics as a valid engineering area of practice. These graduates can apply for licensing or registration with the AOLS and/or PEO. Qualified Geomatics Professionals with more than 10 years of specialized experience working for a Professional Engineer may also apply for a limited PEO license. The scope of a limited licence does not include membership. To date the requirements for PEO membership do not accommodate graduates of geomatics science programs that are ‘unrecognised’ without a lot of extra study and effort. Similar issues arise with other organizations and boards like the Canadian Board of Examiners for Professional Surveyors (CBEPS).

Geomatics Professionals who join PEO or AOLS could benefit from some practice restrictions. The AOLS, for example, allows candidates to apply for a licensed or registered membership. As noted earlier, both types of memberships are ‘professional’ but only the licensed members, who practice boundary surveying, have exclusivity.

The Professional Engineers Act states that only those who are granted the “professional engineer” license have the right to practice professional engineering in Ontario. It is also worth noting that Geomatics Engineering is a designated area of practice and that the Act defines professional engineering activities very loosely and broadly. It is conceivable that PEO at some point could argue that certain types of mapping or data management present a public risk and therefore should only be delivered by Geomatics Engineers.

In Ontario, the Geoscientists have taken a more focused and flexible approach. They define their practice area and then list activities within it that are restricted. These include a significant number of geomatics practices. However, explicit in their act is an exemption for all professional AOLS and PEO members. This illustrates one of the advantages of membership; even without exclusivity, wherein AOLS or PEO members may be protected from any new restrictions that might emerge from third parties such as other professional organizations, public agencies or government.

Despite these advantages, it is worth noting that none of the organizations is global and none has fully developed member services that include outreach, professional development, standards, professional certification and quality assurance through peer review. By those standards, none of the professional organizations fully measure up. Barring the emergence of a geomatics organization like PMI, the best a new Geomatics Professional can hope for is membership in an organization with potential for improvement.

What are the options for the professional organizations?

In general, legislated provincial professional organizations have two broad options; they can find ways to ‘license’ Geomatics Professionals or they can ‘register’ them and look for future opportunities to regulate specific activities and practice areas.

Even without exclusivity, registration can have value to members, if it offers them the same services, benefits, obligations and stature that licensed members enjoy. Examples of obvious benefits include networking and career opportunities, professional development, competency certification, peer review and advocacy. They may also be able to emulate the approach of the Geoscientists and work towards identifying and restricting specific geomatics activities to professional members.

Professional organizations that are ‘unregulated’ can consider emulating the PMI model and offer professional and paraprofessional certification, without the benefit of legislated exclusivity. To be successful, this type of credential must be promoted effectively to both the professional and the client community. The goal of this promotion would be to evoke a ‘client activated exclusivity’ based on the client organizations’ new found appreciation of the value of the credential to their businesses’ bottom line. This approach is aggressive, risky and openly competitive but as PMI has demonstrated when it works - it can go ‘global’ quickly and be very effective.

A few other advantages of this unregulated approach are that they can offer most of the same benefits as regulated organizations without the encumbrances of legislation. They

can also move quickly to issue new certificates of competency for emerging practice areas.

Disadvantages include the fact that without legislation they have no mandate to enforce exclusivity and that members also run a higher risk of being overlooked for ‘exceptions’ when governments or other ‘regulated’ organizations, like the Geoscientists for example, expand the number of activities or practice areas that they control.

What are some of the Risks and Benefits of Regulated vs. Unregulated Professional Associations?

Benefits and Risks to the Public

It is true that credentials don’t guarantee good business practice but they do offer the public and client organizations an easy way to ensure that at least a basic level of knowledge and competency is adhered to. It may be unrealistic to hope that a project can be protected by ensuring that all certified professionals are equally competent, but we can at least hedge our risks by ensuring that all retained professionals are equally certified. For complex or high risk activities, the fact that some professional organizations can monitor licensed practices and restrict practice to certified individuals can be a significant benefit to the general welfare and safety of the public. The peer review and quality assurance services, if they are rigorous, also provide real value and protection to the public. They can also represent a savings to the client organizations.

