SLSA Corner Post

Fall 2011
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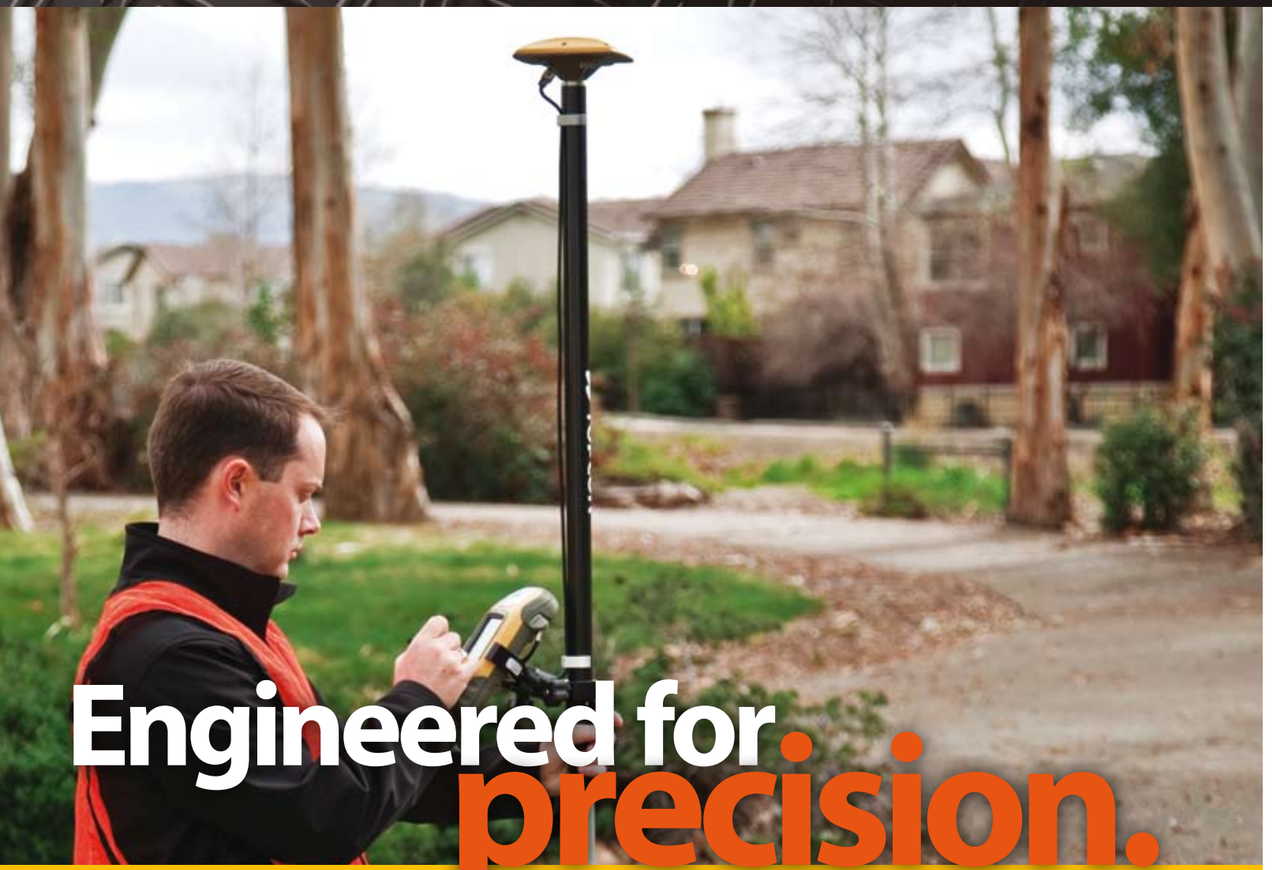
Quarterly Newsletter of the Saskatchewan Land Surveyors Association



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SLSA CORNER POST

Fall, 2011
Volume XXXII, Number 3

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The opinions of the contributing writers may not be consistent with those of the Council of the Saskatchewan Land Surveyors Association. Articles may be reprinted with appropriate credit given to the authors, unless it is under copyright.

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Regular Features

Cover Story

When the executive committee began considering the qualifications required for the person or people who would take over administration of the association office on January 1, 2012, it seemed probable that many of the requirements would need to be developed through on-the-job training. The transition process was expected to take some time. Part of the problem was the broad range of activities undertaken and computer programs used, none of which take up major amounts of time each year, but each of which requires a fairly in-depth understanding. Compounding the problem was the fact that the amount of money available for administrative services is really quite limited and generally insufficient as full-time income for anyone with all or even most of the knowledge and skills required.

Then along came Greg Hluska - a self-professed computer geek with a degree in business administration, experience in starting up and winding down his own small company and passions for writing, desktop publishing, web site design, Internet based services and public relations. Not only was he familiar with the computer programs used in the SLSA office, he had already developed a moderate to high level of proficiency in all of them.

As added bonuses, Greg has become completely fascinated with the history and ongoing development of the survey system in Saskatchewan and he will relate very well to the new generation of tech-savvy land surveyors who are taking on the leadership of the association as it strides confidently off into the new millennium.

President's Message

Wayne J. M. Adams
SLS, P. Surv.
President

Upcoming Events

Oct. 20 - 22	ANSLS AGM, Dartmouth, NS
Jan. 19 - 21	ANBLS AGM, Saint John, NB
Feb. 22 - 24	AOLS AGM, Ottawa, ON
Mar. 8 - 9	ABCLS AGM, Parksville, BC
Apr. 19 - 21	ALSA AGM, Banff, AB
May 3 - 5	ANLS AGM, St. John's, NL
June 7 - 9	ACLS/SLS AGM, Regina, SK
Sept. 19 - 21	AMLS AGM, Winnipeg, MB
Sept. 27 - 29	OAGQ AGM, Lévis, QC

Well summer is now behind us, and we are well into fall. It's been a busy summer with a lot of activity with the AGM, and Carl's replacement. The following is a rundown of some of the things on our plate this past summer.

2012 AGM

The National Surveyors Conference to be held in Regina in June, 2012. The 2012 AGM is a joint AGM with the Association of Canada Land Surveyors. We have struck a joint committee which will be working on the agenda and all of the logistics. I would like to thank Pat Maloney for taking on the role a chairman, and would also like to thank Travis Wolfe for handling the Golf Tournament. We will be meeting in the next few weeks to flesh out all the details.

Replacement of our Executive Director

Well as you know, Carl Shiels is retiring at the end of this year. The Executive Committee decided to run ads in the local news paper, and an online job search site for potential candidates, the ads were run for a period of two weeks. From there the candidates were reviewed, and reduced down to four potential candidates. The four were interviewed, and an offer was then issued the candidate that we all felt was the strongest, and a very lucky find. Greg Hluska accepted our offer and we are very pleased to have someone like Greg working for our Association. Greg will be working on a three month training contract, which will be renegotiated in January as the Executive Director contract. Greg's formal education consists of a Bachelors of Business Administration (Marketing Major) but is well versed in technology, accounting, and desk top publishing. Greg has a lot of energy and is a welcome addition to our Association. Please welcome Greg Hluska.

Carl Shiels has done a tremendous job for the association and will be missed. I would like to thank Carl for all your hard work, you devotion, and your energy, for a job well done. We wish you well in your future endeavours.

Presidents Travel

There has been no travel this summer. I had full intentions to travel to the Association of Manitoba Land Surveyors AGM held in Winnipeg on September 21, 22, and 23rd, 2011 but a family member had taken ill and I was not able to attend.

Upcoming Events

The next meeting is the Association of Nova Scotia Land Surveyors on October 19, 20, and 21st, 2011, in Dartmouth, Nova Scotia. Sharon and I will attend on behalf of the Association.

Metin Timocin (#317)

Blake Wahl (#318)

Congratulations to Metin Timocin and Blake Wahl who received their commissions this past summer. Metin Timocin (#317) received his commission on July 13. Blake Wahl (#318) received his on August 26.

The Case of the Lost Township Corner

By W. W. Stockton, S.L.S., P. Surv., C.L.S.

I read the article in the Summer Edition of the Corner Post by Gerald Johnson titled "There is no Such Thing as a Lost Township Corner." This brought to mind a case of my own I encountered a few years ago where I believe there is a truly lost township corner.

In 1981 we were hired by the Central Survey & Mapping Agency to establish ISS monuments near several township corners in southeastern Saskatchewan. As it turned out one of the corners, the N.E. 36-9-5-2, was right in the middle of Moose Mountain Provincial Park. When the original township surveys were completed there were no regular monuments planted inside the park boundaries and surrounding area except at the township corners. The remaining section and quarter section corners were referenced by bearing trees. Since the average life of a poplar tree is only 50 years all these reference points are now long gone. At the N.E. 36 the township plan shows an iron post, pits and mound.

The N.E. 36 is located in very dense bush so we had to establish the ISS monument some 300 metres to the west at the south end of a hay meadow. Our next step was to plant a reference post at the north end of the meadow and take a series of sun observations for bearing. In the office we established the theoretic location of the corner on paper using the 1:50,000 topographic map and the 1:20,000 photo map. We then scaled angle and distance from the ISS monument to the corner. The day we went out to locate the corner I was accompanied by crew chiefs Chris Milgaard and Joel Dvernichuk. We turned the scaled angle from our reference line, cut bush, measured in 342 metres and left a reference post near the corner. The corner was in a very isolated location and it was obvious that there had been no human activity near there since the original surveys were completed. If the monument was ever planted it should still be there. I was confident we were within 30 metres of the corner, however, we spent the next half day wandering around in the bush with our pin locater and came up empty handed. The one thing that bothered me was that the undergrowth was so thick it's possible we could have walked right by it and missed it.

Bill Schwartz was managing the project for CSMA and I told him what we had done. I also suggested that once coordinates were obtained for the township corners 6 miles to the north and south that we could go back in the following year and take another look. After giving it some thought Bill decided that due to the remote location it wasn't worth the trouble so nothing further was done. Still, over the years, it bothered me that we might have missed something.

A couple of years ago I got a call from Joel Dvernichuk who now works for ISC. ISC had received a request from the Parks Department to locate that particular corner for some development work. Joel went out to do the job and this time was armed with GPS equipment. Joel tagged several monuments in the adjacent townships and calculated the theoretic location of the corner. This should have put him within a metre or so of the corner. When he went in to look however he found not a trace of the monument. Joel spent the better part of a day searching but, like our earlier venture, he came up empty handed. Joel found our reference post and I asked him how close we had come to the corner with our earlier survey. He said that our post was 15 metres too far east and 3 metres too far south. This made me feel pretty good. If the monument had been there at the time of our earlier survey we would have found it.

The original field notes dated July 13, 1881 show the corner referenced by a bearing tree with the words "iron bar" in lighter writing. It is my belief that the surveyor established the bearing tree so he could come back at a later date and plant the monument but, for some reason, he never made it back. Field notes by a different surveyor dated October 11, 1881 show an iron bar and mound but maybe this was just a copy job. Exactly what happened remains a mystery but, in my belief, it is a truly lost township corner.

Reminder - The Fall Education Seminars are being held December 5 and 6 at the Travelodge Hotel - South Albert location - Regina, SK.

Contact the SLSA office with any questions.

Council Highlights

Carl Shiels, M. Sc., P. Eng.
Executive Director

2011-12 Meeting #3 – August 26, 2011

New Commission

- Commission #318 was issued to Blake John Wahl of Regina.

2011-12 Meeting #4 – September 19, 2011

- The council meeting was preceded by the annual workshop with standing committee chairpersons.

SIAST Update

- The latest information from the SIAST Geomatics Engineering Technology indicated that 18 of 20 seats had been filled for the Fall 2011 semester.
- Teaching staff at SIAST will continue to pursue CBEPS accreditation. This process will have been delayed somewhat because of revisions to the curriculum.
- The three SLSA scholarships are in place and will be awarded later in the fall.

