

Ontario Professional Surveyor



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Retracement of the historic limit
between Upper and Lower Canada

also in this issue ...

GIS and the Future of
Surveying

The Joys and Pains of Open
Data

"Professional Expansion"

...Early on
Land Development Tracking
Enabled By GIS

Mobile LIDAR Scanning for
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regular features:**

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ON THE COVER ...

As a result of a meeting requested by the Glengarry Historic Society in the fall of 2010, a partnership was formed with representatives from the Office of the Surveyor General (Ontario) and the Bureau de l'arpenteur général du Québec (QSG) to support an initiative to undertake the retracement of the provincial boundary and promote the heritage of this historic limit between Upper and Lower Canada. See the article by Wikar Bhatti on page 4.

*Professional
Surveying
in
Ontario*

*encompasses
the
Disciplines of*

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





President's Page

By Paul Benedict, O.L.S., O.L.I.P.



It's hard to believe that the summer is gone and we are now deep into fall. There is so much going on at the AOLS office right now and I believe that all the activity swirling around the AOLS office has re-invigorated and engaged a large part of our membership.

When I first started getting involved with Council, attracting volunteers to committees was, as they say, "like pulling teeth". Either it was the same faces or no one put their hand up and we had to go begging and pleading. Recently, we went asking for volunteers for two committees – the Standards Committee and the Discipline Committee. We fully expected the usual results. Imagine our utter shock when over 35 people volunteered for the Standards Committee and more than a dozen volunteered for the Discipline Committee. Increasing membership engagement was a key pillar of our strategic plan. Maybe this is a sign that our investment in strategic planning is starting to pay off.

Following the theme of membership engagement; one of the biggest activities that our Association is working on is the Ontario Digital Cadastre Corporation. Even though there were two unanimous motions at the 2010 and 2011 Annual General Meetings in support of the project, I sense that a lot of members were supporting the initiative to see if we could actually pull it off given the old grudges, distrust and overall pessimism.

Notice has been sent via mail concerning a special general meeting on October 19th, 2012. This meeting was requested by 35 members who signed a petition for a special meeting under By-Law 2004-1. Given the general silence from the AOLS and ODCC regarding what is happening, you could take it that the meeting was requested to "rake us over the coals." That is not the case! The truth is actually very exciting and inspiring.

Today, ODCC is run by volunteers who meet at least once every week and devote countless hours to making this project a success. Volunteers mean that this project has cost relatively little but volunteers also means that resources are scarce and their time has to be used judiciously. Ultimately this means that efforts have been focused on potential clients in the regions those clients were interested in. Unfortunately this means that other regions felt neglected. Truthfully, they were.

Now we could have communicated more to alleviate this sense of neglect but in part, until recently, there wasn't too

much to talk about. We were busy working on our business plans, client development and 100-day feasibility projects. The other reason for a lack of external communication is quite simply that ODCC has a number of potential competitors, and various items need to be in place prior to going "public" with a lot of detail. In any business, the last thing you want is for your competition to know the precise details of your business plan and strategy.

So silence could be misconstrued that little or nothing is happening. The members requesting the general meeting knew that the ODCC volunteers were busy, but the members actually wanted to ensure that we were being pushed to success and wanted to ensure that we were properly resourced for success.

The involvement of 35 of our members in this request for a General Meeting is another sign of the engagement by our members. It is good to see our AOLS members pushing us rather than having to pull them along. On October 19th there should be plenty of exciting news. Register early because space is limited to the first 300.

Another major undertaking for the AOLS is our new website. To say the project hasn't gone as we had originally planned would be a major understatement. I won't profess to know all about building websites. I can tell you, the AOLS website is not a simple brochure-type website that could be put together in a few weeks. Behind the scenes is a tremendous amount of infrastructure, material and data that needs to be transferred from the old site to the new site.

Recently, a group of volunteers attended the AOLS office for a day to perform user acceptance testing on the new website. Five "show stopper" issues were raised as well as number of minor issues. Four of the five show stoppers have been fixed. The fifth will take some time to work out.

A key feature of the new website is the ability of members to register for events and to be able to update their own contact information. In order to reduce administrative time and costs it is critical that there is a seamless synchronization between the new website database and our existing AOLS database. This synchronization has been problematic. In part, it is due to the rules that need to be in place to search and display the data correctly from the database. Part of the solution is for members, when we are ready, to login to the new site and ensure their contact information is correct.

One of the "minor issues" that needs to be corrected is that the new website is truly bland and to be honest quite ugly. We

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It's All About The Wine!!

By Wikar A. Bhatti, O.L.S., O.L.I.P., Crown Surveyor, Office of the Surveyor General
Ontario Ministry of Natural Resources



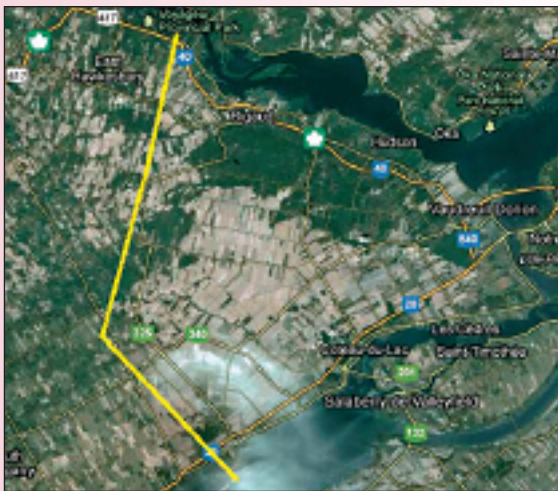
I thought that title might get your attention!!

Recently, I read that Bill C-311 received royal assent, amending the *Importation of Intoxicating Liquors Act*, enacted in 1928. This recent amendment eliminates federal restrictions that prohibit Canadians from transporting wine across **provincial boundaries**, encouraging Canadians to visit wine regions and support the development of our world class wine industry. (<http://www.cra-arc.gc.ca/nwsrm/rlss/2012/m06/nr120628b-eng.html>)

Now you're probably wondering what all this has to do with surveying.

The Ministry of Natural Resources has the legislative authority under the Public Lands Act for the control and jurisdiction of the Province's Crown land. That duty also requires that the Office of the Surveyor General be responsible for the definition and maintenance of Ontario's **provincial boundaries**.

The subject matter of this article is the retracement of the 43 km long segment of the historic limit between Upper Canada (Ontario) and Lower Canada (Quebec). Contrary to most maps out there, there is no solid black or yellow line in the field marking this boundary. It's just not there!!!



History:

The boundary was originally created under the Constitution Act of 1791, which divided Quebec into Upper and Lower Canada. However, no provisions were made for actually marking the boundary in the field. As you can imagine, over time confusion arose as to the dividing line's true location. As such, an Act in 1860 (*An Act respecting the Line of Division between Upper and Lower Canada*) gave permission to have this boundary line surveyed and delineated on the ground. E.T. Fletcher, P.L.S. performed this survey, setting 46 stone markers along the boundary.

An Ontario/Quebec joint-venture to rehabilitate the line was carried out by P.E. Mercier and E.T. Wilkie in 1922. They found 43 of the original 46 markers and they set several new monuments.

The provinces jointly inspected the line in 1969 and 1987 and found that a majority of the monuments from 1922 were still in place, albeit in various states of disrepair. Many of the original monuments had been either destroyed due to road widenings, agricultural and construction activities, even automobile accidents or being pilfered by persons unknown to be used ostensibly for souvenirs.

While they recommended some form of monument remediation be undertaken by the provinces, no work had taken place – which brings us to the present.

The issue of the monuments being in disrepair had attracted the attention of local organizations on both sides of the provincial boundary. In the fall of 2010, the Glengarry Historical Society requested a site meeting of representatives of the Office of the Surveyor General (Ontario) and the Bureau de l'arpenteur général du Québec (QSG) to view the damaged monuments and generate some willingness on the part of the provinces to restore the monuments.

From that meeting, a partnership was formed to support an initiative to undertake the retracement of the provincial boundary and the establishment of additional monumentalization at the intersections of major roads and the provincial boundary to encourage visitation by the public and promote the heritage of this historic limit.

Now, as you can imagine, the logistics of such a project presented some rather unique challenges, from partnering with a jurisdiction outside Ontario to designing the type of monuments to be used, the coordination of the various contractors, as well as resolving transportation and construction issues, all within the constraints of two autonomous provincial procurement guidelines.

As overwhelming as this project seemed at the start, it was pretty basic - using the principles of best evidence to retrace the limit, a number of the original monuments from 1922, as well as 1860 were located in stable condition. This actually resulted in several bends in what was defined under the



1860 Act as “theoretically straight lines” that followed the seigneuries of New Longueuil, Vaudreuil and Rigaud.

Based on this, new monumentation consisting of a combination of Stanstead granite monuments and steel bars with aluminium caps were set at the locations as shown below. Red tags indicate the location of granite monuments and yellow tags indicate the location of steel survey bars.



The newly placed monuments are located with public access in mind; you can easily walk up to the new monuments - a line is also scribed into the foundation so one can actually see the direction of the boundary line as it crosses open fields or thick forests. The monuments are inscribed with Ontario on one side, Quebec on the other, and marked with the monument number and the year of installation.

Final deliverables for the complete project will consist of a Confirmation Plan and a mapping product. The Confirmation Plan is presently being drafted. There will be two official versions, each signed by the respective Surveyors-General and housed in their respective offices in Peterborough and Quebec City. The mapping product will consist of a series of sheets with the appropriate imagery and the boundary line superimposed on top. Each sheet will also contain a table of the coordinates for the respective monuments.


The Glengarry Historical Society is erecting additional public signage to promote a greater appreciation of the



Monument 20A - Southern limit of the 8th Concession Road

heritage of the boundary. Local newspapers have printed articles highlighting the efficiencies of the progress and commending the partnership of both provinces.

This is a good news story! All Ontarians and Quebecois alike have a vested interest in the heritage of this boundary.

Administering the Province’s Crown land can be overwhelming at the best of times. This project was no different. While efforts began many years ago to carry out this project, it was under the auspices of Susan MacGregor and Daniel Roberge, Surveyors-General of Ontario and Quebec respectively, that this project was completed. I would like to extend a heartfelt thank you to Eric Belanger, a.-g., and the staff of the Bureau de l’arpenteur général du Québec for their cooperation and significant contribution in establishing an excellent working relationship throughout the process to make a complex project proceed to a successful conclusion. 

Monuments Through The Ages



Sites to See

GeoBase

www.geobase.ca

GeoBase is a federal, provincial and territorial government initiative that is overseen by the Canadian Council on Geomatics (CCOG). It is undertaken to ensure the provision of, and access to, a common, up-to-date and maintained base of quality geospatial data for all of Canada. Through the GeoBase portal, users with an interest in the field of geomatics have access to quality geospatial information at no cost and with unrestricted use.

GIS and The Future of Surveying

By Dave Martin Horwood, BSc, O.L.S. and G. Brent Hall, PhD, MNZIS

Walking an invisible line

Requires knowledge, judgement and skill

Beware the barking dogs

- DMH 2012

There has been a flurry of recent activity and discussion within the international surveying community around the future of the profession. These exchanges are really no different than similar discussions that have appeared occasionally over the last decade. In fact, the dialogue extends back even further, into the mid-1990s (see, for example, in the context of survey education, Frank (1995)). Despite the recognized need to find identity and place in a world of growing geospatial information complexity and ubiquity, there has been only minor progress toward charting a clear path for surveying and surveyors into the future. The need to make more progress on this front is now more urgent than in the past, and the urgency will accelerate rather than abate over the next ten to twenty years.