On the other hand those same traditional professional organizations that protect the public can also harm it by being too slow to adapt and develop new products. As a result they can inadvertently leave the public with ‘stale dated’ practices that are overpriced and under serviced. Their ‘regional’ practice restrictions can also lead to extra costs and delays for global projects that are trying to accommodate numerous jurisdictions simultaneously.

Benefits and Risks to the Members

Members of established regulated professional organizations are more likely to receive the benefits of legislation changes if any new activities are licensed and restricted. They are also more likely to be protected from changes in the mandates of other organizations.

On the other hand, members of new unregulated organizations are unencumbered by a legislated mandate. They are not only free to act but may act sooner because they have no sense of entitlement, no historical baggage and are focused on change and improvement. They are also able to network and partner with global organizations, develop new training for emerging professional activities and issue new certificates of competency at will. Since they have no statutory obligations to make protection of the public their primary objective, they can openly advocate for their members and more effectively respond to the changing business needs and interests of their members. On the other hand, as alluded to earlier, they have no monopoly or right to exclusivity and this makes them more vulnerable to vagaries in the marketplace, shifts in client perceptions and government intervention.

Summary

It is a given, that in the near future some professional

organization is going to certify and promote the Geomatics Profession. To achieve this, they will need to ensure that their members have proficiency in a number of related geospatial disciplines and these will probably continue to include land surveying. Whether Geomatics Professionals also need to be licensed boundary specialists or engineers is still an open question. Regardless of how many disciplines are required or which organizations prevail, it is a fair comment to state that in today's market the credential of Certified Geomatics Professional (CGP) is virtually 'up for grabs'.



John Ward is an Ontario Land Surveyor and a professional project manager certified as a Project Management Professional (PMP) with the Project Management Institute. He is currently managing the Eastern Region Geomatics Section for the Ministry of Transportation of Ontario. He has been delivering change management initiatives since the 1980s. He also provided loss control and change management consulting and training throughout the 1990s as owner of 'Growth Management Technologies'. John can be reached by email at john.ward@ontario.ca.


Guest Editorial – Empire State Surveyors President’s Column

By Patricia P. Brooks, President, New York Association of Professional Land Surveyors

What a winter this has been! Luckily I was able to punctuate the cold and snow with visits to State Annual Conferences in Connecticut and New Hampshire, and as I write this column I am enjoying the hospitality of the Association of Ontario Land Surveyors at their annual conference in London, Ontario. Of course, the highlight of the winter was our very own NYSAPLS Conference held at Turning Stone in Verona, New York. I am sure all attendees will agree that the Conference Committee and Education Committee once again produced a superb program for all. It was equally rewarding to have the opportunity to network with so many colleagues, to discuss areas of mutual concern and hear about issues I have not yet encountered.

A common thread in many of these discussions has been emerging technology. How did we live without it, and now more frequently, how do we deal with it? I spoke with one surveyor who brought to my attention a solicitation he received from a company based in India, offering to provide a wide range of mapping and GIS services “at a highly competitive rate of 8 to 16 USD per hour”. We must be careful to not let the abilities of technology erode our profes-

sionalism. One way we can ensure that is by embracing these technologies ourselves and making them part of our business model.

We all acknowledge that the face of the surveyor is changing through societal demands, and we must seize the opportunity to be proactive in painting the fabric of that change. How are we doing that? The October 2010 issue of the Professional Surveyor Magazine had an excellent article about national land parcel data, and I fully intend to read the recommended book. Yesterday, the Association of Ontario Land Surveyors unanimously voted to establish a task force to investigate the steps required to move forward with the establishment of a digital cadastral system for the Province of Ontario. Where are we in achieving these goals? One of the initiatives of our Strategic Plan, adopted in July of 2009, was to provide the general public, municipal entities, and other professionals with a proper understanding of our profession. I propose that over the next few months we need to have a discussion amongst ourselves, and review our strategic plan to be sure it is still aligned with the goals and objectives of our association, as well as our profession. 