LightSquared

- Developments related to the LightSquared issue were discussed. Whatever decisions are taken by the US will inevitably have an effect on GPS services in Canada.

Amendment of Part I Administrative Bylaws

- Several amendments were made to the Part I Administrative Bylaws. Most were of a house keeping nature. The bylaw revisions were to be distributed to the members and posted on the SLSA web site.

SLSA Charitable Fund

- Finalization of the SLSA Charitable Fund has been authorized with $20,000 of seed money to be allocated from the SLSA Education and Promotion Fund.
- D.L. Gurnsey was appointed chairman of the new SLSA Charitable Fund Selection Committee.

Issues from the 2011 AGM

- It was agreed that the SLSA would endorse and support the salary survey as proposed by Professional Surveyors Canada. To the extent possible, an SLSA representative (Chris Kuntz) would provide input to the design of the survey in the hope of obtaining information that would be relevant and useful to survey companies in Saskatchewan. This was in response to a suggestion at the 2011 AGM that the SLSA undertake such a review in this province.
- The SLSA administration was asked to draft a resolution for consideration at the 2012 annual general meeting regarding the compulsory purchase of survey monuments through the SLSA. This was in response to a 'straw poll' taken at the 2011 AGM that showed strong support for the renewed debate of such a provision.

New SLSIT Agreements

- The following land surveyor in training agreements were approved:
  - Brad Luey/T.R. Webb, SLS
  - Matthew Holloway/D.L. Gurnsey, SLS
  - Corban Christie/J.H. McLeod, SLS

Student Land Surveyor Agreement

- A student land surveyor agreement between Joel B. Klashinski and T.R. Webb, SLS has been registered.

Public Member on Council

- The three-year term of Terry Alm as public member on council expires on October 1, 2011. It was agreed that the SLSA would recommend that Mr. Alm's appointment be extended for an additional three year period.

Administrative Services Agreement For 2012

- The Executive Committee authorized advertisements in search of a person or persons interested in taking on the administrative duties of the SLSA office starting on January 1, 2012. The advertisements resulted in twenty responses, four of which were short-listed for interviews. Since one of those on the short list withdrew from the competition, three were eventually interviewed. Of those, one candidate was considered to be the best fit for the association's immediate and future needs. Council accepted the Executive Committee's recommendation and authorized entering into a transitional contract with Greg Hluska of Regina (see Greg's article on page 44).

Dissolution of CCLS

- With Professional Surveyors Canada (PSC) having taken on the responsibilities of the Canadian Council of Land Surveyors (CCLS), it became necessary to formally dissolve the CCLS. The SLSA Council voted to support that move.

Convention Committee

- Planning continues for the joint ACLS/SLSA convention at the Hotel Saskatchewan in Regina in June.

Education Committee

- The Education Committee will again be planning two series of seminars; one for Monday and Tuesday, December 5 and 6 in Regina, the other in conjunction with the 2012 AGM in June. Committee Chairman J. H. McLeod is hoping to recruit more recently commissioned members to the committee.

Practice Committee

- Reports of survey monument restorations not have been done according to Saskatchewan standards suggests that some survey crews based in Alberta may not be aware of the difference between the two provinces. This has prompted the Practice Committee to consider another review of oil and gas survey plans being submitted to Sask Energy and Resources. Council urged the committee to pursue this initiative. It was also a suggested as a potential topic for an education seminar.

Public Relations Committee

- Priority will again be focused on high school career fairs and another round of school visits to promote the SIAST Geomatics Engineering Technology program. Three "Surveyor in a Crate" kits have been assigned to Saskatchewan teachers. There has also been several inquiries from teachers wishing to log in to the Teachers Resources area of the SLSA web site.

Government Relations Committee

- Liaison with the provincial government in efforts to better document the location of private cemeteries was initiated by D.L. Gurnsey while he was on council. This activity was reassigned to the Government Relations Committee of which Mr. Gurnsey will also become a member.

A cheque for $3,875 was presented to Kristina Konchak of the Childrens Hospital Foundation of Saskatchewan.

Councillor's Corner

Chris Kuntz, SLS, P.Surv, ALS

Fall, my favourite season of the year, usually not too hot, not to cold and the mosquitos are all dead, perfect weather for surveying. For a Surveyor working in the oil patch this can be one the busiest times of the year, this is the time of year when a number of well site and pipe line projects that were surveyed during the spring and summer are usually constructed. The crop is all off, dry fall weather and the ground hasn't frozen yet, ideal time for construction. However there are still clients that weren't that organized or perhaps just picked up some land in the previous land sale. They want to survey a well or pipe line and build it within a month, not impossible but doesn't give you a lot of time for any unforeseen delays, such as tracking down a flow line that affects your job, which you can't locate in the field and you can't find a survey plan of.

A problem like this happens more often than one would think, you know there is a survey plan for the pipe line but you have no way of obtaining a copy. You check with ISC but the plan was never registered because it was just a flow line. You look at the title and see there is a caveat for an easement, reviewing the caveat you find that there is no plan attached, just a brief description saying there is a pipe line in that quarter section. So you begin the process of calling the local surveyors who you think most likely surveyed it because the surveyor who signed it isn't practising anymore, or has been bought-out and the company name has changed half a dozen times, or maybe the oil company went broke, or changed its name or that oil field has changed hands a number of times over the years. Now, we're very lucky that all us surveyors are such friendly people and can spare a few minutes to help a fellow Surveyor or else we would be in real trouble.

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From http://www.flickr.com

The situation I described obviously relates to old pipe line plans, however sadly this still happens with new plans. If the plan is a flow line we are not required to register it at ISC, so there's no record there. The Individual Ownership Plan that we create goes to the Land Company contracted by the oil company or their in-house land department, they use this to sign the landowner and determine damages and acreage used. There are instances where the Land Company doesn't attach the IOP to the Caveat that they put on title, we are back to the age old problem, no public record of the pipe line plan.

To tell you the truth I'm not sure what the best solution is to this problem, I'm sure there are many. The three that come to my mind are:

- registering all pipe lines at ISC
- have a licencing body for pipe lines where they all get a licence number that can be used to obtain a copy of that plan
- make it mandatory that all caveats for oil and gas have a plan attached

If we go the route of registering all pipe lines, eventually there will be a very good database of plans, however there is a cost to this in regards to time and money. You can also end-up with the same dormant plan problem that Alberta has. A licencing body that has copies of all pipelines put in the ground is a great idea but there would be a cost to maintain this, not to mention the oil and gas industry is not interested in additional regulations. The simplest solution may be requiring that all well sites and pipe lines in Saskatchewan be registered as an interest on the title and have a survey plan attached. When an interest is registered in the Land Registry and does not have a survey plan attached it is rejected, much like the packets we send in for Plan Processing when we're missing a page or there is some other kind of error. Over time there would be fewer and fewer rejections and the plan would have a public home. Anyone can access the caveat to obtain a copy of the plan.

Nowadays when safety and the environment are such huge concerns, it seems wrong to keep the status quo. Perhaps as an association we can influence the Land Registry side of ISC or Saskatchewan Energy and Resources to come up with some kind of solution to this problem before the pipe line we couldn't find on paper, is found in the field with some serious consequences.

Surveyors on Bikes (SOB's) 11th Annual Reunion: June 4th to 7th, 2011 in Cranbrook, British Columbia

By Rick Beaumont, CLS, ALS (Ret.)

This year's SOB's annual reunion was held in and around the beautiful southern B.C. community of Cranbrook. It has been eleven years since Stan Nickel, Brian Brown and a few other BCLS/CLS's got together for a few days of enjoyable motorcycle riding along the world class biking roads of interior B.C. Since then, the motley crew has grown to about 3 dozen riders from Manitoba, Saskatchewan, Alberta and British Columbia. They are professional land surveyors or have a land surveying background, work either in private industry or the government and have a desire to be on the open road, riding their motorcycle.

Stan Nickel's vision for the 2011 SOB's ride/reunion was to support the David Thompson Brigade as they made their way from Invermere to Fort Steele B.C. and then across the International Boundary. So as usual, the SOB's organized themselves, booked rooms, e-mailed itineraries and began to converge on the rally point of Cranbrook for a few days of fellowship, socializing and riding.

Two big events took priority, the festivities and BBQ at Fort Steele in support of the David Thompson Brigade and the Brigade's crossing of the International Boundary close to Roosville just north of Urica Montana. Both events were spectacular and well attended by local dignitaries, friends and well-wishers. At the international boundary crossing there was a David Thompson commemorative plaque placed on a local international boundary monument.

For more detailed information on the 2011 David Thompson Brigade and their journey see:

http://www.voyageurbrigade.org/thompson/2011_Thompson_Columbia_Brigade/2011_David_Thompson_Columbia_River.html

If you are interested in more information on the SOB's, just send Stan Nickel or myself an e-mail at stan_nickel@telus.net or rbeaumont@telus.net.

An Introduction to the Executive Director in Training

by Greg Hluska

My name is Greg Hluska and I am training to become your new Executive Director. I'm writing this article to introduce myself, give you a bit of my background, and a look at what I hope to accomplish while I am with the Saskatchewan Land Surveyors Association.

First though, I'd like to thank all of you for the opportunity to work for your organization. It is a tremendous honour and not one that I take lightly. Particularly, I would like to thank the Council for giving me this opportunity. And special thanks to Carl Shiels who has taught me a tremendous amount in a very short time – I'll never forget how much work he has done to bring me up to speed.

I love history, specifically the history of Western Canada and so the history of surveying is of great interest to me. The Dominion Land Survey is of special interest, not only because of the tenacity and skill of the surveyors involved, but also because of its historical significance. The DLS paved the way for the railway and for the waves of immigrants that have made the West such a wonderful part of Canada.

My background has been quite varied. When I was in Grade 12, I had no idea what I wanted to do with the rest of my life. At the time, I had absolutely no awareness of surveying; otherwise, I could very well be a member of the SLSA right now. When some young people have no idea what they want to do, they travel…I decided to become a Chartered Accountant. Accounting wasn't a very good fit, so after three years of a degree and sixteen months spent articling towards my CA, I decided to drop out of University.

I didn't make it back to University until my late 20s. By then, I had tried my hand at a number of different fields and decided that Marketing was a better fit. Truly it was, and I quickly finished a Marketing degree, with a primary focus on online marketing, statistics, and consumer behaviour.

Online marketing was of interest because of a subject that I fell madly in love with in elementary school. Programming computers fascinated me from the moment my friend Jeremy and I first started hacking away (in a language called BASIC) under the guidance of an amazing teacher named Mr. Rounce. Years later, my mind was further blown when I hopped online for the very first time. That was about twenty years ago, when the web was in its infancy and very few companies had websites. It felt like I was exploring a brand new world…

Interest in exploring quickly turned into an interest in building, so I started learning how to build websites. Those first initial sites turned into a full blown interest in web technologies. This interest propelled me through my marketing degree - I was always the most technical person in all of my marketing classes and usually served as the professor's technical resource.

After I finished my marketing degree, I decided that I wanted to work in small companies. So, I helped start two – a magazine which did extremely well and an import business which failed spectacularly. And, after my business failed, I joined an internet security startup called Netsecure Technologies.

Netsecure was an amazing experience and I made some very good friends during my tenure there. I joined the company before we had a commercial product available. My initial job was in online marketing and web development, but being a startup, there were significantly more jobs than people. Consequently, I ended up building a user experience department, which was responsible for every part of the product that our customers worked with. So, I built/supervised our technical support team, ran beta trials, designed the interface, talked with customers about how to make our product better, and oversaw our outsourced call centre.

After nearly three years at Netsecure, I decided it was time to do something different. I was lucky to have made some good contacts who helped me stumble into some freelance web consulting. My consulting practice focused on online marketing, content strategy, data modelling/analysis and web application development. However, at the same time, I was looking for the next great opportunity.