The surveying profession, more so than other professions, is feeling acutely the weight of the demographic shift of the baby boom generation as it passes from active participation in the workforce into retirement. In Canada, for example, by 2030 the population over the age of 65 will double, while, in contrast, the working age population (25-64) will increase by only 8%. Members leaving the survey profession are already outstripping the rate of new members entering from higher education, and unless specific steps are taken this problem will increase. In 2011 the number of 18-21 year old Canadians peaked, and will gradually decline until it rebounds by 2030. Through to 2024, the 52% of full-time higher education enrolments in the 18-21 age group (52% of total enrolments) will decline by approximately 10%, and all provinces and territories will experience a loss in potential demand for higher education. This reality is compounded by the fact that higher education surveying programs are struggling worldwide to attract new student enrolments, and the public perception of surveying is not so much that of a viable profession that supports multi-faceted professional activities but as that of a trade that is a necessary evil as part of the land development process. This perception is likely embodied in the perception of the surveying brand, which for well over a century served the profession admirably, as involving individuals, almost invariably males, using tripods and measurement instruments. However, this branding now is far less relevant and accurate as a portrayal of the overall work of a modern surveyor, most of which is now done back in the office as opposed to in the field. In the next twenty years, the surveying profession will be

even more challenged to bolster member retirements due to generally declining tertiary enrolments of Canadian students, compounded by the challenges the profession faces in terms of its public image.

The article “Perspectives on the Future of Surveying” by A. Richard Vannozzi (2011) (<http://surveysummit.com/2011-proceedings/files/perspectives-future-surveying-profession.pdf>), articulates the view that the current scope of the surveying profession consists of three activities, namely boundary (cadastral) surveys, data accumulation surveys (e.g., topographic, LiDAR, photogrammetry, utilities) and construction layout. In the latter two activities, surveyors have faced and are continuing to face increased competition from other related professions and trades. The so-called “sacred cow” of the survey profession, the cadastral survey, has also come under public scrutiny, where it is now not uncommon for potential clients to opt for more expedient products like title insurance in lieu of a survey. At the same time, government agencies are also assembling parcel maps in response to the need of more efficient forms of land administration, and these activities have the potential to replace some of the traditional uses of a cadastral survey.

Beyond the public arena, and as noted above, the general field of surveying, both as an area of higher education and as a professional activity undertaken by ‘land surveyors’, ‘hydrographic surveyors’ or, more generically, ‘survey professionals’, is also experiencing a problem with its brand. The label “geomatics” was enthusiastically adopted during the 1990s by the surveying profession worldwide, yet this term has no resonance with the public and is divorced from the well-known brand of land surveying, which is also not without its own challenges in terms of perception. Surveying programs in educational institutions throughout the world during the 1990s and into the 2000s undertook a rebranding and department names were replaced with labels such as geomatics and geomatics engineering. The word “geomatics” itself really just means “related to the earth”, and as such it is a rather nebulous distinction that has failed to resonate with students or with the public. Moreover, the word has also been adopted by the engineering profession, further diluting the surveying brand. More recently, tertiary institutes in Australia have opted to return to the “surveying” brand, as this more accurately articulates what surveyors do day-to-day in their work. In this context, the act of surveying is *to observe critically and measure the real world and to form a professional opinion*. In our view, this is where the brand and the profession

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both have their greatest investments not only in the past, but also in the future.

Whereas the surveying profession is experiencing, on the one hand, challenges in attracting new entrants and, on the other hand, a constricting market with increased competition, the geographic information systems (GIS) market has shown continued and accelerating growth. GIS, also known currently as Geospatial or Geographic Information Science, comprises the information systems and tools used to organize, manage and analyze objects based on location and relationship with other objects in the real world. The growth in GIS has been steady and continuously upward over the last 25 years, even through downturns in the global economy. With its focus on software and its applications across multiple domains, GIS has no problem attracting new practitioners and is beginning to become a critical part of all businesses information technology (IT) infrastructures from local to national enterprises. Location information is now part of almost all information collected, including personal photographs.

Some surveying associations have seen this trend and have attempted to capitalize upon it by embracing not only GIS but the more broadly defined knowledge base and skills that are centred within the geospatial sciences. The Association of Ontario Land Surveyors (AOLS), for example, added in 2001 the Geographic Information Management (GIM) branch and currently has about 60 members with this designation. However, the AOLS is still struggling with articulating what this designation means, whether members with GIM credentials should be licensed, how a GIM relates to cadastral surveying, how the GIM value proposition can be best articulated to the large cadre of students exposed to GIS in higher education, or what benefits exist for current GIMs that will encourage them to renew their designation.

Surveying, Professionalism and GIS

Surveyors traditionally have been relied upon to provide accurate measurement to the exclusion of almost everything else that the profession provides above and beyond the trade (i.e. the value added by professional opinion to the trade of accurate measurement). However, by concentrating on measurement they may have abandoned to other professions and trades important aspects of the roles that the surveyor has traditionally held, ostensibly as *the trusted land advisor*. Up until the relatively recent past, the surveyor was generally regarded as the director, guiding all stakeholders through the land development process. However, slowly at first, but much more rapidly recently, accurate measurement has essentially become commoditized, so much so that a minimally trained technician can, using modern instrumentation, faithfully measure and stake out survey grade locations.

Clearly, there is much more to the process of surveying than measurement. In fact, it is with this point of realisation where the field of surveying becomes transformed from simply a task-based trade into the realm of professional activity practised by survey professionals. To perform the tasks required of

him or her fully and with due diligence a surveyor not only measures the land or sea floor but must also research the legal record and other surveyor's opinions of the area being surveyed, visit the location to find evidence and recreate that legal record on the ground, and *form his or her own professional opinion as to the physical and conceptual extent of title*. In all jurisdictions, a licensed surveyor is the only legally qualified professional who can form this opinion and is also held legally liable for the same.

Extending the activities of the professional surveyor into the broader context of the geospatial information sciences, the question of whether GIS itself also constitutes a profession is of central importance. There are both proponents and opponents to the view of GIS as a profession, or even as a discipline or field, nevertheless in the early 2000s, the Urban and Regional Information Systems Association (URISA) consolidated yet earlier discussions and introduced a GIS Professional (GISP) certificate. The certificate, now managed by its own institute (<http://www.gisci.org/index.aspx>), has a five-year term and professional development requirements for renewal. There are approximately 5,000 members worldwide, however most of these members are registered and likely resident in the United States (US) (95%) and were grandfathered into the program for critical mass (80%). New certifications have definitely slowed since the end of the grandfathering period in 2009 (averaging 400 new certifications per year for the last three years). It remains to be seen whether there will be a large drop off in numbers once grandfathered members need to recertify, but based on current rates the membership will drop to 2,000 members by 2017. This represents less than 1% of the total estimated number of Geospatial Information Scientists and Technologists in the US in 2010 (210,000). There is a similar certification proposal put forward by the Canadian Institute of Geomatics (CIG), however this has had even less success, possibly because 195 of the GISP certifications are Canadian and at least two provincial survey associations have a GIS branch to their membership (Ontario and Saskatchewan).

As with any and all professional designations, there is a danger of falling into the credentialism trap where credentials become commonplace, littering business cards with long lists of designations. When credentials are multitudinous, ubiquitous and borne out of a need for identity and competition they lose their significance and credibility. Also, efforts to define the GIS 'profession' are analogous to earlier efforts to define the field of Computer Science as a profession. Very much like GIS, Computer Science has been trying to create a value proposition for a computer profession and regulatory body. Computer Science is a much larger more clearly demonstrable field than GIS and practitioners have been attempting to articulate the need for a computer profession for at least a decade longer than GIS practitioners with little success.

There are a number of other initiatives that seek to articulate the GIS body of knowledge, in particular the Geospatial Technology Competency Model (GTCM -

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NEWS FROM 1043

Changes to the Register

MEMBERS DECEASED

Maurice C. Armstrong 790 June 22, 2012
Douglas J. McNeely 939 Sept. 22, 2012

COFA REVISED

Was : Craig Aregers, OLS
Is: Acculine Inc., Toronto, August 22, 2012

Was: Tham Shanmugarajah Surveying Ltd.
Is: Tham Surveying Limited, Vaughan, Sept. 13, 2012

Was: Eplett & Worobec Surveying Ltd.
Is: Eplett Worobec Raikes Surveying Ltd., Barrie, Sept. 17, 2012

RETIREMENTS/RESIGNATIONS

Herbert Mellish 1328 July 16, 2012
Christopher Sexton 1188 Aug. 14, 2012

COFA'S ISSUED

J. Anne Cole Surveying Ltd., Sudbury, June 13, 2012

Surveyors in Transit

James Silburn is now with **MMM Group**, in Thornhill.
Phone: 905-882-4211.

Timothy D. Hartley is no longer with **Total Tech Surveying Inc.**

Barry Costello is now with **Esri Canada** in Toronto. Phone: 416-386-6496.

Jansky T.C. Lau is now with **Ertl Surveyors** in Richmond Hill. Phone: 905-731-7834.

Bruce Irwin is no longer working with **Niagara Region**.

Raymond J. Sibthorp is now working with **Alex R. Wilson Surveying Inc.** in Mount Forest.

Dan J. Cormier is no longer with **Hopkins, Cormier & Chitty Surveying Consultants Inc.** He is now working with **J.D. Barnes Limited** in Markham.

Robert Wannack is now with **Ivan B. Wallace Ontario Land Surveyor Ltd.** in Bowmanville.

THE AOLS IS PLEASED TO ANNOUNCE THAT THREE NEW ONTARIO LAND SURVEYORS WERE SWORN IN:

Ali A. Gholami 1952 July 19, 2012 • Jansky T.C. Lau 1953 July 19, 2012 • David G. Tulloch 1954 August 13, 2012

<http://www.careeronestop.org/CompetencyModel/pyramid.aspx?GEO=Y>), in a way that realizes core competencies and skills that may be realized in workplace employment. This model attempts to articulate the competencies required to be a GIS practitioner. It divides industry-sector technical competencies into three areas, namely positioning and data acquisition, analysis and modeling and software, and application development. There is an unmentioned fourth area dealing with presentation and distribution. The field of Surveying clearly overlaps the first area and could partially overlap the second depending on the value added nature of the professional opinion. Despite these various initiatives, there is no overarching profession that encompasses all GIS activities. In this respect, perhaps GIS is more a way of looking at the world, or an expanded set of competencies that enhance existing professions than a profession in and of itself.

To place this discussion within a framework that recognizes the role of all disciplinary or core competencies, including surveying, involved with land and its development, it is necessary to include a number of other professions or quasi-professions that play a role in the land development cycle. These include the professions of planning, architecture, engineering and surveying. Generally this cycle begins with a survey of the land to be developed. Conceptually, following this planners create a plan for the land, architects design the development, engineers oversee the construction and realization of the design and surveyors resurvey the land to reflect the new development. However, the process is cyclical, sometimes iterative between steps and all professions interface with each other during the transformation of undeveloped land into some form of human habitation and use. At the core of this framework, geospatial information science and GIS practitioners facilitate the integration of information at each of these steps and can help manage the transfer of information between other professions and professionals along the way (see Figure 1).