Calendar of Events

May 1 to 5, 2011

ASPRS 2011 Annual Conference
Milwaukee, Wisconsin
www.asprs.org

May 18 to 22, 2011

FIG Working Week & XXXIV General Assembly
“Bridging the Gap Between Cultures”
Marrakech, Morocco
www.fig.net/fig2011

June 21 to 24, 2011

7th National Surveyors Conference
“Exploring North!”
Yellowknife, Northwest Territories
www.acls-aatc.ca/en/node/69

July 3 to 8, 2011

25th International Cartographic Conference
Paris, France
www.icc2011.fr

July 7 to 12, 2011

Survey Summit
ESRI/ACSM
San Diego, California
www.thesurveysummit.com

August 23 to 25, 2011

Digital Earth (ISDE7)
ESRI/ACSM
Perth Australia
www.isde7.net

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EDUCATIONAL FOUNDATION NEWS

Report from the Annual General Meeting

Maureen Mountjoy, the Secretary of the Educational Foundation, was very surprised to receive an award at the Educational Foundation Meeting of Members. She was recognized for her continuing support for the Foundation. She would like to thank the Board of Directors.



Jim Hill presenting an Educational Foundation award to Maureen Mountjoy

The fundraising events at the AGM this year were very well received and over \$12,000 was raised. The Board of Directors would like to thank the Exhibitors for providing items for the Silent Auction at the Welcoming Party and Peter Moreton for organizing and running the Pig Races, which were a lot of fun. Jaime Gelbloom was remarkable as the Auctioneer of the Charles Potter Circumferentor at the Open Forum. He not only convinced Manouchehr Mirzakanlou to be the highest bidder with an offer

of \$1650, for the honour of displaying the artifact in his office for one year, but he also persuaded 22 other bidders to contribute donations as well. Our Sergeant-at-Arms, Tim Hartley was also successful in collecting a large sum of phone and texting infractions at the meeting room door. Thanks to all of the organizers and volunteers and those who participated in the various fundraising events.

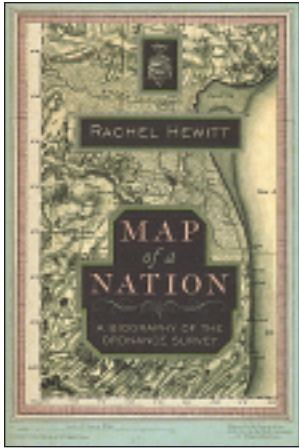
The 5th Annual Graduate Student Geomatics Poster Session, which is sponsored by the Educational Foundation, was held at the AGM. Ten entries from Ryerson University and York University were judged by Bruce Pettit, Mark Tulloch and David Stringer. Thank you judges. The top four award winning posters and abstracts can be found on page 37.



Maureen Mountjoy and Manouchehr Mirzakanlou are pictured with the Charles Potter Circumferentor.

The Educational Foundation would like to recognize with thanks, a donation made in the memory of Bruce Stinson from the Kawartha-Haliburton Regional Group.

BOOK REVIEWS



Published by Granta Books 2010
ISBN 978-1-84708-098-1

Map of a Nation A Biography of the Ordnance Survey

By Rachel Hewitt

From the Shetland Isles in the furthest north-easterly reaches of Britain, to the Scilly Isles in the south-west, the Ordnance Survey has mapped every mile of the nation. Before it, Britain was represented by a mosaic of county and military surveys of variable accuracy, content and scale. But now each region possesses its own highly detailed map, whose pink and orange covers and beautiful contours are familiar to anyone who has rambled through the British countryside.

But the Ordnance Survey would not exist if it were not for the vision and determination of several extraordinary individuals over two hundred years ago. *Map of a Nation* tells the fascinating story of the map and the men who dreamt and drafted it, through the political revolutions, rebellions and unions that altered the nation's shape and identity over the 18th and 19th centuries.

Information taken from inside the front cover.