When the opportunity to join the Saskatchewan Land Surveyors Association came up, I jumped at it. Not only am I interested in the history and practice of surveying, but the position itself has a tremendous amount of variety. I consider myself very lucky to be the chosen candidate.

So, what would I like to accomplish while I am with the SLSA?

As I see it, my primary goal is to keep things running as smoothly as they have. Carl Shiels has built a wonderful system and my primary goal is to keep that system running. Consistency is extremely important in an organization like this, so I want to maintain that consistency and make this transition as smooth as possible.

However, my knowledge of technology provides some interesting opportunities to add to that system (and hopefully make your lives easier). For example, I have been building web applications for half my life and can add some useful features to the website. It would be helpful if the Real Property Report database could be searched on our website. It might also be helpful if our website had a facility so you could enter (and save) your education credits over the web.

Because SIAST tried to put an end to the Geomatics Engineering Technology program, one of our primary goals should be to keep the enrolment strong. The kids we most want to reach live online – they may not read traditional brochures, but Facebook and their iPhones are part of their lives. The online world is like my second home – I'd argue that I'm a citizen of the web. Since I know it so well, I can use technology to help reach out to kids where they feel most comfortable.

However, what I want to do is unimportant. I work for you and want to find out what you would like me to do. Do you have any ideas for our website? Are there any services I could offer that would make your lives easier? Are there any topics that especially interest you that you would like me to write about?

When I'm not at work, I spend a whole lot of time in front of my computers - I contribute to a few open source projects and always have a few projects of my own underway.

And, when I'm not in front of my computer, I fill my time with a number of different hobbies. Cooking is one of my favourite things to do – I love spice and enjoy cooking with the hottest peppers that I can find. Exercise is also important to me – I have decided to run a sprint triathlon in 2012 and am starting to train for that. I am not very good at swimming (I just took my second swimming lesson), so that may turn out to be a very bad decision. I'd also like to run the Queen City Half Marathon (and possibly one more half marathon) sometime in 2012.

I hope that this article was informative and that you have a better idea of who I am and what I am interested in. I look forward to getting to meet each of you, so please send me some email, drop by the office, or call me on the phone. I love hearing new ideas and I especially love any feedback you have on the work that I'm doing. Take care, thanks again for this opportunity and enjoy the rest of this issue!

Survey Law Education: Introduction to Canadian Law and Legal Systems for Land Surveyors

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

Reprinted from "Ontario Professional Surveyor" - Summer 2011 - Volume 54, No. 3

In contrast with the scientific method, the learning of law draws on different suppositions and paradigms. The subject itself is not amenable to study in the same manner as the maths and sciences. Accordingly, learners in survey law — the legal principles and processes by which property rights on the ground are defined as parcels with boundaries — deserved some preparatory work as to the nature of law itself. It was feared that a consequence of not exposing students to this subject as a forerunner to survey law would simply lead to frustration when first exposed to the boundary law topics. This was an apprehension that had formed during the design stage of the courses in survey law for IEP[1] learners who were seeking licensure as professional surveyors in Ontario. The design was based on a statement of competencies that defined the expected abilities of a qualified professional surveyor in Ontario today. Included in this statement was the implicit expectation that learners were proficient in English. However, by definition, English was not necessarily the first language of IEP learners. The structure of the course and its delivery therefore had to take into account the special accommodation needed for IEPs in order to make the experience useful.

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flickr.com/photos/ilovebutter

An initial delivery of the introductory course took place between January and April, 2011. The majority of students in the "beta"[2] version of the course were IEPs. The goal and expectation for students who had completed this course would be an ability to embark on the learning of boundary law principles. In particular, competencies would include:

- knowledge of Canadian government and the creation of legislation
- a working familiarity with the constitutional division of powers and how this has progressed to this day over history
- awareness of the court structure and the hierarchy of different divisions, as well as concepts of jurisdiction, appeal, and remedies
- familiarity with sources of law, especially common law, and the process of common law evolution and adaptation
- reading legislation, case law and understanding ratio; hierarchy of decisions, and the operation of precedent role of tribunals and other dispute resolution methods
- the concept of "proof" and the use of evidence to establish facts
- gain familiarity with the legal subjects and an ability to read and write in an appropriate and topical fashion

Although a number of introductory books to Canadian law are available, it seemed that over half of any one such work was irrelevant. The preferred resource became a compilation of readings totaling about 20 or 25 separate items, together with annotations to guide the student. The resources assembled in this fashion served best to highlight the topics of special interest to learners of survey law.

The use of a variety of resources was also supported by the fact that topical and relevant materials were available through the Internet and already in the public domain. A digital licence would not be necessary if the annotations were authored as part of an integrated set of readings. Reported cases from the CanLII service[3] added a variety of initial readings which became necessary components of the course material.

Access to these resources was made available to participants several weeks before the first meeting with the learners. During this initial period use of the material and readings was facilitated through a LMS[4] that was hosted through a portal associated with the Association of Ontario Land Surveyors' own website. As the course unfolded, the LMS also made possible the communication between the instructor and the learners, the holding of on-line "office hours" and the completion of assignments. The LMS was also used to facilitate a collaborative assignment in which learners were asked to compose and write an explanatory letter to a client by engaging a "wild" tool for the task. All learners were employed in full time jobs but most appeared in person during the classroom sessions. Some participants lived or were on projects that took them far away from the Toronto area. By using distance learning software and an Internet connection, learners were able to be virtually present in class and participate in discussions from home or a hotel room. That same Internet connection allowed for access to the resources available through the LMS.

Autumn Berries by Aunto - Creative Commons
flickr.com/photos/aunto

The total course was first divided into three teaching sessions of about three hours each, but was augmented with a fourth session about half-way through the planned program. This still allowed for completion in about three months, with sessions about three weeks apart. The class sessions were scheduled during evenings so as to avoid a conflict with other commitments that were already in place for learners.

Readings from the annotated material amounted to about 50 pages for each session, plus other resources available on line. Each class addressed the assigned readings and reviewed the topics, but all with an emphasis on why land surveyors need to know the material.

There were some interesting insights and realizations that were reached when it came time to consider an appropriate method of evaluation of the students' success. At first it was presumed that the attainment of competency in this subject could be measured best by the learner "showing" what he or she can do. This was thought to be a logical result from having done the readings and completed the assignments. Likewise, the evaluation of a learner's mastery of the competencies was thought to be best assessed by a combination of traditional tools such as a short test for each one of the classes, a writing assignment, and participation. The use of a "final exam" could have been a consideration as well but, perhaps only as exposure to working with a final examination tool for evaluation in the survey law courses to follow. As the course progressed it was realized that a very real benefit of the course to IEP learners was its potential function as a tool for learners to self-assess their competency in order to be better informed in making the choice to seek licensure as a professional surveyor in Ontario. During the beta teaching version of this course in its first cycle, evaluation shifted away from a "pass/fail" consideration to more emphasis being placed on learners' own insights to their preparedness to proceed on with further courses. This included an opportunity to meet and have an interview with each student after the course was finished and an attempt to reach a consensus with each learner on his or her readiness to proceed.

The further benefits from the design and delivery of the course on a LMS platform and designed for distance learning delivery are many. The lessons learned by the team of persons involved in the overall building of this introductory course will be adopted in the design and delivery of courses to follow. Students need not take time away from work to take the course. Components of the course can be incorporated as video vignettes on the LMS for future students taking this program. The intensity of instructor involvement can be accordingly reduced over time. The resources created for any particular course will have potential value and demand for continuing professional development.

The ability to structure a series of courses in survey law is not of much benefit if their continued delivery is not sustainable. Using a LMS, taking advantage of Internet-based video conferencing and taking a team approach to the structure ensures ease of maintenance and delivery into the future. The platform will make topical relevance, currency and delivery a sustainable and fresh experience for years to come.

About the Author:

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, coauthored books and taught seminars and courses for lawyers and land surveyors. He can be reached by email at: Izaak@izaak.ca.

More Information:

The purpose of education in legal subjects for land surveyors is of course not to educate or train lawyers. Instead, a familiarity with the legal process, as it is learned by law students and applied by courts and tribunals in Ontario, is an important precursor to the substantive topics of boundary law and the retracement of boundaries on the ground.

Endnotes:

1 - IEP learners are Internationally Educated Professionals. Many present candidates for articles and licensing in professional land surveying have been welcomed to Canada as permanent residents as part of an immigration screening process that recognizes foreign education and credentials. It is up to the provincial licensing bodies to evaluate and provide education to such candidates for admission to the professions.

2 - "beta" refers to tentative or provisional. There was much to be learned from the initial delivery experience that would inform the design and delivery of subsequent course offerings.

3 - Canadian Legal Information Institute at www.canlii.org.

4 - Learning Management System. In this case, the LMS used was known as "Moodle" at www.moodle.org.

The Face of Surveying

By Marc Cheves, LS

Reprinted from "The Arizona Surveyor" - Issue 1 - July 2011

"It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, we were all going direct to heaven, we were all going direct the other way - in short, the period was so far like the present period, that some of its noisiest authorities insisted on its being received, for good or for evil, in the superlative degree of comparison only."

With those words Charles Dickens, the English novelist, opened his 1859 novel, A Tale of Two Cities. The novel depicts the apparently polar opposites of the French peasantry and the French aristocracy in the years leading up to the French revolution. He also illustrated many unflattering parallels with the society in London at the time. These were times that, seen from our perspective, suffered unnecessarily from problems that could have been bridged or at least ameliorated with a small amount of empathy.

I think those words fit the situation in which we find the practice of surveying today. Who are we? Where are we? How are we? Who are they? Where are they? How are they? The struggles to answer these questions have troubled our profession for quite some time. The struggle doesn't come so much from its members understanding themselves. It comes more from dealing with and answering the misconceptions of those not members of the profession.

Perhaps you remember the fable of The Six Blind Men and the Elephant. The elephant, had he been told of the 6 opinions, would have found it hard to believe any of the men were speaking seriously. He would dismiss them as irrelevant. So it has been with surveying and surveyors. For literally thousands of years the profession called surveying has included an amalgamation of any and all techniques and technologies available to accomplish its charges.

Surveying has always been unique. Observers from many different perspectives have come up with their individual ideas about and descriptions of Surveying. To most, the apparent magic of surveying has garnered strong reactions. One is of amazement that anyone can with a little hocus pocus point with certainty to a place on the ground and say "this is the place." More recently, a feeling of watching a charlatan who takes information anyone could acquire from public or on-line records and regurgitates it for a fee. A third is one of seeing a menial technician who has been trained simply to use measuring tools. It is enough to make any surveyor sympathize with the elephant of the fable.

The first successful movement toward legal regulation of surveying & engineering practice in the U.S. originated with the small group who founded the Louisiana Engineering Society in New Orleans in 1898. They were developing legislation for the regulation of the practice of Land Surveying and Civil Engineering in the 19th century. They succeeded in 1908 passing Louisiana's first registration act. It was the beginning of an era. Wyoming passed a registration act the previous year in 1907. It may have been the best thing to happen for engineers but set in motion events leading to difficulties for those practicing surveying.

Florida joined the field in 1917 as the third state; by 1920, seven states had laws requiring registration of engineers and representatives, under the leadership of Louisiana's Colonel Marcel Garsaud, formed the National Council of State Boards of Engineering Examiners (NCSBEE). They drafted a "Model Registration Law," and shortly thereafter most of the states had passed laws based on this Model Law. Montana finally made it complete after 40 years 1947.

Louisiana, who got the ball rolling licensing Surveyors and Civil Engineers, was different from most in that it wasn't until 1950 that Louisiana's law was revised to recognize all the "branches" of engineering. During those four decades, two world wars and a depression had conspired with the model law to increase the glamour of engineering while the public understanding of surveying seemed to be dependent upon those Six Blind Men. By the 1960s practically anyone who received a degree in Civil Engineering was simply handed a license to survey; with predictable results.