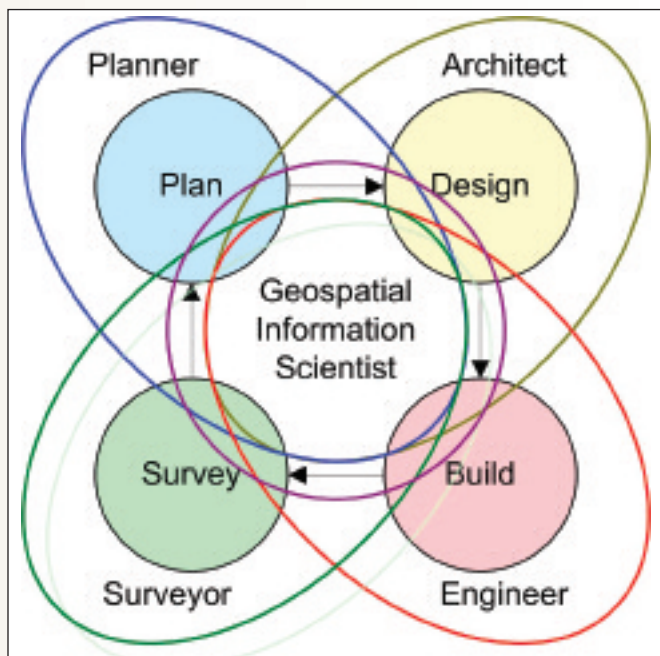


Figure 1: The Land Development and Management Process

In this conceptualisation the geospatial information science domain overlaps all of the land development related professions. Each of the land development professions also have overlapping domains, for example, in Ontario, site drainage is a shared domain where architects, engineers and surveyors are all legally qualified to prepare a site drainage plan. However, we believe that relative to the professional ‘orbits’ revealed in Figure 1, the surveying profession should be particularly interested in where the domains of GIS and surveying intersect and that very clearly there is an important GIS part of surveying that is not currently being addressed as adequately as it should be in current education programs for professional surveyors. We further feel that inclusion of this missing dimension in surveying curricula and recognizing it explicitly in professional surveying designations has the potential not only to broaden the dwindling ranks of professional surveyors, but also to provide professional credibility for GIS practitioners by embracing them more explicitly within the profession of surveying.

As part of the process of articulating the competencies of a GIM within the current AOLS designation, we have identified the following high level competencies for a geospatial information (GI) surveyor:

- Mathematics / Statistics
- Computer Science
- Introductory knowledge of survey methods / disciplines (cadastral, geodesy, hydrography, remote sensing – satellite, photogrammetry, LiDAR)
- In depth knowledge of GIS.


Given this premise we have analyzed a number of university surveying and GIS programs across Canada and one in New Zealand and scored them against the above proposed set of competencies, spread across courses in current undergraduate curricula. The resulting scores are still preliminary and need to be validated with the analyzed institutions. However, during this exercise we found that the survey programs matched quite well (80%) with the competencies, only missing in depth GIS and introductory computer science. The GIS programs on the other hand did not stand up as well (60%) and were missing a lot of positioning science as well as introductory boundary law and legal tenure courses. What is interesting from this exercise is that the concept of a GI surveyor with the proposed competencies has 80% of the educational requirements that would lead them to becoming a licensed cadastral surveyor.

Surveying associations and institutes, in dealing with an expanded profession, have in some cases taken a reductionist view. In Ontario, for example, non-cadastral branches (GIS, geodesy, hydrography and photogrammetry) of surveying are given a “Certificate of Registration” like cadastral members, but not a licence. The Ontario Surveyors Act (1990) articulates the branches specifically, requiring a legislative change to change or add new branches. Engineering, on the other hand, uses an “ethics-based” approach to regulating the profession. All engineers are licensed and are governed by their own code of ethics and overseen by the regulatory body

to ensure they are not practicing outside their domain of professional competence.

Resurrecting the Surveying Brand

Cumulatively, the above discussion and our general intuition suggests that surveying needs to expand its scope and re-establish the brand within this broader domain to encompass surveying-related parts of GIS. This path has been followed in Australia and is currently under discussion in New Zealand, and it should be high on the agenda in the various constituencies across Canada. Surveying needs this rebranding to make the profession more attractive to potential new members in order both to grow the industry and to keep it vibrant during the challenging times that lie ahead. Students need to see a vast number of potential options in practicing surveying, well beyond the traditional realm of boundary retracement. We believe that Australia and New Zealand are following the correct path by distancing surveying from the “geomatics” label and resurrecting the “surveying” brand centred within the geospatial sciences. After all, surveying was the first profession in the US and George Washington, Thomas Jefferson and Abraham Lincoln were all land surveyors before entering politics. The Australian surveyors have coined the motto “life without limits” (<http://www.youtube.com/watch?v=l-QufqAeFyM>) for their marketing to students, which we feel resonates more with potential practitioners than the current mottos of the Professional Surveyors of Canada (<http://setyourboundaries.ca>) or the AOLS, which is particularly problematic as far as future sustainability is concerned (“ask me about geomatics”).

In his book, “The Mystery of Capital”, Hernando de Soto recounts his experience walking through the rice fields of Bali. Although there was no clear indication of where property boundaries lay, every time he crossed from one farm to another a different dog barked. Listening to the barking dogs, a reasonable approximation of the property boundaries could be determined. Similarly, surveying associations and institutions need to heed the many barking dogs: their own members, geospatial information scientists, students and the public to mint an expanded profession and relevant and sustaining brand and restore the surveyor to the role of a trusted land advisor. 

Reference:

- Frank, Andrew A. (1995) ‘Surveying education for the future’, *Geomatica*, 49, 3, 273-282
- De Soto, Hernando (2000) ‘The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else’

David Martin Horwood is the President of S.E.A. Graphics Inc. specializing in software products and consulting in the areas of surveying, engineering and architecture. He an O.L.S. and is currently serving on AOLS Council. He is currently the parcel data management expert for Esri Canada, supporting Esri in development and implementation of new core parcel editing capabilities of ArcGIS. dave@seagraphics.ca

Dr. Brent Hall is Director of Education and Research at Esri Canada. He was Dean and Head of the National School of Surveying at the University of Otago, New Zealand from 2007 to 2011, and prior to that Professor and Associate Dean at the University of Waterloo. bhall@esri.ca

President’s Page cont’d from page 2

know this. The contract for the new website was for the behind the scenes infrastructure or functionality. This functionality seems to be really good and there will be a facelift, or depending on how you look at it, major cosmetic surgery to make it look pretty.


So, bottom line, we are much closer to having a new website than we were a few months ago. We had the web developers come to our September 10th Council meeting and we stressed repeatedly that it was critical that the new website be fully functioning and live before the January 1st membership renewals.

The next big thing that will happen on January 1st is the introduction of mandatory continuing professional development. Paul Church and his committee have been working on the details and the reporting forms and will be doing a presentation at the fall regional groups and the October 19th general meeting to update everyone.

There are a number of other committees and task groups that are also extremely busy. The Professional Standards Committee has just formed but they are already full throttle with a full plate of tasks. The Peer Review Task Force is looking at amendments and improvements to the current SRD processes for the inclusion of the expanded profession as well as for cadastral members. The Public Awareness Committee and the Geomatics Recruitment and Liaison Committee are as

busy as always. The Discipline Committee is the only committee I wish wasn’t as busy as it is. As mentioned earlier, the Discipline Committee had to make a call for new members to help form Discipline Panels due to the number of recent referrals. Personally, I find it unfortunate that this is the case but as the Regulator, part of our function is to govern our members to ensure the public interest is served and protected.

Lastly, our legal Lay Councillor, Eric Bundgard’s, appointment is over. His last official Council meeting was on September 10th. Eric’s devotion and service to Council, our members and the public has been invaluable. His calm and reasoned inputs will be greatly missed. Since Eric was bound to us until a replacement was appointed that means we will have an announcement shortly to introduce our newest lay member to Council.

The theme of the President’s Page this time is “engage-ment” of the AOLS members and how that has changed over the last few years. I mentioned earlier about the Strategic Planning and I believe that was a major influence in that change. That being said, there are many parts of our profession that have taken up the torch of change. These include, Council, various Committees and Task Forces and the AOLS staff. I would like to take this opportunity to thank all those involved. 

A Unique Opportunity for Advancing Students' Surveying Skills - Advanced Field Surveys at York University



By Jianguo Wang, Dr.-Ing., P.Eng.

Advanced Field Surveys (AFS) is the second practicum right after the third year of undergraduate studies within the curriculum of Geomatics Engineering and Earth Science at York University. It is a unique opportunity for undergraduate students to advance their practical surveying skills in high accuracy and high precision surveying based on the fundamental skills that they learned while doing topographic mapping and ordinary engineering surveying in the first practicum.

AFS is a fifteen-day course for three credits that is taken after the students have completed most of the essential surveying courses, which include; Fundamentals of Surveying, Field Surveys, Adjustment Calculus, Geodetic Surveys, Geodetic Concepts, Analysis of Overdetermined Systems, Photogrammetry, GIS and Spatial Analysis, etc. In this practicum, students can systematically be trained through their involvement in designing, planning, organizing, scheduling and practicing the logistical aspects of high accuracy and high precision surveying related to the establishment of control networks which are necessary for the deformation monitoring of engineering structures and other specialized industry surveying tasks.

The tasks in this practicum are divided into field work and office work. The former will include instrument testing, calibration and operation of geodetic GPS receivers, precise levels and 1" high end total station systems. Specifically for this practicum, the Engineering Laboratory at York University is equipped with a number of high end geodetic instruments, such as Leica TC1800 total station systems (1", 1mm+1ppm), Leica GPS 1200 receivers, Trimble R8 receivers, the Zeiss

Ni002 precise level and the Trimble DiNi (0.7) digital level and quite a few commercial software packages, such as Leica GeoOffice, MicroSurvey, and GeoLab together with other free software, such as Columbus Best Fitting software, etc.

AFS has been offered to undergraduate students annually since 2004. Two field sites were developed for this practicum, the Algonquin Radio Observatory (ARO) in Algonquin Provincial Park and the Rexall Centre (Figure 1) in Toronto, respectively. These sites have allowed us to simulate a real life engineering environment for the students.

The ARO antenna reflector is 46m in diameter and the first 36.6m is made up of 0.364cm steel plates surrounded by 4.6m of steel mesh. The surface accuracy was designed to be 0.32cm for the solid portion and 0.64cm for the mesh. The antenna is surrounded by a high stability network made up of 13 concrete piers.