Samuel de Champlain before 1604

Des Sauvages and Other Documents Related to the Period

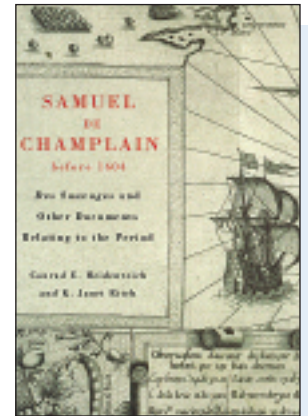
Edited by Conrad E. Heidenreich and K. Janet Ritch

Explorer, surveyor, cartographer, and diplomat, Samuel de Champlain (c.1575-1635) is often called the Father of New France for founding the settlement that became Quebec City, governing New France, and mapping much of the St. Lawrence and eastern Great Lakes region. Champlain was also a prolific writer who documented his experiences in the Americas, including his travels, impressions of the New World, and encounters and alliances with native peoples.

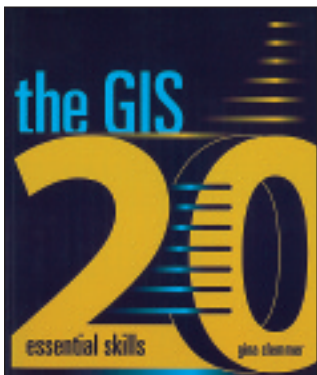
Samuel de Champlain before 1604 is the definitive edition of the early documents by

or about Champlain, correcting numerous errors in previous publications. Providing the documents in both English translation and the original French or Spanish, this meticulous, fastidiously researched work contains a comprehensive Introduction that includes biographical information, details about Champlain's early career, his connections at court, the military and political context underlying French imperialism, and the royal policies that allowed trade and colonization in the Americas.

Information taken from the back cover.



Published by McGill-Queen's University Press
Co-published with the Champlain Society
ISBN 978-0-7735-3757-6



Published by ESRI Press
ISBN 978-1-58948-256-2

The GIS 20 Essential Skills

By Gina Clemmer

A geographic information system (GIS) is a powerful tool that can be challenging to navigate as a beginner, especially when you're faced with a deadline. Inspired by a poll of 500 GIS practitioners, *The GIS 20: Essential Skills* is an easy-to-understand guide that emphasizes the top twenty skills most people need

to master to be successful using GIS. A quick and comprehensive introduction to fundamental GIS skills, this book includes a data CD for completing the exercises. Written for professionals with no time for classroom training, *The GIS 20* can be used for independent study or as a reference.

Information taken from the back cover.

The Last Word

Sir Andreas de Harcla (1270-1323)

Sir Andrew Hartley, anglicized from Andreas de Harcla, was an important English military leader in the borderlands or Marches, a term used for the Anglo-Scottish border. He was innovative and was thought to have been one of the first to have made use of maps in battle. It was at this time in history when cartographers' art was slowly ripening from crude sketch maps of the type that estate managers and bailiffs were drawing for their Lords, into what we would recognize today as a real map. The Gough Map of Great Britain (also known as The Bodleian Map) is the oldest surviving road map of Great Britain. Its date of origin is uncertain and ranges anywhere from 1320 to 1360. It has a distinctly military and strategic bias.

Andreas de Harcla was born about 1270, the son of Sir Michael, at what was known as Harcla, which is just outside of the village of Kirkby Stephen in the English Lake District. He commanded the English forces for King Edward II at the Battle of Bannockburn in 1314 for which he was knighted. In 1315 Sir Andreas was appointed Sheriff of Cumberland, and drove off Robert the Bruce of Scotland from a siege of Carlisle Castle. More notably, in 1321 he was summoned to parliament as a baron. In 1322 he defeated the rebel forces of Thomas, Earl of Lancaster at the Battle of Boroughbridge, and was created Earl of Carlisle and Warden of the northern Marches. Later in 1322 King Edward was defeated by the Scots at Old Byland and thereafter the north of England became very hard to defend against Scottish raiding.

Harcla lost faith in Edward's ability to lead and met secretly at

Lochmaben with Robert I of Scotland to conclude a peace treaty. Edward deemed this treasonous. Andreas was arrested and without a proper trial was hanged, drawn and quartered at Carlisle on the 3rd of March 1323. His sister Sarah successfully petitioned the King to have his body recovered from the far corners of the country that it had been sent to: Carlisle Castle, Newcastle upon Tyne, York, Shrewsbury and his head from London Bridge. His remains are buried at Kirkby Stephen's Church.



A portion of the Gough Map. Credit: The Foxearth and District Local History Society, UK

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