Since June 1941 the American Congress on Surveying and Mapping (ACSM renamed from National Congress on Surveying and Mapping) sought to better coordinate the nation's surveying and mapping activities. Its purpose is to "advance the sciences of surveying, mapping, geographic information and related fields, in furtherance of the public welfare and in the interests of those who use surveys, maps, spatial information and those who make them, and to establish a central source of reference for its member organizations and the public." Also, to coordinate Conferences, Governmental Affairs, Society Outreach and Public Awareness for the benefit of the members and to speak on the national and international level as the collective voice of the Surveying and Mapping professions; to contribute to education both in the technological sciences and the professional philosophies.

The ACSM has suffered from time to time the strains large groups see when parochial interests overshadow the grand purposes of the organization. For a while government employees and academics ruled the roost with predictably disastrous business results. In 2004, the structure of ACSM was changed from one in which individuals were members of ACSM, and participated within their chosen interest group to one in which individuals are members of one of the four independently incorporated Member Organizations (Figure 1). The four MOs were: American Association for Geodetic Surveying (AAGS), Cartography and Geographic Information Science (CaGIS), Geographic and Land Information Society (GLIS) and National Society of Professional Surveyors (NSPS).

In the last decade or so many users of GIS technologies have grown resentful of the legal recognition afforded surveyors licensed by the states and have sought professional status separate from surveying for those who use that computer technology. One effect of that

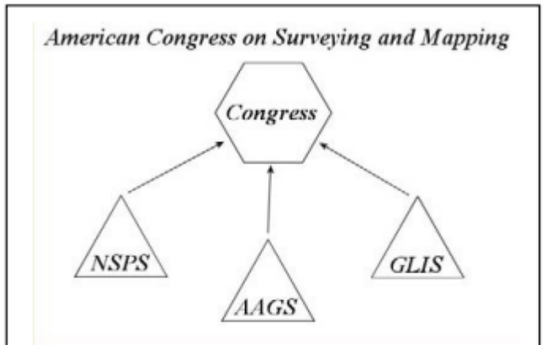

Figure 1 Member Organizations form the "Congress" of the ACSM

resentment resulted in CaGIS withdrawing membership in the ACSM. Recently, the imbalanced governance of the ACSM (the congress) by equally represented MOs coupled with a pair of unprofitable conventions has resulted in near fiscal disaster for ACSM. The NSPS with over 95% of the ACSM membership has picked up much of the financial burden but its own membership has begun to ask "where's the bang for our buck?" and set in motion the process of withdrawing from ACSM also.

Representatives of NSPS, AAGS and GLIS have met in an effort to reorganize ACSM in a manner acceptable to all, but have not been successful in finding middle ground. The dispute seems to have boiled down to this. The AAGS and GLIS fearing NSPS leaving with a nearly total majority of the membership resent feeling like they are being dictated terms. The NSPS resents hearing less than 5% of the membership major changes in governance and operational structure. Neither group sees the other as playing fair. The 800-pound Gorilla in the room that everyone has been pretending to ignore is that

NSPS has the resources and membership to survive going its own way, while ACSM without NSPS won't likely be viable. Whether the future holds an ACSM that includes NSPS or an independent NSPS, (perhaps renamed to sound less exclusive) the future success of any group that has the best interests of the fields of interest that are covered by the umbrella of surveying must serve the interests of its members while maintaining the ability to stretch the horizons of their interests. Any organization or re-organization that fails to do so will simply repeat history.

The unique difficulty faced is to recognize and to communicate the necessary breadth of that field we call Surveying. It is mathematical, astronomical, legal, optical, historical, electronic, geological, computerized, chemical, manual, biological and above all professional (in the real not necessary some legal sense). There is perhaps no other field that is such a university within itself. That is particularly why those with a more specialized mindset have failed to adequately serve and nurture it.

Presently, the organization of the NSPS, in part because of its affiliation with state societies includes primarily members who are licensed to practice surveying by state law. Those not so licensed look skeptically at claims that their interests might be fairly served in such an organization. It is obvious that a Paul Bunyanesque effort is called for to change the popular mindset that sees deep divisions between the different specialties that reside under the surveying umbrella. In the mean time it is incumbent upon whatever organization emerges that the current fears of the majority and attacks by those who would see the specialties cleft from the whole are addressed while simultaneously making room for the influence of smaller groups of specialists and has the flexibility to accommodate future change as it is warranted.

The successful solution will not be a simple one. The simple one will be doomed to isolation. We must allow for subtlety and a touch of complexity if we wish to have a viable result. All interests must be accommodated; but done so in a way that doesn't unreasonably empower one or a few to dominate the whole, except to defend a recognized right principle. I see the in broad strokes how a successful organization will look.

At present the members of the NSPS represent over 95% of the total and as such will form the immediate core of any

result. Additionally the existing successful local penetration of the NSPS affiliate structure lends organizational strength and stability. Admittedly, this group is overwhelmingly composed of state licensed practitioners that could be intimidating for those not so licensed. A welcoming, inviting attitude must prevail to specialists who don't fall into the licensed group, including a strong persuasion aimed at the states to find ways to be inclusive locally with membership as well as broadening licensing definitions. If that can be done the future will be hopeful.

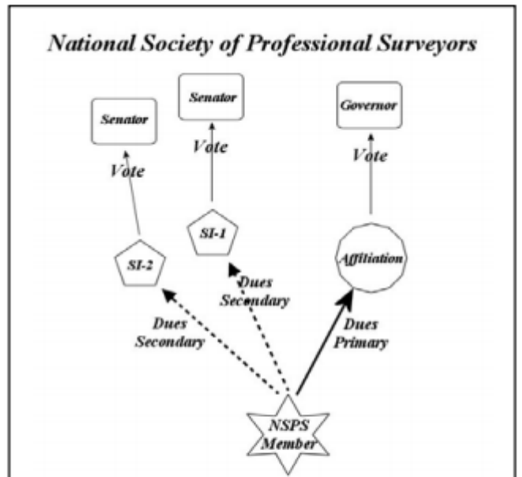

Figure 2 Members pay dues through their geographical affiliate and indicate special interest by dues paid to S.I. groups.

The current NSPS organization is much like early bicameral governmental experiments. There is a lower house (Board of Governors) that is usually most responsible for initiating and forming legislation that must be passed on to an upper house (Board of Directors) for conclusive action. As long as NSPS identifies itself principally with the licensed practitioners this organization is well designed. In order to accommodate the other specialists a successful organization will have to add another body.

I envision a few "special interest areas of practice" that would have, as members, individuals whose practice includes the specialties covered by such groups. Each special

interest group will be allowed to choose a delegate to a senate-like body (Board of Specialties) representing the specialties to balance the BoG that represents the individual members geographically (Figure 2).

I see two methods passing on legislation to the BoD. Method 1 (a motion) would be for either the BoG or the BoS to pass an item without concurrence of the other. It would be treated as a motion in the BoD (much like actions passed by the BoG is now handled) to be decided by the BoD. Method 2 (a bill) would allow for times when the BoG and the BoS concur by passing identical legislation on to the BoD who then must veto the action or it becomes effective. The situation will resemble somewhat the relationship between the US Congress and the US Executive but with the BoD reserving a bit more leeway to act than afforded the US President by the Constitution.

With a balance such as described the interests of all may be fairly represented. I hope pressure would be brought to bear on the state affiliates to recognize the broader definition of surveying and membership in the national ought to become a requirement to join a state organization for it to claim affiliation. The organization that can accomplish those things will have a good chance at a viable future and a best chance to represent surveying going forward.

Figure 3 Either body may pass a motion on to the Board of Directors for consideration. Both houses may concur on a bill that the BoD may veto.

About the Author

Marc Cheves, LS is a member since the mid 1980s of ACSM, AAGS, GLIS, NSPS, LSPS currently and of GaGIS until this year; and is on the NSPS Board of Governors, serving as Secretary. The opinions expressed are entirely personal and are not represented to be those of any other than myself.

Marc Cheves, LS

The American Surveyors Editor

Blog: http://www.gpsman.com/blog

Northern Lights: Opportunities in Forensic Mapping

by Bob Galvin, RS

Reprinted from "Professional Surveyor Magazine" - September 2011 - Volume 39 - Issue 9

Traditionally, field surveying has been the domain of the total station. But savvy surveyors, whether they're independent consultants or a large surveying firm, are finding a new application for this trusted tool: law enforcement—more specifically, forensic mapping at crash scenes. Although crash-scene investigators aren't surveying with this tool, they're mapping points of physical evidence.

Because the total station is the mainstay of nearly every forensic investigation in Canada, it is increasingly essential for investigators without a lot of forensic-mapping experience to learn how to use a total station, along with the data collector, evidence-collection software, and diagramming program that comprise the standard crash-scene documentation process. Helping them learn the methods of forensic mapping is the Canadian Traffic Safety Education Centre (CTEC) in Edmonton, Alberta, Canada.

Surveyors are occasionally tapped to help with instruction on the use of total stations. Canadian police agencies, much like the U.S. law-enforcement agencies, have hired surveyors for unique situations, some of which include assisting with forensic mapping.

Teaching Total-station Use

The CTEC had auspicious beginnings. At one point in his career, Dwain Friesen, the center's chief operating officer, was handling collision investigation and training for the Royal Canadian Mounted Police (RCMP). He left the RCMP in 1995 to join the Canadian firm of Renneberg-Walker Engineering Associates Ltd., which also performs crash reconstruction work."We put on a collision investigation course for the public [including insurance professionals and trucking firms] and it went well," Friesen recalls. "Then we formed the CTEC division."

Today, the CTEC offers forensic, advanced driving, and motorcycle training courses. A variety of collision investigation courses and specialty courses—such as forensic mapping and computer-aided design—are also included.

Friesen is a big advocate of using total stations, having used a tape measure at crash scenes for years that required much more time and presented great danger for officers.

"It was a huge hazard," Friesen said. "We have to balance the interruption of traffic flow with the collection of evidence. So, once the total station was available, it cut down on the amount of time at the scene substantially, and at the same time increased officer safety."

After teaching total-station setup in a classroom at the Canadian Traffic Safety Education Centre, instructor Paul Hills (in red) moves students to the field where they practice setup and collect data points on their own.

Another reason the total station is such a pivotal tool for forensic mapping is its ability to collect evidence. Friesen cited an instance years ago in which CTEC learned of a law enforcement agency that was taking some course work through the traffic safety education center and considering purchasing a total station. To help the agency justify the cost of a robotic total station, the center set up a mock scene with three groups of people collecting data: one collecting evidence with tape measures, a second using the distance-measuring capabilities of a laser speed device, and a third group using total stations.

The mock test results were stunning in their contrast. The group using tape measures was picking up about 20 points an hour,

which, Friesen notes, is what the center found to be consistent with its collision investigation courses for the tape measure portion.

"With the total station, we were picking up 300 points in the same hour," Friesen said. "If you only needed to get 20 points, then of course the amount of traffic disruption and risk exposure [using the total station] is greatly reduced. Or, if you're going to stay the hour, you get so much more data and it's so much more accurate."

Add the data collector and software to record the collected data points, and "you've got your scene just about completely mapped before you leave," Friesen continued. "So, this adds another dimension where if it's a very serious event you could have a scaled diagram of the collision scene within 15 minutes of getting to a computer. Which is fantastic."

Given Friesen's testimonial, it's no wonder that he requires students to spend a one-week course just on how to use a total station. Friesen makes sure students follow proper total-station setup procedure. This is all typically followed by another one-week course on how to use the evidence-collection software. However, Friesen said, "We try to combine these so there's no disconnect between the two components. Typically, we'll be working with one law enforcement agency at a time so that the instrument we're using is the same for every student."

The Canadian Traffic Safety Education Centre trains students on Sokkia and Nikon total stations. Students' agencies will have purchased one of these brands, and then depending upon the class size, the center can rent or borrow the total stations from the vendors. Friesen prefers six students to a class. They must practice with the total stations until they learn how to use them. "When they get bored from this, we know we've got acceptance," Friesen said.