The ARO practicum site supported by Natural Resources Canada was used from 2004 to 2006. The objective of the practicum at ARO was to determine the position of about 130 sticker targets on the surface of the Very Long Baseline Interferometry (VLBI) antenna based on a high accuracy 3D engineering control network that was established, partially using the existing pillars equipped with the forced-centering system, and partially using the selected ground points marked by metal nails. The expected 3D positional accuracy of each control point was better than $\pm 5\text{mm}$ (1σ). The Columbus Best Fitting software was used to rigorously adjust the GPS base-

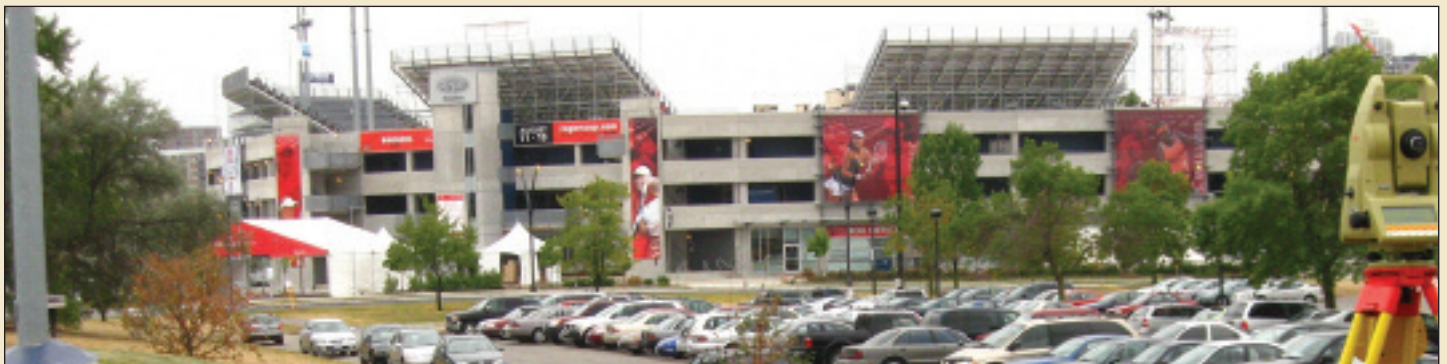


Figure 1 The Rexall Centre

lines that were processed by Leica GeoOffice and the horizontal directions, vertical angles and slope distances that were observed by using Leica TC1800 total station systems. The 3D targets were observed by using Leica TC1800 total station systems. Students developed their own utility to process the measurements and estimate the 3D coordinates of the targets.

The Rexall Centre site has been used since 2006 and is partially sponsored by Tennis Canada. The stadium is a typical large scale sport facility with a capacity of 12,500 seats. The objective of the practicum at the Rexall Centre is to determine the position of about 70 targets which are distributed on its columns outside. In order to do so, two layers of geodetic control are required.

First a global 3D engineering control network is established between Steeles Ave. West and Shoreham Dr. east of Murray Ross Pkwy on York's Keele campus in Toronto. Second, a local 3D traverse surrounding the stadium of the Rexall Centre is used, from which all of the targets can be observed using the total station systems. The accuracy requirements for

the geodetic control and targets are similar to those at the ARO site. However, on the campus, there is no concrete pier available. This makes it more difficult to reach the accuracy requirements. At this site, static GPS baseline observation, elevations determined from precise levelling and precise measurements using total stations are intensively applied in order to obtain the best possible accuracy.

In spite of the two different practicum sites, the common course objectives and tasks have been shared: project planning; design, preanalysis, field observation and adjustment of 3D engineering control networks; observation and 3D coordinate estimation of targets; and writing a project report. Strictly following the field operation procedures with different types of instruments, rigorously processing the measurements, professionally executing the project and preparing the final report are just a few of the valuable skills that students learn during this practicum.



The author can be reached by email at: jgwang@yorku.ca



Kun Qian (left) and Julien Li-Chee-Ming (right) were performing a precise levelling exercise for their Rexall Centre project, York University, Keele Campus, May 2008.

BOOK REVIEW

The GIS Guide to Public Domain Data

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

Seldom does an opportunity arise that allows us to find a book that serves as a single source for the discussion of geographic data which is available for individual users but, also relates to data in the “public domain”. This well-organized and easy-to-use book is only a part of a larger learning experience that is offered to readers who choose to purchase the product from Esri Press. In other words, the book is only one tool in a larger learning activity that includes online exercises that are available for readers to use in order to “try out” the very information that is contained in, and communicated by, this publication.


I found the content of this book to be very user-friendly although many of the examples are American based. Likewise, many of the examples of data licensing agreements and the terminology that one might expect in the larger international context are focused primarily on an American perspective that, although they include examples of data licensing clauses from agreements available in the U.K., Australia, and elsewhere, offered very little in the way of Canadian examples. Nonetheless, the book is essential reading for AOLS members who are eager for additional knowledge and insight into the practical applications of digital geographic data and the management of that data in relationships with suppliers, users, and colleagues.

In general, I found the organization of this book nothing short of excellent. In ten well organized chapters, the reader is led from a discussion of concepts of spatial data which exist in the public domain to a future looking discussion of the role of public domain data in anticipated geographic information systems and novel applications. Intervening chapters deal with technical issues involving the reliability of data that is obtained in the public domain but has unknown metadata attributes, the need for standards in relation to such data and metadata, and the ability to share the data architecture across international boundaries. Furthermore, data-using communities and crowd-sourcing are identified as logical users of such data but, are also identified as contributors - with some very interesting strategies which explain how to utilize the data generated by and from the users themselves.

Despite the ease with which one can applaud the availability of this publication and course, the difficult and complex nature of the topic itself is somewhat its own undoing. In other words, if one were to welcome the availability of this book and the course of which it forms a part, then there is a certain level of disappointment in the book’s failure to address the more complex issues of ownership of

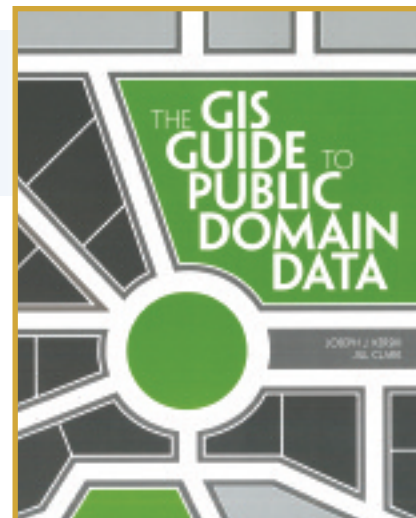
intellectual property in newly created works which incorporate public domain data and liability issues that are associated with volunteered geographic information. To be fair,

it would not be possible to find in a single book, or even a course, such a rigorous treatment of such complex issues. On the other hand, it might be the choice of “public domain data” as a phrase in the title of the book. What is it *really*? The authors could have done more to expand our understanding of its nature and its ubiquitous presence beyond offering the caveat that it is not free.

As a publisher of many books and other learning opportunities in GIS, Esri Press has a significant presence in the literature and contributes to the general competence of geomatics experts in the use and understanding of GIS data. However, although the open source platforms by which the software applications that utilize such spatial data are a welcome development, they eventually lead to a need to purchase the proprietary software which enables and facilitates the full range of software applications. Having said this, neither this book nor the course nor other publications from Esri Press are seen or considered as disappointments or even “teasers” – to the contrary, this book and the course of which it forms a part, are an important resource for all surveyors in Ontario who want to obtain a better awareness and understanding of opportunities and the usefulness of spatial data and how it can be used and managed. I highly recommend this book and the course, which offers a number of learning exercises as a resource, for members to use to acquire increased awareness and competence in broadening their knowledge about digital geographic data which exists in the public domain. Highly recommended. 

Izaak de Rijcke 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

The GIS Guide to Public Domain Data, by Joseph J. Kerski and Jill Clark, published by Esri Press, Redlands, California 2012, ISBN 978-1-58948-244-9.



SCHEDULE “A”

ALLEGATIONS OF PROFESSIONAL MISCONDUCT

CANADA)
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PROVINCE OF)
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ONTARIO)
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**IN THE MATTER OF the *Surveyors Act*
R.S.O. 1990, Chapter S.29, as revised.**

AND IN THE MATTER OF P. Ardon Blackburn, O.L.S.

**AND IN THE MATTER OF a Disciplinary Hearing of the
Discipline Committee of the Association of Ontario Land
Surveyors held in accordance with sections 26 and 27 of
the said Act.**

I, WILLIAM D. BUCK, O.L.S., C.L.S., P. ENG., of the Town of Markham, in the Region of York, am the Registrar of the Association of Ontario Land Surveyors.

1. The Council of the Association of Ontario Land Surveyors (AOLS) pursuant to Section 25(7)(a) of the *Surveyors Act*, by a Motion dated February 21, 2012, directed the Discipline Committee to hold a hearing in respect of allegations of professional misconduct against Ardon Blackburn, O.L.S.
2. It is alleged that Ardon Blackburn, O.L.S. (herein referred to as “Mr. Blackburn”), in his personal capacity, and as the official representative for the firm P. A. Blackburn Limited Ontario Land Surveyors, is guilty of professional misconduct within the meaning of Section 35 of Regulation 1026, R.R.O. 1990, as amended, the particulars of which are as follows:
 - a) On or about August 2, 2011 the AOLS received an official complaint from Matthew Tucker alleging that Mr. Blackburn had failed to provide him with services that had been agreed to by both parties for an agreed fee, that Mr. Blackburn’s final invoice far exceeded his original estimate of his fees and that no indication of an increase in fees had been provided to Mr. Tucker during the course of the project;
 - b) In the Reasons section of the Complaints Committee’s Decision for the said complaint, the Committee noted that there had been a history of similar complaints against Mr. Blackburn over a period of several years, including:
 - i. File C-04-10 in which the Final Decision included a statement that “No evidence was submitted that Mr. Blackburn had provided Mr. Spooner with a written work order detailing fixed-cost arrangements for the requested revisions.”
 - ii. File C-05-16 in which the Interim Decision required, among other things, that:
 - “c) Mr. Blackburn, O.L.S. prepare, and submit to the Committee, a sample form to document the authorization of additional fees above an original quotation and/or scope of work, prior to proceeding with the additional work.
 - d) In order to prevent further reoccurrence of this type of complaint, Mr. Blackburn, O.L.S., must commit to use the above form to gain client authorization of additional work prior to the undertaking of such work.”
 - iii. File C-10-10, in which the Committee again noted that Mr. Blackburn had not supplied the form that he had agreed to supply in Decision C-05-16.
3. It is alleged that the member failed to comply with the *Code of Ethics* of the AOLS in that he has repeatedly failed to ensure that clients are aware of the complexity of the type of surveys recommended and the nature of fees for service, all of which is contrary to Section 33(2)(e) of Regulation 1026, R.R.O. 1990, as amended. Failure to comply with the *Code of Ethics* constitutes Professional Misconduct within the meaning of Section 35(3) of Regulation 1026, R.R.O. 1990, as amended.
4. It is alleged that the member has committed acts of professional misconduct as defined by Section 35(21) of Regulation 1026, R.R.O. 1990, as amended of the *Surveyors Act* in that his actions would be reasonably be regarded by members as dishonourable or unprofessional.

Dated at Toronto, Ontario, this 1st day of June, 2012.

DISCIPLINE DECISION

IN THE MATTER OF the Surveyors Act, R.S.O. 1990,
Chapter S.29, as amended

AND IN THE MATTER OF Ardon Blackburn, O.L.S.

AND IN THE MATTER OF a Disciplinary Hearing
Of the Discipline Committee of the Association of
Ontario Land Surveyors held in accordance with
Sections 26 and 27 of the said Act

Order and Reasons

This panel of the Discipline Committee convened on July 17, 2012. The Member, Ardon Blackburn, O.L.S. was represented by counsel, Ms. Christine McLeod. Both Mr. Blackburn and Ms. McLeod were present. The Association was represented by Mr. Izaak de Rijcke, Counsel; both Mr. de Rijcke and the Association Registrar, Mr. Bill Buck, were also present. The panel was assisted by counsel, Carol Street.

On convening, the panel was presented with a Joint Submission as a proposed resolution of the matter.

The proposed Joint Submission, as originally signed by both Mr. Blackburn, O.L.S., and Mr. Buck, O.L.S., C.L.S., was marked as Exhibit 5 at the hearing. A copy of the Joint Submission, as presented to the panel, is attached to this Order and Decision as Appendix A.