Robotic Total Station Gets Spotlight

Recently, the center experienced a situation that most of us might view as the student instructing the teacher. It involves the Moose Jaw Police Service in Saskatchewan, Canada, which approached CTEC about training some of its officers on a Sokkia SRX Robotic Total Station it just purchased from Brandt Tractor Ltd-Positioning Technology Division. It uses the MapScenes Evidence Recorder and Forensic CAD software. Friesen had not previously used robotic total stations in his classes, plus he was a bit skeptical. "I wasn't the biggest fan of a robotic because there [usually] was someone around who could hold a prism rod for you," he said. Yet, Friesen admits this older method presented difficulties because the prism often came out of level, prompting trips back and forth between it and the total station to make sure measuring would be on target. Once management saw how many hours people wasted on the scene double-checking the target, they better understood why a robotic instrument was a better choice.

Robotic total stations, first introduced in the early 1990s, help reduce overhead and save time because they do not require two operators. They allow the operator to control the instrument from a distance via remote control. This removes the need for an assistant staff member, as the operator holds the reflector and controls the total station from an observed point. The Sokkia SRX series features fully tracking and auto-pointing robotic total stations, with on-demand target reacquisition and reflectorless EDM.

Soon after the Moose Jaw Police Service purchased the total station, it contacted MapScenes for a trainer. Then MapScenes contacted Friesen. Sokkia "came out to introduce students to the total station and evidence recorder, and my part was to take the data collected and use it with the diagramming software program," Friesen said.

"It was a great experience for the students," Friesen affirmed. "Working the first two days on the Sokkia really won me as a fan. There was considerable ease of use, and driving it with the evidence recorder flattened out the learning curve immensely."

In addition to substantial time savings, the CTEC's use of total station packages (total station, data collector, evidence recording software, drawing software) has provided some major benefits. First, it has removed all human error from measuring crash scenes and collecting evidence.

Therefore, accuracy and security of data is ensured. Second, Friesen notes that the time savings with using total-station packages compared with tape measuring scenes simply allows investigators to respond to more incidents.

"It's all new to most of these people [CTEC's students]," said Friesen regarding forensic mapping of crash scenes. "It's a bit of a paradigm shift for them. They're not leaving a scene with a bunch of handwritten notes," he added. "So they have to make that jump to believe in the technology."

Most law enforcement officers will quickly admit that it's much easier for surveyors to learn the basics of forensic mapping, because surveyors already know how to operate a total station and how to map and collect data points, then build a diagram from them. And even if surveyors don't plan to pursue a new or parallel career in forensic mapping, they can be a valuable resource to police agencies that might need basic instruction on mapping and diagramming evidence points.

Furthermore, once trained by firms such as the Canadian Traffic Safety Education Centre, these police agencies could share their knowledge and training with surveyors aspiring to enter forensic mapping, whose consulting services might prove helpful as well.

About the Author

Bob Galvin is a Portland, Oregon-based freelance writer who writes on technology trends. His writing covers developments in total station equipment and diagramming and data collection software.

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Lightsquared Cell Network Knocks Out First Responders' GPS in Tests

By Bob Brewin

Reprinted from Gem State Surveyor - Volume XXXV, Issue 2 - Summer 2011

Initial tests of a controversial cellular broadband network planned by LightSquared showed the company's system knocked out Global Positioning System receivers used by first responders.

LightSquared of Reston, Va., tested its system last month at Holloman Air Force Base, N.M., with the participation of state police vehicles and county ambulances, both of which experienced outages from the company's cell tower, according to Bill Range, director of the State of New Mexico E911 program.\par

LightSquared cell system operates in the 1525-1559 MHz and 1626.5-1660.5 MHz bands, and the Federal Communications Commission directed the tests to determine if the network interfered with GPS systems that operate in the nearby 1559-1610 MHz bands.

Range, in a May 11 letter to Col. Bernard Gruber, director of the Air Force Global Positioning Directorate, said the results of the April tests, "substantiate concerns that the LightSquared network will cause interference to GPS signals and jeopardize 911 and public safety nationwide."

The New Mexico State Police reported that when parked directly under the tower, their GPS equipment experienced "system failure," and while driving around near the test site in Alamogordo, N.M., they "continued to be incorrect during the test period."

GPS receivers in ambulances from Otero County, N.M., which includes Alamogordo, could not establish any connection with the GPS satellites within 60 yards of the tower in the April tests.

LightSquared, the GPS industry and numerous federal agencies are conducting tests through June to determine the extent of interference from the company's system to GPS receivers. The Federal Aviation Administration said another test of the LightSquared system started this Monday in Las Vegas and will continue through May 27. FAA warned of potential GPS outages within 300 miles of the LightSquared tower in Boulder City, Nev., 25 miles southeast of Las Vegas.

The Defense and Transportation Department have serious concerns about the impact LightSquared's national network of 40,000 cell towers will have on GPS receivers. LightSquared maintains the interference is not caused by its system, but by sensitive GPS receivers that "see" into the frequency band the network uses.

Updates on Lightsquared:

As this article was written a few months ago, it is prudent to give a little more information on what has transpired since it was published.

- On September 15, at a US House Armed Services committee meeting, General William Shelton testified that the Lightsquared network interfered with every single Department of Defense (DoD) GPS receiver that the DoD had tested.

- On September 25, Lightsquared CEO released an open letter claiming his company had solved 99.5% of all interference issues. The open letter went on to claim that this solution could be implemented quickly, easily and at little cost.

- However, at a Congressional Briefing on September 26, 2011, FCC Chief Engineer Julius Knapp stated that interference continued to be a "hard problem".

- On October 12, the US House of Representatives Small Business Committee will hold a hearing to determine the impact that Lightsquared could have on small business users of GPS. (see page 69)

- With political pressure building, the FCC has stated repeatedly that they will not let Lightsquared operate unless they can prove that all the interference problems have been solved.

Main Sources:

Wall Street Journal - For Lightsquared, a High Bar
Wall Street Journal - Lightsquared defends GPS Jamming Fix...
Wall Street Journal - FCC Seeks More Lightsquared Testing
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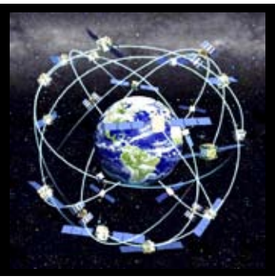
Computerworld - Lightsquared Faces Congress, Amends LTE Plan
Armed Services Committee



Some Recent Advances in GPS Precise Point Positioning

By Mohamed Elsobeiey and Ahmed El-Rabbany, Department of Civil Engineering (Geomatics Option), Ryerson University

Reprinted from "Ontario Professional Surveyor" - Summer 2011 - Volume 54, No. 3

Abstract

Global Positioning System (GPS) surveying has traditionally been carried out in the relative (differential) positioning mode. This is mainly due to the higher positioning accuracy obtained with relative positioning in comparison with point, or standalone, GPS positioning. A major disadvantage of GPS relative positioning, however, is its dependency on the measurements or corrections from a reference receiver or network; i.e. two or more GPS receivers are required to carry out the job. New developments in GPS positioning show that a user with a standalone GPS receiver can obtain positioning accuracy comparable to that of relative positioning. Such technique is known as precise point positioning (PPP).

A major drawback of PPP, however, is that about 30 minutes or more is currently required to achieve centimetre to decimetre-level accuracy. This relatively long convergence time results from remaining un-modelled GPS residual errors. This article discusses some recent developments in PPP, which are carried out by the Global Navigation Satellite System (GNSS) research group at Ryerson University.

Introduction

Differential carrier-phased-based GPS techniques have traditionally been used in high-accuracy surveying applications. These techniques inherit their high accuracy from the fact that GPS receivers in close proximity share, to a high degree of similarity, the same errors and biases. The shorter the receiver separation is, the more similar the errors and biases. As such, for those receivers, a major part of the GPS error budget can simply be removed by combining their GPS observables. Unfortunately, as the baseline length increases, the errors at the reference and the rover receivers become less correlated; i.e., they would not cancel out sufficiently through differencing. This leads to unsuccessful fixing for the ambiguity parameters, which in turn deteriorates the positioning accuracy. In addition, a major disadvantage of differential techniques is their dependency on the measurements or corrections from a reference receiver or network (e.g., virtual reference station). This, however, may not be a practical solution in many cases, as a result of, for example, high cost or lack of infrastructure.

With the termination of selective availability (SA) in May 2000 and the production of precise ephemeris and clock data through, e.g., International GNSS Service (IGS), it became evident that centimetre to decimetre positioning accuracy is possible with standalone geodetic-grade GPS receivers. Such technique is commonly known as precise point positioning (PPP). Unlike classical GPS point positioning, PPP attempts to account for all the GPS errors and biases (see El-Rabbany, 2006 for details). In addition to being cost effective, the PPP method provides an accuracy level comparable to that of differential carrier-phase-based positioning (i.e., centimetre- to decimetre-level accuracy).

Typically, in PPP ionosphere-free linear combination of undifferenced code and carrier-phase observations is used to remove the first-order ionospheric effect. This linear combination, however, leaves a residual ionospheric delay component of up to a few centimetres representing higher-order ionospheric terms (Hogue and Jakowski, 2007, 2008). Satellite orbit and satellite clock errors can be accounted for using the IGS precise orbit and clock products. Receiver clock error can be estimated as one of the unknown parameters. Effect of ocean loading, Earth tide, carrier-phase windup, sagnac, relativity, and satellite and receiver antenna phase-center variations can sufficiently be modeled or calibrated. Tropospheric delay can be accounted for using empirical models (e.g. Saastamoinen or Hopfield models) or by using tropospheric corrections derived from regional GPS networks such as the National Oceanic and Atmospheric Administration (NOAA) tropospheric corrections (NOAATrop). The NOAATrop model incorporates GPS observations into numerical weather prediction (NWP) models (Gutman et al., 2003).

At present, the IGS precise orbit and clock products do not take the second-order ionospheric delay into consideration. This leaves a residual error component, which is expected to slow down the convergence time and deteriorate the PPP solution. To overcome this problem, higher order ionospheric delay corrections must be considered when estimating the precise orbit and clock corrections and when forming the PPP mathematical model. In this article we restrict our discussion to the second-order ionospheric delay, which is much higher than all remaining higher order terms (Lutz et al., 2010). This article estimates the second-order ionospheric delay and studies its impact on the accuracy of the estimated GPS satellite orbit, satellite clock corrections, and global ionospheric maps. In addition, the effect of accounting for the second-order ionospheric delay on the PPP solution is examined. It is shown that neglecting the second-order ionospheric delay introduces an error of up to 2 cm in the GPS satellite orbit and clock corrections, based on recent (May 5, 2010) ionospheric and geomagnetic activities. In addition, accounting for the second-order ionospheric delay improves the PPP convergence time by about 15% and the accuracy of the estimated parameters by up to 3 mm.

To further improve the PPP solution convergence, we developed a modified PPP model which uses between-satellite single difference code and carrier-phase measurements. The advantage of this model is that, with the exception of multi-path and system noise, all receiver-originating errors and biases are cancelled out. This includes receiver clock error, initial phase bias, and others. Our results indicate that the PPP solution convergence is improved by up to 50% in comparison with the undifferenced PPP model. This is very encouraging as it reduces the station occupation time by up to 50% and is considered a major step towards real-time PPP.

Second-order ionospheric delay

The second-order ionospheric delay results from the interaction of the ionosphere and the magnetic field of the Earth (Hogue and Jakowski, 2008). It depends on the slant total electron content (STEC), magnetic field parameters at the ionospheric pierce point, and the angle between the magnetic field and the direction of signal propagation (Figure 1). STEC values may be obtained from agencies such as the IGS and NOAA. IGS produces global ionospheric maps (GIMs) in the ionospheric exchange (IONEX) format. GIMs are produced with a 2-hour temporal resolution and a 2.5° (latitude) by 5° (longitude) spatial resolution on a daily basis as rapid global maps. NOAA, on the other hand, produces a regional ionospheric model known as the United States total electron content (US-TEC). US-TEC covers regions across the continental US (CONUS), extending from latitude 10° to 60° North and from longitude 50° to 150° West. The USTEC maps have a spatial resolution of 1°x1° and a temporal resolution of 15 minutes (Rowell, 2005). The maps include both STEC and vertical total electron content (VTEC) for different locations and directions. Alternatively, STEC can be estimated by forming the geometry-free linear combination of GPS pseudorange observables and applying the receiver differential code biases.

The geomagnetic field of the Earth can be approximated by a magnetic dipole placed at the Earth's centre and tilted 11.5° with respect to the axis of rotation. The magnetic field inclination is downwards throughout most of the northern hemisphere and upwards throughout most of the southern hemisphere. A line that passes through the centre of the Earth along the dipole axis intersects the surface of the Earth at two points, referred to as the geomagnetic poles.

A more realistic model for the Earth's geomagnetic field, which is used in this article, is the international geomagnetic reference field (IGRF). The IGRF model is a standard spherical harmonic representation of the Earth's main field. The model is updated every 5 years. The International Association of Geomagnetism and Astronomy (IAGA) has released the 11th generation of the IGRF in December 2009. The coefficients of the IGRF11 model are based on data collected from different sources, including geomagnetic measurements from observatories, ships, aircrafts, and satellites (NOAA, 2011). The relative difference between the dipole and IGRF models ranges from -20% in the east of Asia up to +60% in the so-called south Atlantic anomaly (Hernández-Pajares et al., 2007).

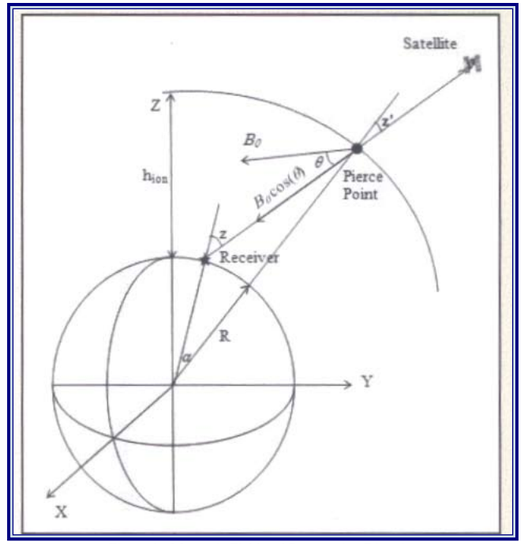


Figure 1 - Magnetic Field and Propagation Direction

Effect of second-order ionospheric delay on satellite orbit and clock corrections

To investigate the effect of second-order ionospheric delay on the GPS satellite orbit and clock corrections, Bernese GPS software was used. A well-distributed global cluster of 284 IGS reference stations was formed based on a priori information about the behaviour of each receiver's clock and the total number of carrier-phase ambiguities in the corresponding observation files. GPS measurements collected at the 284 IGS stations were downloaded from the IGS website for May 05, 2010 (DOY125). The raw data were first corrected for the effect of second-order ionospheric delay. The corrected data along with the broadcast ephemeris were used as input to the Bernese GPS software to estimate the satellite orbit and clock corrections. Our study shows that the effect of second-order ionospheric delay on GPS satellite orbit ranges from 1.5 to 24.7 mm in radial, 2.7 to 18.6 mm in the along-track, and 3.2 to 15.9 mm in cross-track directions, respectively (Figure 2). Satellite clock corrections, on the other hand, show differences within 0.067 ns (2 cm) compared with the final IGS satellite clock corrections. Figure 3 shows that impact of second-order ionospheric delay on GPS satellite clock corrections root-mean-square (RMS). Interested readers should refer to Elsobeiey and ElRabbany (2011) for more details.

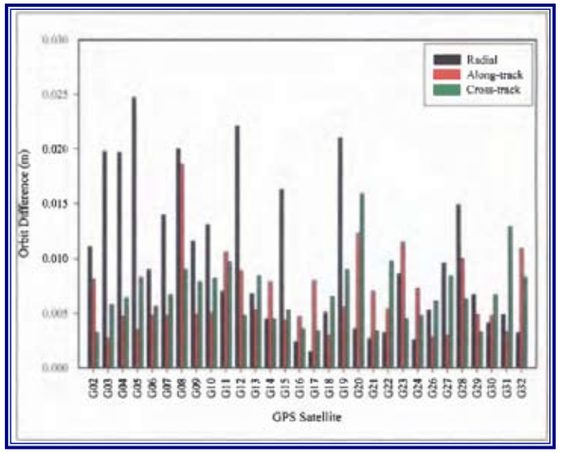


Figure 2 - Impact of Second-Order Ionospheric Delay on GPS Satellite Orbit

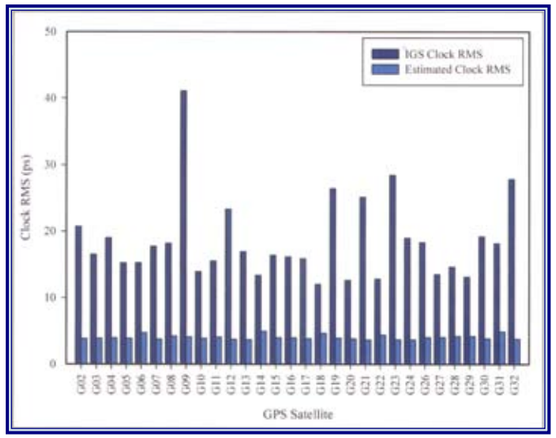


Figure 3 - Impact of Second-Order Ionospheric Delay on GPS Satellite Clock Corrections RMS

Results for undifferenced GPS PPP

The GPSPace PPP processing software, which was developed by Natural Resources Canada (NRCan), was modified to accept the second-order ionospheric correction, the NOAA tropospheric correction model, and others. To examine the effect of rigorous error modelling on the undifferenced PPP solution, GPS data from 12 randomly selected IGS stations were processed using the modified GPSPace. The data used were the ionosphere-free (with both first- and second-order corrections included) linear combination of code and carrier-phase measurements. The estimated precise satellite orbit and clock corrections, from the previous step, were used in the data processing. The results show that improvements are attained in all three components of the station coordinates. Figures 4 through 6 show the 3D solution obtained with and without the second-order ionospheric corrections included, for station ALGO (Algonquin Park), as an example. As can be seen, the amplitude variation of the estimated coordinates during the first 15 minutes is reduced when considering the second-order ionospheric delay. In addition, the convergence time for the estimated parameters is reduced by about 15% on average. The final PPP solution shows an improvement in the order of 3 mm in station coordinates. It should be pointed out that the solution improvement is much higher at low latitudes whereas the second-order ionospheric effect is much higher.

Results for between-satellite single-difference model (BSSD)

GPSPace was further modified to perform between-satellite single difference observables. A major advantage of BSSD over the undifferenced mode is that the GPS receiver clock error, receiver hardware delay and non-zero initial phase of the receiver's oscillator are cancelled out. This, however, comes at the expense of introducing mathematical correlations to the BSSD observables. Such mathematical correlation, however, can be easily obtained by applying the law of covariance propagation. To examine our BSSD model, we processed the same data sets at the 12 IGS stations again. The results show that the solution convergence has improved at all stations by 20% to 50%. This improvement is significant and is considered a major step towards real-time PPP.

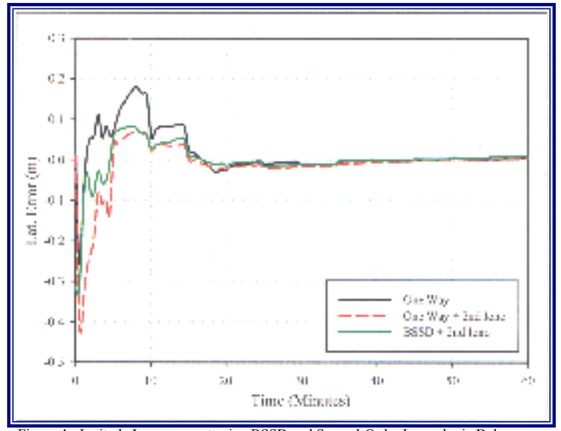


Figure 4 - Latitude Improvement using BSSD and Second-Order Ionospheric Delay vs. Undifferenced Model

Figures 4 through 6 compare the results obtained for ALGO with both the undifferenced and BSSD modes.

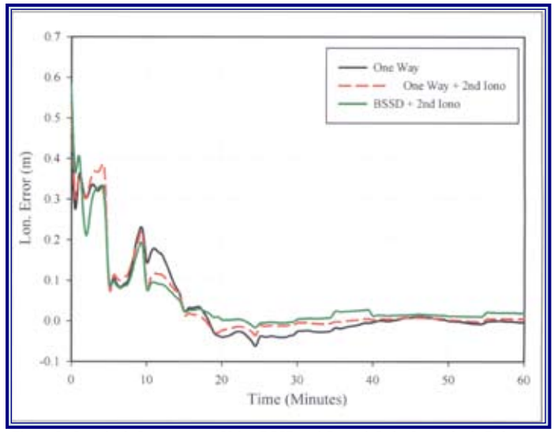


Figure 5 - Longitude Improvement Using BSSD and Second-Order Ionospheric Delay vs. Undifferenced Model

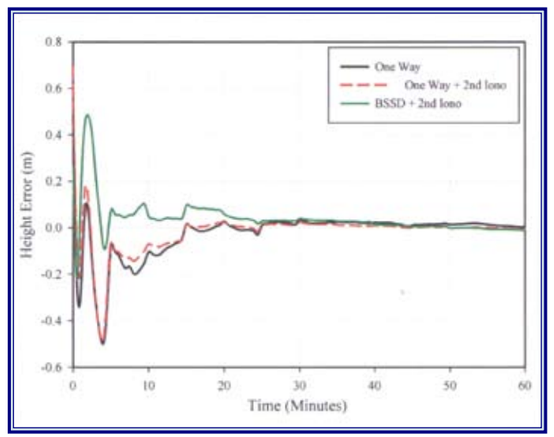


Figure 6 - Height Improvement Using BSSSD and Second-Order Ionospheric Delay vs. Undifferenced Model

Conclusions and future outlook

It has been shown that rigorous modelling of GPS residual errors can improve the PPP convergence time and solution. It has been shown that neglecting the second-order ionospheric delay can produce an orbital error ranging from 1.5 to 24.7 mm in radial, 2.7 to 18.6 mm along-track, and 3.2 to 15.9 mm in cross-track directions, respectively. In addition, neglecting the second-order ionospheric delay results in a satellite clock error of up to 0.067 ns (i.e. equivalent to a ranging error of 2 cm). Moreover, accounting for the second-order ionospheric delay can improve the final undifferenced PPP coordinate solution by about 3 mm and improve the convergence time of the estimated parameters by about 15%. Further improvements of up to 50% in the PPP solution convergence can be obtained when the BSSD model is used. This is very encouraging and is considered as a major step towards real-time PPP.

Future research will develop a PPP ambiguity resolution technique for precise real-time surveying applications.

Acknowledgements

This research was supported in part by the GEOIDE Network of Centres of Excellence (Canada) and by the Natural Sciences and Engineering Research Council (NSERC) of Canada. The authors would like to thank the Geodetic Survey Division of NRCan for providing the source code of the GPSPace PPP. The data sets used in this research were obtained from the IGS website http://igscb.jpl.nasa.gov/.

For more information Mohamed Elsobeiey, Ph.D candidate, and Dr. Ahmed El-Rabbany, P.Eng. can be contacted by e-mail at Mohamed.elsobeiey@ryerson.ca and rabbany@ryerson.ca respectively.