Pursuant to paragraph 8 of the proposed Joint Submission, the parties had not come to any agreement with respect to the matter of costs and whether the panel should make an order that the Association should be reimbursed for a portion of its costs in proceeding to a discipline hearing regarding Mr. Blackburn.

After hearing submissions from both Mr. de Rijcke and Ms. McLeod, the panel recessed and considered the Joint Submission and the question of costs.

The panel accepted the Joint Submission. Pursuant to paragraph 3 of the Joint Submission the Member was reprimanded by the Lieutenant-Governor in Council representative, Mr. Mark Spraggett. With respect to the question of costs, the panel notes that it has the discretion to make an award of costs against the member in favour of the Association. Section 26(4)(k) says:

If a discipline panel finds a member of the Association guilty of professional misconduct or incompetence it may, by order, ...

fix and impose costs to be paid by the member to the Association

Both counsel agreed that any such cost order is to reimburse the Association for costs incurred in proceeding against a member, and are not by way of a penalty.

Mr. de Rijcke submitted that a cost award in the amount of \$10,000 should be imposed by the panel against Mr. Blackburn. He provided documentation establishing that the actual costs to the Association were in excess of this amount.

Ms. McLeod pointed out that in a criminal law proceeding, costs are very rarely awarded against a defendant. While noting that a discipline hearing is an administrative law proceeding, she described it as quasi-criminal in nature. She submitted that in the circumstances the panel should not exercise its discretion to award any costs against Mr. Blackburn. Alternatively, if any costs were to be awarded she submitted they should be nominal and suggested an amount of \$1,000. She pointed out, among other things, that once the matter was brought to Mr. Blackburn's attention he responded diligently and appropriately, and that he had not engaged in any culpable or advertent wrongdoing.

The conduct that brings Mr. Blackburn before this panel arises out of a fee dispute between him and a client and the failure to make use of a specific form identifying the project or tasks to be undertaken by the member, and the cost to avoid such disputes. The panel noted that in paragraph 1 of the Joint Submission, Mr. Blackburn pleaded guilty to most of the allegations against him, including the allegation that there have been similar complaints against him in the past which resulted in an agreement between Mr. Blackburn and the Complaints Committee of the Association that he would make use of the specified form to avoid such complaints in the future. The current proceedings, in the panel's view, became necessary because Mr. Blackburn failed to use the form as previously agreed, and failed to resolve the fee dispute with his client without the involvement of the Association.

A copy of the Notice of the Allegations against Mr. Blackburn was marked as Exhibit 1. Schedule "A" of Exhibit 1 lists the Allegations. A copy of Schedule "A" is attached as Appendix B to this Decision. Mr. Blackburn pleaded guilty to all charges except those allegations set out in paragraph 2(b)(iii) of this Schedule.

In these circumstances, the panel agrees that a cost award of \$10,000 is appropriate, to be paid within 60 days of the hearing date of July 17, 2012.

The panel has therefore accepted the Joint Submission between the Member and the Association, in the form attached hereto as Appendix A, with costs to be paid to the Association in the amount of \$10,000 within 60 days of the panel's oral decision.

This Order may be signed in counterparts.

cont'd on page 18

APPENDIX A

JOINT SUBMISSION TO DISCIPLINE COMMITTEE ON CONSENT OF ALL PARTIES

The Association of Ontario Land Surveyors (the “Association”) and the Member, Ardon Blackburn, O.L.S. (the “Member”), make joint submission to the Discipline Committee under the *Surveyors Act* in respect of this matter by asking the Discipline Committee to issue a consent Order on the following terms:

1. The Member pleads guilty to the charges and allegations of professional misconduct against the Member (the “Charges”) as alleged by the Association at paragraphs 2(a);(b)(i),(ii);3; and 4.
2. The member shall provide a written undertaking that he will consistently and uncompromisingly use an approved client confirmation of scope of engagement form before undertaking a project for a client, using a form that has been approved by the Registrar of AOLS, which form shall identify the specific project or tasks to be undertaken by the member, including a quote, cost estimate, or schedule of fees and also, where applicable, identifying any tasks or projects that were discussed with the client but not undertaken by the member. Written direction shall also be

obtained from the client each time that the scope or nature of the terms for the project are changed.

3. The Member shall be reprimanded and the reprimand will be recorded on the Register of the Association.
4. The Member shall be required to comply with the terms of the Order or Decision in all respects, failing which, the Member’s License shall be suspended for a period of one (1) year.
5. The terms of this Joint Submission are fair and reasonable and protect the public interest.
6. The Member acknowledges having been advised to obtain and has had the benefit of independent legal advice, or, has voluntarily declined to obtain same.
7. This Joint Submission and agreement thereto by the Member may be set up as a complete bar and answer by the Association to any appeal or judicial review of the Order or Decision of the Discipline Committee resulting therefrom.
8. The Association and Member may each make submissions to the Discipline Committee as to costs.

DATED at Toronto, Ontario, this 17th day of July, 2012.

Land Development Tracking Enabled By GIS

By Patrick Sun, O.L.S., O.L.I.P.

Despite the latest negative news on the economy and financial world, Ontario is growing rapidly. According to the provincial growth plan, “Places To Grow” (www.placestogrow.ca), by 2031, for example, the total population for the Greater Golden Horseshoe Area (GGHA) is expected to be around 11.5 million with 5.54 million jobs for employment. The total population growth from 2006 to 2031 will be 3.4 million and 58% of that will be in the GTA (905) area; Toronto is only at 17%. That means almost 2 million more people will be coming to the GTA area by 2031. The Employment Growth for the period of 2006 to 2031 will be 1.28 million jobs with 76% for GTA/905 area and 13% for Toronto. But one of the problems is that there is not enough Greenfield land remaining for development purposes. In 2006, in the GGHA, there were 34K hectares designated as Greenfield land and by 2011, there were only 27K hectares left.

Municipalities are facing intense pressure from rapid growth in a restricted environment. Provincial land use policies are asking for intensification, while municipalities still require Greenfield development to fund infrastructure. In this environment, capital forecasting is becoming more critical with huge financial risks. On top of this, the planning process is even more complicated by split responsibilities between municipalities and regions. Development Charges (DCs) are increasingly becoming a significant contributing factor to the municipal infrastructure funding model. There is an urgent need for the ability to track the land development process and especially to be able to track the development charges.

Additionally, many municipalities are facing serious issues caused by budget cuts, and reduced staff and staff resources. Municipalities and many local government organizations are relying more and more on technology to cope with the pressure. It is not surprising that many Information Technology (IT) departments are getting more attention and pressure as a result. Many legacy systems fail to address the urgent need from municipalities to be able to

track their land development process as its core functionality with the flexibility to integrate with other corporate system components. GIS (Geographic Information Systems) has traditionally served as the “mapping” tool for municipalities but it is now starting to play a more significant role in delivering business solutions.

As a relative newcomer to the municipal solutions domain, “AppTrack”, a robust software application developed by Munirom Technologies (www.munirom.com), a Canadian IT company in Richmond Hill, has developed the GIS into an integration tool for linking various corporate systems and applications together and geo-enabled the Land Use Development Application workflow. This is a good example of how a business solution can leverage GIS as a fundamental part of its application platform for workflow and information flow management and more importantly for providing analytical and reporting functions for decision support. The implementation of this software application demonstrates how GIS can become an integral part of corporate systems.

The following diagram (Figure 1) illustrates the architecture of “AppTrack” and how it can integrate with other municipal corporate systems including document management, permitting and licensing, finances, and Enterprise GIS, etc. The GIS viewer can be a standalone viewer with a default map viewer or it can incorporate the municipality’s corporate GIS viewer. It becomes a significant component of the system and it provides strong support for the work-

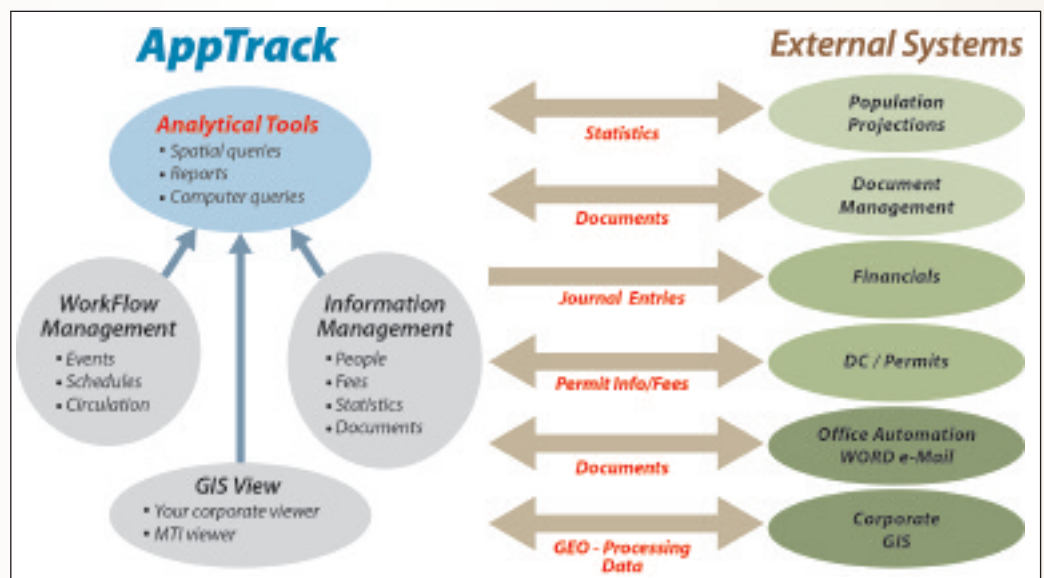


Figure 1: Land Development Tracking with “AppTrack”

flow and information flow management, and greatly enhances the functionalities of Analytical Tools.

The screenshot below (Figure 2) provides an example of how reports can be generated from selection sets by using GIS functions. In this case, an area is defined by drawing the polygon on the screen, just like any GIS, or Google or Bing Maps. The area selection set is used to drill down to the various data layers in the system and the current existing land development applications get selected (in red). From that, a user, a planner, an engineer, a clerk or a land developer, can select each application area from the

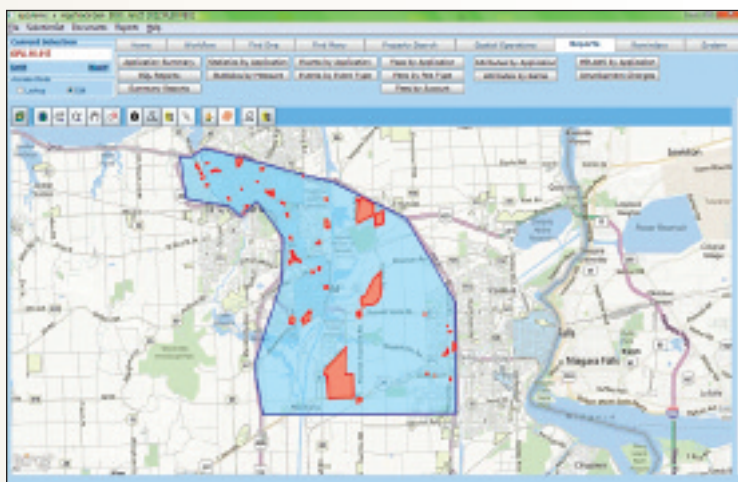


Figure 2: Reports by GIS Selections (Words, Service Areas, Districts, DA, Blocks, etc.)

map and query on the status of each application and track any scheduled events or fees, receipts and payments. As well, the user can perform various analyses by selecting pre-set report buttons on the user's working dashboard and generate standardized reports, for example, a status report, an event report or a fees report. It is fairly quick and easy to get the reports generated once the workflow is implemented and the database is populated and maintained on an ongoing basis.