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Attitude, Presentation, Education

By Robyn Graham, ALS

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Through the years of Canada's early development land surveyors played a prominent roll. They were highly regarded in society and respected as professionals. However, when I obtained my commission in March of this year I found myself explaining to friends and some family what it meant to be a land surveyor and the role they played. The conversation usually started in one of four ways: "My cousin is a land surveyor and he's only twenty, what took you so long?" "Is that like getting your Red Seal?" "I thought you graduated from some sort of engineering program." "Good for you... does this mean you can survey my property for free now?"

In comparison, when my sister passed her Uniform Final Examination (UFE) and became a Chartered Accountant (CA) the same circle of people understood immediately that she had obtained a professional designation. Just to be clear, I still have no idea what my sister does every day at the office but I do understand that she is a member of a professional organization and that if I was to go into business for myself she is the first one I would call regarding financial and administrative advice. Likewise, I would consult a lawyer for legal matters and a physician for health concerns.

Fall Arch by Paparutzi - Creative Commons 2.0 - flickr.com/photos/paparutzi

The point I am trying to make is that it is not the public's lack of understanding of the practice of land surveying that is concerning. Rather it is the increasing failure to recognize land surveying as a profession and understand when it is necessary or in one's best interest to seek the counsel and services of a land surveyor. How do we change our public image? This has been a topic of discussion and many well written articles within ALS News for at least thirty years; that's how far back my company's archives date.

In my opinion, it all boils down to three things. The first being attitude. In his article "Professional Attitude of the Land Surveyor," David C. Clark, NSLS describes the necessary professional attitude as being "characterized by an ever alert conscience, self-discipline, integrity and a sense of justice and responsibility." This article was published in the 1990 fall issue of ALS News and is worth the read.

As members of a professional association we need to recognize the importance of this attitude and acknowledge that it is something found within each of us to varying degrees. I'm not saying that we walk around with inflated egos but rather, if we do not view ourselves as professionals, then what hope is there of convincing our staff and the public to do the same? If you want to be treated as a professional, believe and act as though you are.

The second is presentation. When I look at photographs of surveyors in the early 1900s the first thing that comes to mind is "they surveyed in suits?!" Presentation is an important part of public perception. If I was to walk into a dirty doctor's office, it is very unlikely that I would proceed with the appointment. The same is true if I was to visit my lawyer and they came to the meeting in ripped jeans and an old tie-dyed shirt or my accountant handed me a financial report riddled with spelling mistakes and coffee stains. Now certainly none of us would dream of wearing our good clothes in order to read the markings on the side of a post, at the bottom of a three-foot hole, but clean company branded trucks, field staff in employee uniforms, professionally formatted client returns and a land surveyor in a suit does demand a certain level of respect. How often do we see a land surveyor on a job site with a white hard hat and a suit to meet with their clients? This is an image that the public and industry has come to associate with a professional engineer. If you want the public to look on you as a professional, present yourself as one.

The third is education. This is the most important component for raising the profile of our profession. This component also requires the most amount of time, effort and resources. Education is comprised of both information and instruction. There is an unbelievable amount of information available to the public regarding land surveying. There are educational programs such as "Made to Measure," association brochures, Boundaries, ALS News, YouTube videos and historical documentaries and novels.

In this age of information, it initially seems odd that not everyone knows what it is that land surveyors do. I believe that this stems from two causes. First information without instruction can be misleading and/or confusing. From viewing GPS suppliers' YouTube videos, it is easy to see how one could get the impression that land surveying can be accomplished by anyone able to operate a GPS system—a dangerous assumption, as we learned with the introduction of GPS location plans. It is equally unlikely that you will learn that land surveyors require an education or do anything other than ride around on quads and helicopters with GPS equipment.

Second, how would you even know that such information existed or where it was available if no one told you? Blindly walking though the wilderness will eventually take you somewhere but not always to the correct destination.

This is why I think that the key to educating the public is good old-fashioned face-to-face conversations. We need to explain to friends, family, clients, and government agencies alike that land surveying is a profession—not a trade; that land surveyors do not just measure—they provide a long list of professional services—a list too long to do justice to with this short article. If you want the public to know you are a professional, educate them. Enhancing the public image of the land surveying profession is a task we, as an Association, need to take seriously. I plan on starting by educating my friends and family; explaining to them that land surveyors are well educated, responsible professionals eager to help them with all of their land-related requirements and that we, as a profession, played a major role in developing this country and we will continue to do so.

Acquiescence

By Knud E. Hermansen and Robert A. Liimakka

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Knud Hermansen

Robert A. Liimakka

Acquiescence, similar to the doctrines of estoppel and practical location, is an equitable doctrine that will fix the location of a common boundary in a location that may differ from the location where a surveyor would place the common boundary based on the rules of construction.

The doctrine of acquiescence is known in some jurisdiction as a consentable boundary. Some states have equated it to a boundary by implied agreement. The motivation for a court recognizing a boundary different from the record is to let boundaries that appear to have been settled to be settled. A person that sleeps on their rights should not be allowed to demand with passion what they have for so long ignored with indifference.

The doctrine of acquiescence generally requires three conditions exist. First, the record boundary must be vague or unknown. The ouroose for this element is to prevent persons from usurping the legal requirement that parties alter the location of their record boundaries by written instrument. By requiring the boundaries be vague or unknown, the legal fiction is created that the parties-in-interest have not altered the location of their deed boundaries. Rather, the parties-in-interest have fixed a definite location for the boundaries described in their respective deeds. This fiction survives even though a surveyor would place the boundary with some confidence in a different location than where the boundary location has been historically recognized.

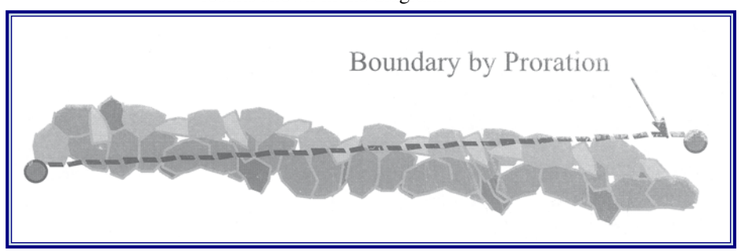
A second condition requires one party act by fixing the boundary in a location by definite monumentation or occupation that appears and is accepted as marking the boundary. The boundary so fixed by the one party cannot be based on fraud or deceit. In other words, the party in placing the monuments or barriers must have reasonably believed the objects are placed on the common boundary.

The third condition requires that the non-acting party recognize the barriers or monuments as marking the boundary. Recognition is sufficient if the individual does not contest the location.

The fourth and final condition is that the three conditions exist for some length of time that a reasonable person would have been expected to object or act had they disagreed. A long length of time is not crucial if the location of the record boundary is otherwise vague or difficult to locate and the location of the monuments or barrier is reasonable to the location of the record boundary.

The following situation may be give rise to a boundary by acquiescence:

Bill and Jane live next to each other in an old subdivision. Bill does his best to locate the common boundary he shares with Jane in order to build a rock wall. He makes measurements and sets stakes, eventually building the rock wall along a line between the stakes. Jane watches Bill make the measurements to locate the boundary and observes Bill construct the wall. For many years thereafter, Jane and Bill respect the wall as marking the common boundary. Twelve years later, Jane needs a survey of her property in order to build a garage. In performing the survey for Jane, the surveyor gathers considerable site and record information. Most of the original monuments have disappeared. The surveyor prorates the distances between found monuments that are located several hundred feet away with the following results shown in the diagram:



In the above situation, the court would be reluctant to adopt the boundary established by prorated distances over the location of the stone wall that has been accepted as the boundary for some length of time. The wall is located within reason to the record boundary. It has been accepted as the boundary for over 12 years. The upheaval and disruption in the neighborhood that would result with adopting lines that differ from the long standing occupation flies in the face of equity.

It is reasonable for a surveyor to adopt an occupation line as the boundary where the record boundary location is vague, difficult to fix, or a reasonable location of the record boundary is on or near the occupation line. Justice Cooley remarked on this very situation in the late 19th century using these words.

Occupation, especially if long continued, often affords very satisfactory evidence of the original boundary when no other is attainable; and the surveyor should inquire when it originated, how, and why the lines were then located as they were, and whether a claim of title has always accompanied the possession, and give all the facts due force as evidence. Unfortunately, it is known that surveyors sometimes, in supposed obedience to the state statute, disregard all evidences of occupation and claim of title, and plunge whole neighborhoods into quarrels and litigation by assuming to establish corners at points with which the previous occupation cannot harmonize. It is often the case when one or more corners are found to be extinct, all parties concerned have acquiesced in lines which were traced by the guidance of some other corner or landmark, which may or may not have been trustworthy; but to bring these lines into discredit when the people concerned do not question them not only breeds trouble in the neighborhood, but it must often subject the surveyor himself to annoyance and perhaps discredit, since in a legal controversy the law as well as common sense must declare that a supposed boundary long acquiesced in is better evidence of where the real line should be than any survey made after the original monuments have disappeared. Thomas M. Cooley, Chief Justice, Supreme Court of Michigan, 1864¬1885 in The Judicial Functions Of Surveyors.

Where the surveyor is convinced the location established for the record boundary is different from the markers or barriers acquiesced to by neighbors, the surveyor should report both locations to the client. In reporting both locations, the surveyor would be wise to inform the client that the acquiesced boundary may in fact be determined to be the ownership boundary based on the doctrine of acquiescence.

The surveyor may want to consider wording such as the following in a letter or report to the client when accepting monuments or barriers by the doctrine of acquiescence:

"I have established your common boundary to coincide with a stone wall that exists between you and your neighbor. While the stone wall does not coincide with the measurements that were proportioned between existing monuments found beyond your common boundary, it is my opinion that the small difference between the measurements prorated and the measurements made to the wall is insufficient to overcome the equity that courts often find compelling when recognizing occupation lines that were allowed to exist for some time. The courts are often persuaded to leave things settled when it was believed by the parties to have been settled some time ago. You are, of course, at liberty to reject my opinion and advocate that your boundary be the prorated line. Your neighbor may do so as well. In each case, I will be willing to explain both the proration method I used and my belief that the stone wall is ultimately the monument to the common boundary."

Where the surveyor has come to the conclusion that the location of the record boundary is different from monuments or boundaries that were believed to be the boundary, the following example may be used to illustrate the surveyor's opinion as communicated to the client:

"I have determined the common boundary to be a line fixed between two monuments. The line was established by dividing the excess distance measured between the two nearby monuments in proportion to the distances shown on the original subdivision plan between the two monuments. It is not unusual to discover that the actual distance measuring in the field is different from the distance shown on the plan, especially given the age of the original survey. The current surveying technology and education of the surveyor far exceed those of the earlier surveyors.

"My opinion places the common boundary in a location different from the wall that exists near this boundary.

"Although the method I have used to reestablish the common boundary was established by the court as a rule of construction, I feel compelled to warn you that the same court will often adopt occupation lines such as the wall to be the ownership boundary contrary to the record measurements. While I am confident in the methods I have employed in fixing your boundary I would be foolish to predetermine where a court would place the boundary if asked to choose between the boundary I have established and the existing stone wall. I believe you would be wise to consult with legal counsel before taking any action in regard to moving the wall or asking the neighbor to do so."

Acquiescence is similar to the equitable doctrine of practical location. The major difference is that practical location requires the parties-in-interest all participate, while acquiescence requires only one party act while the other parties-in-interest acquiesce to the acts of the one party.

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The Responsible Management of Technical Staff

By Mitch Ettinger, ALS

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Alberta Land Surveyors are granted the right to practice professional land surveying by legislation and through maintaining membership in a self-governing professional association. Like all rights, this right comes with obligations. Each of us has a solemn duty to maintain personal professional competency, to practice in accordance with specified ethical standards, and to foster and maintain public faith in Alberta Land Surveyors and their work.