“AppTrack” is truly a GIS-enabled business solution that is being utilized by several municipalities in Ontario, including Niagara Region, the City of Brampton, and the City of Vaughan. The good news is that most municipalities in Ontario have some kind GIS capability already. A robust system such as “AppTrack” can be leveraged by many of these GIS-ready municipalities. The land development process is an area where Ontario Land Surveyors are directly involved and because of the significant role that Geographic Information Managers (GIMs) play, it is the perfect area to promote GIS and the value of the AOLS' GIM designation.



Patrick Sun, OLS, OLIP is the President of MGP Information Systems Ltd (www.mgpinfo.com). He can be contacted at psun@mgpinfo.com for further discussion.

Mobile LiDAR Scanning for Transportation Design Purposes

By Mel Truchon, E.I.T., O.L.S.

Finalist for the David Thompson National Geomatics Awards in the Categories of Innovation in Geomatics and Unusual Application in Geomatics.

The Ministry of Transportation of Ontario (MTO) resurfaces over 1000 km of highways each and every year and the foundation of every resurfacing project is an accurate and complete engineering survey. New technology has demonstrated several advantages over conventional data collection methods in areas such as time constraints, worker safety, quality control, and cost savings.

In the fall of 2011 the MTO (Northwest Region) engaged Tulloch Geomatics to complete 85 km of engineering surveys of primary and secondary highways throughout Northern Ontario. The timelines to complete the engineering surveys for this project were short. The project was awarded in the middle of September and snow often arrives in Northern Ontario in late October or early November. Tulloch was cognisant of the fact that the use of conven-

system (INS). The digital cameras were set to collect images every 1 second, and the GPS and INS recorded positional information 1 and 200 times per second, respectively. Two dual frequency Sokkia GRX-1 GPS receivers were set over project control while the MLS truck simultaneously drove the highway segments. The maximum base line distance between the GPS receivers and the mobile sensor was set at 5 km. For each highway segment the MLS vehicle made at least 2 passes (typically eastbound lane and westbound lane) to ensure redundancy throughout each highway segment. The raw LiDAR data, the GPS and INS positional information, and the digital imagery were processed to produce a LiDAR point cloud and geo-referenced digital images.

The use of MLS allowed the topographic detail of all five highway segments (totalling 85 km) located throughout Northwest Ontario to be field surveyed in 7 days, as opposed to a forecast conventional (GPS/levels) survey duration of at least 120 days. The use of MLS on this project allowed the surveys to be completed in a matter of days, rather than months, allowing MTO's Capital Projects Schedule to remain intact with surveys being completed in 2011/ 2012, engineering design to be completed in 2012, and construction to commence in 2013.

The safety of survey crews has always been an important aspect of completing any survey within a road right-of-way. Traffic control and signage can mitigate risk and keep workers safe; however,



Google Street View shows an area of the project as it appears in google street view.

tional surveys would not likely allow the surveys to be completed before snowfall. For this reason, Tulloch proposed the use of Mobile LiDAR Scanning (MLS) to MTO as an innovative means to ensure the topographic data was captured in snow free conditions. This was the first time that the MTO used MLS on one of their Group Work Projects.

After horizontal and vertical project control was established by Tulloch Geomatics crews, the MLS mounted vehicle was mobilized to each highway segment to collect high resolution topographic detail. The MLS vehicle consists of 2 Riegl LiDAR (lasers) sensors, 2 digital frame cameras, a dual frequency GPS receiver, power source, digital display, and a high accuracy inertial navigation

new technology can take them outside danger zones altogether. With the use of MLS it is possible to drive at highway speeds while collecting 600,000, 3-D points per second. The use of MLS allows data collection to take place on the hard surface of the road from the comfort of a vehicle without the need for workers to be standing or walking within the driving lanes. This provides a level of safety (and comfort) to the survey crew that would not have otherwise been available to them. Hard surface data has typically been collected by total station or Real-Time Kinematic (RTK) GPS methods. Neither one of the conventional methods can compare to the use of MLS where safety is concerned, nor when it comes to the efficiency of data collection.

As part of Tulloch's QC process on the LiDAR data,



RGB PC shows the colourized point cloud

target validation points are set every 250 meters along the road corridor, surveyed conventionally, and then compared to the LiDAR data. The intent of this QC process is to demonstrate that the LiDAR data is consistently below the required 2cm accuracy level, both horizontally and vertically. Additional cross-sectional audit data is captured using total station methods every 500 metres to further demonstrate that the LiDAR data is consistently below the required 2cm accuracy level. In the event that the collected LiDAR data does not match the validation points to the desired specification, it is also possible to perform an adjustment on the data, which will hold the validation points as fixed reference points and adjust the point cloud to fit these points. This is typically required when there is a control bust with

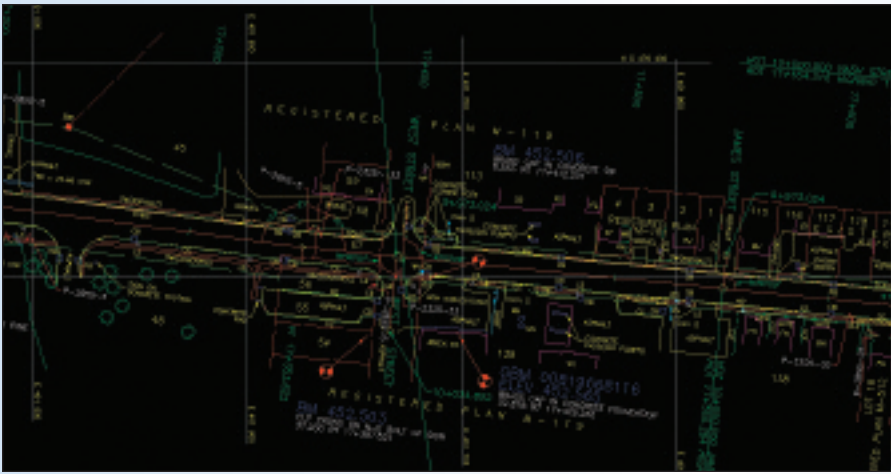
provincial or federal control points.

Once the accuracy of the point cloud is confirmed, feature extraction can commence. From the highly accurate geo-referenced LiDAR point cloud, highway features (crown, edge of pavement, edge of shoulder, rock cuts, etc) can be extracted. The digital imagery is also used to map RGB colour values onto the LiDAR points to produce a colourized point cloud in addition to the more common signal intensity view, which displays colours based on the intensity of the returns. LiDAR analysts use a combination of different point cloud views (top down, cross section, 3-D orbit, colour intensity, and RGB colourized points) and digital imagery to interpret, extract, and classify the data. Similar to conventional



Colored Intensity PC shows the colour intensity point cloud

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A portion of the completed base plan which corresponds to the area shown in the other images

surveys, this process produces point files which were converted to AutoCAD Land Desktop Development (LDD) Field Books and then imported into AutoCAD LDD. Base plans and profiles are generated from the survey information and submitted to the MTO or the municipality, which will in turn be passed on to the Consulting Engineering firm that will design the highway or road project.

There are areas that require conventional topographic surveying (in-fill) for various reasons. For example, areas of open water tended to absorb the laser signal and do not provide adequate returns to accurately delineate the shoreline. This is especially true of marshy areas. Other areas that required in-fill included areas of thick vegetation (where the laser could not penetrate to the ground surface), drainage features such as culverts (as they were not typically visible from the driving surface), and the tops of tall rock cuts where there was no line of sight between the ground surface and the MLS system.

The use of MLS can provide a cost savings during the Field Audit or Quality Control review of the project. The LiDAR data and digital imagery provides an (almost) complete record of the features present along the road with the exception of the areas listed above. It is a valuable tool for performing a portion of the Quality Control for the project by cross-referencing the features delineated on the base plan with the features in the LiDAR data, to ensure all features have been extracted properly. LiDAR analysts were able to return to the point cloud to confirm features without the need to return to the field. The digital images that are taken by the system also proved to

be a valuable reference tool. MTO, or other clients, are also able to employ these tools while reviewing the plans.

The potential cost savings of the use of MLS is three fold. First, the data collection is performed much faster than conventional surveying which can help to reduce costs. Second, the point cloud data and photos can help to confirm features which can in turn reduce the number of trips to the field to confirm and collect additional data. Third, where traffic control would normally be required in order to perform a topographic survey, the MLS system does not require traffic control as it is able to travel at highway speed while collecting data.

Tulloch's innovative approach to Engineering Surveys was nominated for two of the David Thompson National Geomatics Awards. The project was nominated for the "Innovation in Geomatics" and "Unusual Application in Geomatics" categories and was declared a finalist in both categories. Certificates were awarded in recognition of the finalist achievement.



Mel Truchon, EIT, OLS is a Geomatics Project Manager at Tulloch Engineering in Huntsville. She is responsible for supervising field and office staff and the day-to-day management of large cadastral and engineering survey projects. Mel has 4 years experience and has completed numerous survey and engineering assignments that include standalone legal survey assignments across Ontario, including 11 MTO Engineering Survey assignments over the past 3 years. mel.truchon@tulloch.ca



The vehicle mounted MLS system

The Joys and Pains of Open Data

By Tom Bunker, O.L.S. and Will O'Hara, C.S.

Lou Milrad's article, *The Cost of Open Data*, (*Ontario Professional Surveyor*, Summer 2012) raises important issues about open data and the potential implications of a California decision on the open data movement in Canada. At this stage, the open data movement is alive and well in Canada and we would like to see government-produced data freely available to the public. However, we see risks to land surveyors and GIS professionals when the discussion about open data ignores important legal concepts and economic impacts.

We agree with Lou Milrad that the public benefits when government-created data is made available to members of the public. After all, the public has already paid the costs of creating the data through taxes. We shouldn't have to pay for it again.

We also agree with the points attributed to Jury Konga on the benefits of free access to government information. There are many good reasons why government-created data should be made available to members of the public on a no-cost basis, or a low-cost basis. The commercialization model used by some government entities – selling data to raise money – is, in our view, the wrong way to go.

We will examine the California case in the Canadian context to see what effect it will have on the open data movement in this country.

Sierra Club vs County of Orange

The case referred to by Lou Milrad, *Sierra Club vs County of Orange*, dealt with the interpretation of wording specific to the Public Records Act of California ("PRA"). The aim of the PRA is to make public 'data' available to the public, which we agree is a good idea. However, the PRA set out a number of exceptions. It specifically exempted proprietary software from disclosure, on the theory that 'data' and 'software' are two different things.

The issue before the court was whether the Orange County Land base in GIS format was a public record (which should be disclosed), or whether it fell within an exception (in which case it would not be disclosed). In his decision, the judge noted that the PRA "plainly states that computer software is not a public record..." and that "computer software includes computer mapping systems." The judge also noted that the request for the Orange County Land base in GIS format could not be accomplished without execution of the computer mapping system software. In other words, the data and software were scrambled together and it was impossible to give the whites without giving the yolk. The judge found that the Orange County Land base in GIS format fell within a defined

exception. The Sierra Club had no right to have it disclosed (although the Sierra Club could have purchased a license to the land base for \$375,000 a year).

In our view, this decision makes sense based on the wording of the PRA in California. It also makes sense as a matter of policy. Why should the Sierra Club (or anyone else) be entitled to free *software*, just because the thrust of the PRA is to disclose public *data*?

The Canadian context

How will this decision affect the law in Canada? Will it have a chilling effect on the open data movement? The Canadian context is very different from the California context, and the distinction may insulate us from any fallout from the *Sierra Club vs County of Orange* case.

We do not have a PRA that requires public data to be disclosed, as they have in California (subject to the defined exceptions). We do have various *Freedom of Information Acts* at the different levels of government in Canada, and in Ontario we have the *Municipal Freedom of Information and Protection of Privacy Act* ("MFIPPA"). While these statutes establish a right of access to public records, each act has a defined procedure for requesting government information. In particular, *MFIPPA* permits municipalities to make copies of certain documents held by the municipalities *without infringing copyright* in the documents, *provided* that the procedural safeguards set out in that legislation are followed.

The procedure set out in s. 17 of *MFIPPA* requires that a person seeking access to a "record" (defined in s. 2 to include "a plan, a map, a drawing") makes a request in writing to the institution that the person believes has custody or control of the record, provides information adequate to identify the document, and, at the time of making the request, pays a fee. *MFIPPA* does not mandate the free-wheeling distribution of every document in the municipality's possession.

Governments in Canada are not permitted to charge a 'fee' that is in fact a 'tax', unless, of course, they pass legislation to make it a proper, above-board tax. Charging a licensing 'fee' of \$375,000 for access to the Orange County Land base data, as was done in Orange County, might well be illegal in Canada. Again, that practice is part of the commercialization of government-produced data that we feel is the wrong way to go.

Another critical difference between the two countries is their treatment of government copyright. In Canada we are burdened with the ancient doctrine of Crown copyright. The *Canadian Copyright Act* gives the Crown certain rights to

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works “prepared or published by or under the direction and control of Her Majesty or any government department”. The republic to the south does not recognize the Crown. Works prepared by an officer or employee of the U.S. government as part of that person’s official duties are not entitled to domestic copyright. Individual states have different rules for state copyright. The California Appeals Court has ruled that the state government cannot claim copyright in public records.

By contrast, if the Ontario government prepared software for a GIS system, the Crown would own it outright, as well as all intellectual property rights associated with it. That was the result in a 1996 case (1996 CanLII 7705 Ont IPC) where a request was made under the *Freedom of Information and Protection of Privacy Act* (“FOI”) for the business entity database and software produced by the Ontario government – essentially a list of all Ontario businesses, organized by the software – which the government did not want to give up. The FOI states that “information should be available to the public”, (similar to the PRA) but it carved out an exception for records that contain technical information that belongs to the government that has potential monetary value.

The FOI Assistant Commissioner sided with the government and found that the database compiled and organized by the government fell within the exception. The database was protected by Crown copyright. The Assistant Commissioner also found that the software produced by the government was protected by Crown copyright. In the end, the result was similar to the California case, but for very different reasons. The interplay between copyright and Freedom of Information – or making public data available to the public – is quite different in the two neighbouring countries.

Fortunately for Canadian land surveyors and GIS professionals, our governments are moving in the direction of disclosing the data that they produce. There are already vast quantities of government-produced data available online and the amount is increasing exponentially. This is evidenced by the Gov 2.0 movement that Lou Milrad refers to in his article. Government practice – if not government legislation – leans towards disclosure of government-produced data.

What can members of the profession do?

It is important to note that the Orange County case was about *government-produced* data. Different criteria apply when the ‘data’ is privately produced and ends up in the hands of government. This is even more important when the ‘data’ has been reduced to an image or a document. At that stage it is no longer ‘data’. It is an image that may well have intellectual property rights attached to it. The private rights of the creator of the document should not be sacrificed in the name of open data, as has been done in the past. The *Freedom of Information* legislation was not designed to circumvent intellectual property rights by providing low-cost access to valuable privately-produced documents.

Surveyors have long been the authors of documents that are filed with government agencies in a variety of forms on behalf of their clients. These documents are often sought by other users – a secondary market for land surveyors and GIS professionals. If these documents become freely available, the secondary market will disappear, with potentially significant economic and liability consequences to authors of the documents.

The discussion of open data should continue with a view to exploring the Canadian context more fully. We, as citizens and taxpayers, need to talk about the costs and benefits of making government-produced data available to the public. We all need to encourage our representatives to adopt policies that open up government-produced data to the public. Members of the profession need to stress the distinction between government-produced ‘data’ and privately-produced documents (whether in hard copy or digital format) and ensure that the open data movement does not trample on the rights of private land surveyors and GIS professionals.



Tom Bunker, O.L.S., C.L.S., P. Eng., is the President of T. A. Bunker Surveying Ltd. and a founding executive member, and currently Treasurer, of the Land Surveyors Copyright Enforcement Group. Contact Tom at surveys@landinfotech.ca

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“Professional Expansion” ...Early On

By John Halsall, O.L.S.

It was my first interview for an overseas posting. The offer was something along the lines of getting dropped out of a bush plane somewhere in northern Nigeria, procuring a local crew, and setting out ground targets for aerial photogrammetry while ‘living in the bush’. Throughout this somewhat unnerving interview, however, there was a large map of Egypt behind the interviewer with coloured thumbtacks embedded up and down the entire Egyptian Nile River.

Considerable persistence was required to divert the interview to this map...in effect, trying to reverse the interviewer and interviewee roles. With a more nautical

leaning from the beginning, whatever the Nile River could throw at one seemed a better ‘deal’ than trying to outrun green mamba snakes on a daily basis, and no water in sight! “Hah!...that’s a wild card”, he said, “huge job...probably the biggest private sector hydrographic survey of any river in the world to date...logistics will be a nightmare...we’ll never get it...now...back to Nigeria...”

In the end, the contract was awarded, persistence reigned, and commencing in 1981 for a year and a half, one of those ‘life changing experiences’ that one can only truly realize more than a few years later...and even more recently, with the discovery of some long lost, original, crusty photos.

The arrangement was 2 weeks on and 1 week off (local leave), and 1 month off ‘home’ in Canada every 6 months. However, the 2 weeks on involved at least 12 hour days rotating between running the survey launches, running the shore crews setting up Trisponder sites (yes a microwave range-range system...this is before commercial GPS was a viable option!), or running the shore crews on horizontal control (Wild T-2, Distomat, and sunshots), running levels and setting concrete benchmarks. Rest assured it was a tough 2 weeks, particularly when the ‘Westerners’ comforts’ diminished quickly to something more realistically local outside of the tourist areas of Luxor, Aswan, and Cairo. The surveys started in Lake Nasser (the huge flooded area created behind the Aswan High dam in southern Egypt and



Proud young Nubian boatman in his first boat (Lake Nasser)

ran the entire length of the Egyptian Nile to the delta into the Mediterranean. Geographically, the area that appealed the most, to the author at least, was actually Lake Nasser where the largely Nubian population had moved to higher ground on the various islands formed after the flooding. This was the first (and last) area we dared to swim. Further downriver the regular sighting of bloated animal carcasses and other flotsam, and the presence of the bilharzia parasitic disease carried by local snails, put a prompt stop to cooling in the water. It was in this area that we met (and employed) the local Nubian boatmen...superb ‘naturals’ afloat. The young boatman who paddled up in his homemade canoe a little over 1m long made of hammered out cooking oil cans, scrap wood, and a touch of asphalt to seal the joints...unforgettable, and a truly impressive example of ‘local initiative’!

Further downriver, and well away from the tourist areas, the stark reality of daily life as opposed to our much more luxurious standards in the ‘developed world’ was nothing short of incredible. It was on one of many small islands in the middle of the river, while reconnoitring for a Trisponder site, that we met a large family, the only inhabitants. As far as I could make out, the father was a very stout 70 years of age at least with the family (some 3 daughters and 6 sons at least, and more grandchildren) all living off whatever fishing could be had, a small banana plantation, some vegetable plots, and date palms. We were invited to



Shallow draft water jet propelled survey launch on the Nile

Egyptian tea (60% tea and 40% sugar) served on a spotless shiny tin tray and bowls of steamed vegetables, something like okra, and rice and fish. The grace, hospitality, and humbleness of this whole family, living in a simple but impeccably clean dried mud house on a sliver of land in the middle of the Nile, with nothing but their own very local resources, remains unforgettable as well.

On the 'flip side', the next island was from relative heaven...straight to relative hell. Uninhabited by man, but as it quickly turned out, the 'penal colony' for dogs gone too wild for the local villagers. It was an ideal Trisponder location, but it never transpired. The only ammunition available

was a spray paint can and dried 'mud balls', which barely allowed a retreat back to the boat. When asked why such an ideal spot was not used, the only reply required was "that's the first and last time I want to experience being circled by a pack of wolves!"

One more in the 'memorable islands' category, a third island was also uninhabited and another superb candidate for a Trisponder station. Appealing high berms around a flourishing

banana plantation...but guarded by a black cobra. A most respectable reptile, particularly with the headgear extended, and I could only trust the feeling was mutual as we both froze and stared at each other before slowly backing away. My Egyptian crewmates were already back in the boat! More questions followed about why such a superb vertex for range-range geometry was omitted from the 'network'. "Ask the resident black cobra."

As for aquatic wildlife, a local resident of the river was the so called Nile Monitor, a large aquatic lizard with the looks to empty out a fully populated swimming pool in nanosec-



Diligent Trisponder station 'guards' on Lake Nasser

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onds but in reality a rather shy and harmless vegetarian. Whenever larger vessels and cruise boats went by, leaving very damaging wakes astern, massive chunks of riverbank would disappear into the river (truly extreme erosion!) and the basking lizard would plunge into the river from what used to be his sunning spot. The resultant sharp ‘boom’ from thick ‘leather’ impacting the river without warning was a heartbeat adjustment to put it mildly.

Over a year into all this and disaster struck and a more extreme ‘professional expansion’ took over. Being responsible for paying the local crews Egyptian Pounds cash every 2 weeks, I came back to the riverbank base of the week, a local hotel, one evening to find my locked cash box gone from its hiding spot. It was a sizeable sum even on conversion to Canadian dollars and there were a lot of crew to pay. While emergency funds were sent to cover the immediate pay-day, the company insisted I ‘work-out’ what was stolen. Frankly, the upcoming ‘downgrade’ in the delta region to tents (and many more lovely snakes and mosquitoes etc., etc.) that an ‘extended stay’ would entail, was looking less appealing by this time anyway.

This is where one of those rare strokes of incredible luck and timing drop down from whatever spirit one never believed in before. Digesting all this on the next 10 days off in Cairo, I was introduced in an expatriates’ pub to the local manager for a small Canadian oil exploration company. They were preparing to bring a mobile drilling rig by road up from a port in Sudan to the drilling site on the Egyptian

Red Sea beach. The need was for someone to oversee the construction, entirely by locals, of a road some 6 km long to the beach from the nearest paved road. The possibility of the heavy rig, with a hefty day rate, delayed by failure of the proposed access road was a major concern. I was professionally obliged to inform the man that I wasn’t an engineer and knew virtually nothing of road construction, but dammit a financial injection was sorely needed, and somebody sympathetic in the company must have planted some sort of recommendation in the oilman’s ear. When the remuneration topic came up, I figured I’d go for double the day rate on the river, not being particularly in touch with the oil and gas industry yet. The oilman smirked...”really now, we DO need to have this road work for the rig... first time”. The daily rate was doubled again and now, I was truly quite nervous...but committed.

A crawl through some markets in Cairo turned up some fascinating little bookstalls including a few with paperback textbooks on road construction. Mostly plagiarized from British textbooks, but the prices suited my gutted budget and copyright infringement was of absolutely no concern to the crash student! After some four days of voluntary confinement to very-far-off-campus study I relocated to Hurgghada on the Red Sea coast based out of one of the only two hotels there at the time (a Hilton at that!). Every morning before dawn a Bedouin driver in his Toyota 4 X 4


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**121st AOLS Annual General Meeting
February 27 to March 1, 2013
Toronto Marriott Eaton Centre**

showed up and the days were spent tromping (and sweating) around in the desert behind a motley collection of older Russian and Japanese built bulldozers, graders, and oil spreaders, using rudimentary ‘testing techniques’ not to be found in any engineering journals. A pleasantly plump brown envelope of \$US cash landed in my hands back in

Cairo some 2 weeks later and this paid off the debt and more. Equally important, a postcard arrived from the oilman a few weeks after my return to Canada, “the rig made it all the way down ‘your’ road...first time”.

Just one story of many, but beyond entertainment value I share it with the *potential* surveyors in particular...those contemplating a surveying career or already in studies or articles, as just one example where the ‘boundaries’ of the profession can be expanded virtually to the limits of your imagination. A healthy dose of adventurism helps, persistence, and certainly the occasional boost of the aforesaid luck, but in any case the ideal time to test those ‘boundaries’ is while one is still young (in mind at least and body as well, as local environments may demand!). These may appear seemingly ‘reckless’ instincts (as you look back later) but a few rewards, aside from new markets, is that a refreshing overview of the profession and all its disciplines worldwide will develop and new ‘doors’ will open. 



John Halsall, B.Sc., O.L.S. is owner/manager of J. Halsall Hydrographic Surveys, which provides surveys, consulting and client representation services to the marine construction and engineering industry worldwide and hydrographic surveys domestically since 1986. He can be contacted at JHHS@sympatico.ca

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EDUCATIONAL FOUNDATION NEWS

November 1st – Time to join or renew your membership

Since 1975 the Educational Foundation has awarded over \$281,000 to 278 students in several post-secondary Geomatics programs. Currently, 7 of those award winners are articling students, and to date, 69 have become Ontario Land Surveyors. In November 2004 **Shawn Hodgson, O.L.S., P. Eng.**, Project Manager for the MMM Group Limited, received an Educational Foundation award, sponsored by the South Central Regional Group (SCRG), for his “high academic standing in third year courses and his contribution to social activities” in the Geomatics Option, Civil Engineering at Ryerson University. Shawn is currently Vice Chair and Treasurer of the SCRG and for the last 2 years has successfully raised funds for the Foundation by selling “mulligans” for \$5 each at the SCRG golf tournament. He is also an active member of the Board of Directors of the Educational Foundation. Shawn said, “Receiving the award

really helped me out financially and I joined the Board of Directors of the Foundation to make it possible for other students to have the same opportunity.”

This year the Foundation is making \$28,350 available for awards to students in Geomatics programs at Ryerson University, York University, the University of Waterloo, Loyalist College, Fleming College and students in the AOLS Survey Law I and II courses. This record amount has been made possible because of the generous donations of AOLS members, C of A firms, survey suppliers, Regional Groups and others who have an interest in promoting membership in our association. You too can show your support for students and future Ontario Land Surveyors by becoming a member of the Educational Foundation or by sending a donation to the AOLS Educational Foundation. For further information please contact the AOLS office.

Industry News



Geo-Plus: Celebrating 25 years of Geomatics Evolution

Geo-Plus is celebrating its 25th anniversary and is ready for the next quarter of a century to come. Evolving from a one man show to a market leader in surveying and engineering software solutions, the path to the future has been set: bringing high-end technology as easy and user-friendly as possible to most of the professionals. Its contribution in the development of new techniques and processes is significant for fields of expertise like land surveying or civil engineering; thanks to an increase in technology inside the company.

Geo-Plus is celebrating this anniversary in many ways: a brand new company image, a series of events and contests for Geo-Plus's clients and new offices now located at 2077 Michelin Street in Laval, QC. "Our vision has always been clear about Geo-Plus's future: bringing to life new and high quality products and services corresponding in all points to the specific needs of our clients; since we were recognized as a company with great attention to understanding the needs of our customers", states M. Wilfrid Beaupre, president of Geo-Plus.

This event is to be celebrated by Geo-Plus and their clients who have made it possible for Geo-Plus to position itself

among the leaders in the industry by believing in the company itself; clients who have been faithful and recognize the constant renewal in all products and services offered by Geo-Plus.

About Geo-Plus - Founded in 1987, Geo-Plus has been developing a series of land surveying software, civil engineering software and land document software for land surveyors, civil engineers, and other professionals from the sector of land management. The Vision Series software is developed to a high standard and the latest standards on the market. The mission of the company is to review and continuously improve Geo-Plus products to meet the specific needs of clients from various fields of expertise. The company is currently developing new markets, including Europe, Asia, North America and South America, to become the leader in the geomatics world. For more information about Geo-Plus, visit the website at: <http://www.geo-plus.com>

For more information, please contact: Mr. Wilfrid Beaupre
T: 1.800.672.1733 - F: 1.866.635.7344
Email: information@geo-plus.com

Calendar of Events

October 29 to November 1, 2012

MAPPS/ASPRS 2012 Specialty Conference

Cloud to Ground (R)Evolution

Tampa, Florida

www.asprs.org/Conferences/Tampa-2012

October 31 to November 2, 2012

**International Symposium on
GPS/GNSS 2012**

Xi'an, China

www.gpsgnss2012.com

November 5 to 7, 2012

Trimble Dimensions User Conference

Las Vegas, Nevada

www.trimbledimensions.com

November 14, 2012

GIS Day

Discovering the World Through GIS

www.gisday.com

December 4 to 5, 2012

European LiDAR Mapping Forum

Salzburg, Austria

www.lidarmap.org/ELMF

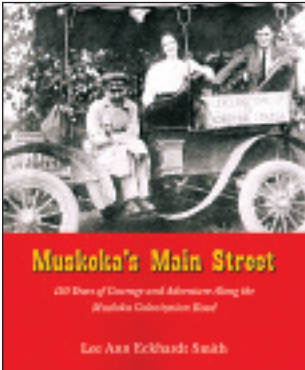
February 11 to 13, 2013

International LiDAR Mapping Forum

Denver, Colorado

www.lidarmap.org/ILMF.aspx

BOOK REVIEWS



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Muskoka's Main Street

150 Years of Courage and Adventure Along the Muskoka Colonization Road

By Lee Ann Eckhardt Smith

The Muskoka Road: this twisting, hilly, bone-jarring route through the “wild lands” of Muskoka and Parry Sound laid the foundation for today’s Highway 11. Built with courage and great optimism, the road led to land that broke the hearts and backs of many stalwart pioneers, even as it launched new townships and became one of the most successful of Ontario’s colonization roads. *Muskoka’s Main Street* describes the road’s 150-year history through the eyes of people who designed, built, and

travelled it, and who settled along its winding course to carve communities from raw bush.

Using field notes and diaries of the surveyors, along with firsthand accounts of early settlers and road builders, Smith has created a comprehensive history of the Muskoka Road. With this book, Smith fills a gap in contemporary Muskoka history, and reminds readers that the Muskoka Colonization Road was the foundation upon which Muskoka began.”

Information taken from the publisher.

British Columbia A New Historical Atlas

By Derek Hayes

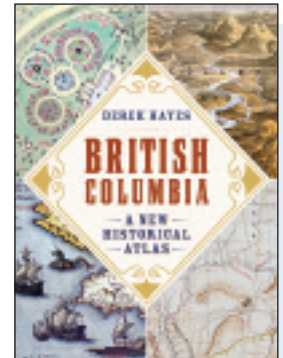
When gold was discovered in quantity in 1858, leading to the gold rush that created British Columbia, the interior of the province was mostly unknown except for the routes blazed by fur traders. Thirteen years later, British Columbia became a province of Canada, and a transcontinental railway was built to connect the land west of the Rocky Mountains with the rest of the country.

The efforts of these explorers, fur traders, gold seekers and railway builders involved the production of maps that showed what they had found and what they proposed to do – the plans and the strategies that created the province we know today. Master map historian Derek Hayes continues his renowned

Historical Atlas Series with a richly rewarding treasure trove, bringing to light the dramatic history of British Columbia.

Ranging from maps by early Aboriginal inhabitants and by the Europeans who arrived to explore and exploit the province’s vast resource wealth – to the maps drawn by those who, decades later, prepared for war, built dams and tracked murders – the over 900 maps in this collection, two-thirds of which are published for the first time, reveal the thoughts and plans of the dreamers, explorers and dynasty makers who built today’s British Columbia.

Information taken from the publisher.



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The Last Viking The Life of Roald Amundsen

By Stephen Bown



Published by Douglas & McIntyre
ISBN 978-1-55365-937-2

The untold story of the great polar explorer who conquered the world’s last unknown places, before vanishing in a daring bid to rescue his nemesis.

In the early 1900s, many of the great geographical mysteries that had intrigued adventurers for centuries remained unsolved, leaving some large blank areas on the increasingly detailed maps of the world. The polar regions – the Northwest Passage, the South Pole, the North Pole and the Northeast Passage – despite having claimed countless lives, were still shrouded in mystery. One man would claim all these prizes within a span of 20 years.

Roald Amundsen was an adventurer and entertainer of the highest order. Larger than life, arrogant and competitive, he was also a meticulous organizer and planner, willing to learn from the mistakes of others, and humble enough to seek the advice of indigenous

peoples skilled in arctic survival – thus avoiding the early death that was so common among others who challenged the most desolate places on the planet.

But Amundsen’s life was one of sharp contrasts: reviled by the British for defeating Robert Falcon Scott in a desperate race to the South Pole, he was loved by his men, hailed as a hero in his native Norway and idolized as a charming and eccentric celebrity in the United States. Drawing on hundreds of recently uncovered press clippings, *The Last Viking* goes beyond Amundsen’s conflicted legacy, revealing a humorous, self-deprecating storyteller who had unusual opinions and dreams; a visionary and showman who won over both his sponsors and his audiences with the same verve that characterized his geographical conquests.

Information taken from the publisher.

The Last Word

Surveyors Celebrating GIS Day

November 14th is GIS Day. The goal of this annual global event is to educate both students and the public about Geographic Information Systems (GIS) and how it is used in their lives everyday. Several years ago, AOLS Council endorsed the celebration of GIS Day as an opportunity to inform students and the general public about the role of the AOLS and the services and products provided by professional surveyors.

For over 10 years, the AOLS has staffed an exhibit at the Peel Region GIS Day, which is sponsored by the Region of Peel and the Peel District School Board. Last year I attended the event at Louise Arbour Secondary School in Brampton along with professionals from the Region of Peel, Peel Regional Police and Credit Valley Conservation. Approximately 150 Grade 9 and 11 students and their teachers had an opportunity to explore eight agency stations, each showcasing how GIS technology is used effectively in a wide range of career settings in government and private industry, and the local community.

It is time for you to get involved and use GIS Day to reach

out to students and the general public to promote your profession. Last year more than 26 organizations held GIS Day events in Ontario. Visit www.gisday.com to find an event to support in your area or use the material available on the GIS Day website and from our own association to organize and host your own GIS Day event.



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