As we move through our careers, we usually become less field-oriented, less technically hands-on, and more involved in business decisions and the supervision or management of technical staff. These roles increase our level of responsibility because we must not only remain aware of current survey standards and requirements but also provide effective direction to technical staff. Our degree of competency is significantly defined by the extent to which we meet these two obligations.

The objective of the Practice Review Board (PRB) is to improve practitioner competency through the Continuing Competency Review (CCR) program. In the process of reviewing more than 98 practitioners under this new program, we have found that most Alberta Land Surveyors are competent, and that they provide a service in which the public can have confidence.

However, the CCR process has also flagged situations where practitioners have strayed off course or demonstrated one or more deficiencies with respect to competence. In my term as a PRB member, I have observed three recurring shortcomings, each of which is related to our professional obligation to manage technical staff responsibly.

1. Written Procedures

Practitioners often fail to provide sound guidance to technical staff through written procedures. The CCR process focuses particularly on written procedures for GNSS surveys and conventional surveys. Although these procedures should deal with redundancy issues, they should not stop there. Technical staff also benefit from (and appreciate) written standards, procedures, and structure for their workflow. Providing written procedures not only clarifies technical requirements but also increases productivity. The procedures need not be presented in "manual" form; they can often be in the form of a memo to technical staff prescribing effective workflow procedures and ensuring that these are followed.

2. Field Notes

Most practitioners stress the importance of good field notes to their technical staff. However, with the advent of GNSS, some field staff and their supervisors have come to believe that capturing digital data eliminates the requirement for well-written field notes. We have a professional obligation to ensure that field crews understand and accept the importance of good field notes, and the ideal way to communicate this is through a written procedures document. The Manual of Standard Practice provides good generic guidance and can serve as a starting point for written procedures, but many of us have "niche-based" practices for which we should also provide technical staff with specific guidelines and samples.

3. Checklists

I once avoided checklists because they seemed trivial and mundane, but I have come to appreciate how much difference they can make for both me and my technical staff. Checklists can improve effectiveness quite remarkably all the way through the life cycle of a project. Since implementing checklists, I've seen significant improvements in the quality and consistency of field notes, field work, and final survey products, and I strongly encourage other practitioners to use them too. Sometimes a simple tool can make a world of difference.

Every ALS has a professional obligation to provide accurate and reliable land surveying services, and this requires us to manage technical staff responsibly by providing written procedures, stressing the requirement for good field notes, and using detailed checklists for every project. Each of these practices can help us to maintain professional competency. The PRB assists us with this obligation through competency reviews. I encourage you to embrace the CCR process and use it to improve your professional competence, your business practice, and public confidence in the work of Alberta Land Surveyors.

Local Land Surveyors Trivia: Allan Wayne Shattuck

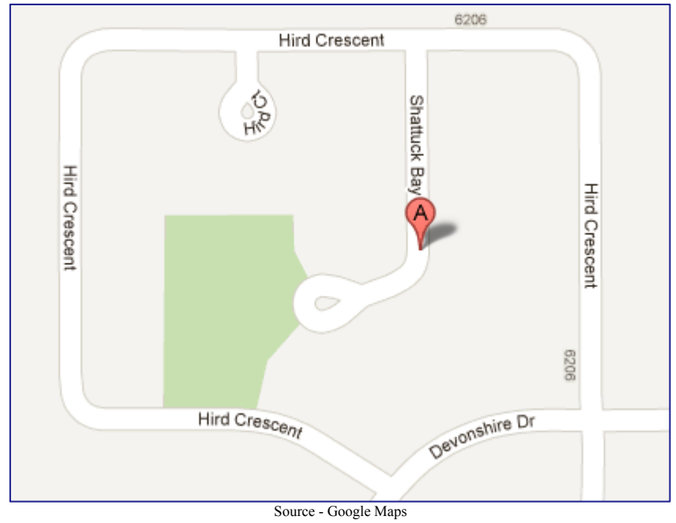
Compiled by Greg Hluska

Wayne Stockton let us know about a bay in Northwest Regina that is named after a former member of the Sask Land Surveyors Association. Shattuck Bay is named after Allan Shattuck (commission #084), who received his commission in 1935.

We did some research and found this Report of the Committee of Biography. Sources are unknown.

Allan Wayne Shattuck

Allan Wayne Shattuck died at his home in Kelowna, B.C. on May 30, 1976. He was 70 years of age. Mr. Shattuck is survived by his wife, Isabel of Kelowna, daughters Aileen Ouvrard and Linda Shattuck of Montreal, and son Douglas of Regina.



Source - Google Maps

Mr. Shattuck was born in Aberdeen, South Dakota, on August 8, 1905. The family moved to Mossbank, Saskatchewan, and he attended public and part of his high school there. He took his Grade XII in Regina and taught school for two years before attending the University of Saskatchewan where he received his Degree in Engineering in 1930.

Engineering jobs were non-existent when Mr. Shattuck graduated and he went back to teaching for a number of years at Assiniboine and Govan and worked in a department store in Regina.

He received his Commission as a Saskatchewan Land Surveyor on February 6, 1935, Commission No. 84.

From 1938 to 1942 Allan Shattuck was City Engineer for the City of Weyburn. He joined the Air Force at this time and served until his discharge in 1945.

After the war Mr. Shattuck was employed briefly with the Department of Public Works for the Province and in 1946 joined the staff of the City of Regina as Assistant Superintendent of Waterworks. In 1955 he was appointed the Design Engineer for the City.

While working for the City of Regina he carried out the initial service for the location of the Buffalo Pound headworks for the construction of a water treatment plant and was project engineer for the design and construction of the filtration plant. He was in charge of the installation of the Buffalo Pound pipe line and was a key witness in the Precast Pipeline case in 1952-53 which was won by the City. He served as President of our Association in 1950.

Mr. Shattuck joined the Ontario Water Resources Commission in 1957 as Chief Engineer in charge of construction. In 1972 he spent a year in Afghanistan as a consultant in a water supply project. He retired to Kelowna in 1973 and continued to work as a sanitary engineering consultant.

Allan Shattuck was an avid woodworker and enthusiastic hunter.

Canada Iron Ltd. have established an Allan Shattuck memorial bursary at the University of Waterloo in recognition of his contribution to his profession.

Travel Insurance: Don't leave home without it

By Susan Pitchford

Reprinted from "The Scrivener" - Volume 20, Number 2 - Summer 2011

You can't see the future, so insure it instead.

- Travel Medical Insurance covers costs for emergency medical treatment.
- Out of Province and Cancellation and Interruption Insurance covers your costs to either cancel your trip before departure, return home early if something happens with a family member, or return hom later if you are delayed in your destination past your scheduled return.

Many options are available. You must be aware of what risks are covered and what exclusions exist in the travel insurance policy you intend to purchase.

Surprises can be wonderful when you are travelling and exploring new destinations — but not when you need to submit a travel insurance claim. That's why it's VERY important to always consult with a professional travel agent or insurance broker—someone who is licensed and knowledgeable about the travel insurance protection that is right for you and your family.

In the travel business in British Columbia for over 13 years, I know some travellers consider travel insurance an unnecessary added expense to their trip. A good number think they are covered through their credit card company or BC Health Care or they simply don't need the coverage because they are going on that trip "no matter what."

That is far from correct. Travel insurance should ALWAYS be factored into the cost of your travel arrangements. Here's why.

1. A medical emergency can be expensive compared to the cost of travel insurance. For example, a hospital room in the US or abroad can cost in excess of several thousand dollars per day; BC Health Care will cover only a SMALL percentage of the cost. Therefore, the cost of travel insurance is minimal compared to what you could potentially end up paying in an emergency—and small compared to your overall investment in a vacation.

2. Credit cards can provide travel coverage for a limited number of days or a limited dollar amount and may not provide coverage for both trip cancellation and trip interruption. A typical credit card often covers only 2 to 20 risks for which you can claim compensation; a standard travel insurance policy covers 40 to 46 risks. Many credit cards provide interruption coverage only after departure and no protection if you have to cancel your trip before departure.

Employment benefits may not cover all medical emergencies and may limit travel benefits. Always CHECK the travel coverage you think you have, then fill in the gaps with additional coverage, as needed.

3. It is very important to have a good out-of-country emergency medical network in case you need to make a claim.

- If you have a medical emergency or you are stranded in a destination due to civil unrest or severe weather, whom would you call?
- Would you have access to multilingual assistance 24 hours a day, 7 days a week?
- How about access to good hospitals and doctors or other necessary service providers?

A standard travel insurance policy has a 24/7 toll-free travel-assistance call centre that can be accessed from anywhere in the world.

Remember, if you travel out of the country more than once a year, an annual travel insurance policy is the best way to go. It provides coverage for an unlimited number of trips of up to 9, 16, or 30 days at a very affordable price.

Always ask about family rates. Children 12-and-under travelling with you are eligible for much-reduced premium costs.

Travelling within Canada? Travel insurance is still needed. Although reciprocity agreements between BC and other provinces will cover basic emergency health care, many items might not be covered if you sustain an injury or illness in another Canadian province.

If you still have doubts about the necessity of having good travel insurance packed in your suitcase whenever you leave home, please read on.

You're in the United States, getting on the bus to the airport for your trip home, when your travelling companion falls and breaks her shoulder. Instead of heading home in a few hours, you're sitting in a hospital emergency room, adding up bills for X-rays, treatments, and missed flights.

How much will this cost?

- If you have medical and trip cancellation/interruption insurance, virtually nothing.
- If you don't, try $10,000 for the hospital bill, $1000 for a new flight home, plus the cost of the airline ticket you purchased and never used.

Please contact me anytime for more information.

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The Lightsquared Hearings

by Greg Hluska

The US House of Representative's Committee on Small Business held a hearing about Lightsquared on October 12. The controversial broadband service did not fare very well in front of the committee.

Committee Chairman Sam Graves (who is a Republican from Missouri) summed up his position saying:

> *"Increasing broadband to underserved and rural areas is a noble goal and only makes sense in this rapidly advancing technological world. However, we must find a solution to increase wireless broadband without jeopardizing currently established GPS systems and further burdening small businesses.*
>
> *"Interference of the GPS signal will cost American small businesses billions of dollars to retrofit their GPS devices. This alone is an enormous burden that could harm or impair their business. From land surveyors to family farmers to thousands of other businesses— a huge segment of our economy will be affected. But this is about more than the cost, it is also about safety. Pilots rely heavily on GPS to maneuver their planes— so above all, we must ensure that safety is not compromised.*
>
> *"I am hopeful that we can find a solution that will not interfere with GPS, while still increasing wireless broadband nationwide. However, we are not there yet. It is clear from our small business witnesses that further analysis and tests for all GPS devices are needed before LightSquared moves forward. This Committee will be following the issue closely to make sure there are no added costs for small business GPS users and that safety remains of utmost importance."*

This hearing came at the end of a difficult month for Lightsquared - problems started when General William Shelton testified before the Armed Services Subcommittee that Lightsquared knocked out every single GPS device that the Department of Defense had tested. Problems continued with the Chairman of the FCC's admission that he didn't know anything about the miraculous fix the Chief Executive Officer of Lightsquared mentioned in an open letter.

The hearing was a dramatic one and left the feeling that Lightsquared is in serious regulatory trouble - some notable quotes from the hearing include:

> *"LightSquared claims that Javad GNSS has produced a filter that will magically solve the problem....not only has this filter not been approved by the FAA yet, here's a thought: Javad has absolutely no experience in aviation, so don't count on them having a viable product ready to fit my Garmin high-precision, WAAS-enabled receivers anytime soon.....There is absolutely no reason to create this risk to life and property, just for their profits."*
>
> (Dennis B. Boykin IV, Managing Principal at DB4 Consulting - Testifying on behalf of the Leesburg Executive Airport Commission)
>
> *"It will take 10-15 years to complete a normal replacement cycle and affects up to $10 billion in equipment. Even if the Javad filter ($300 - $800) works, implanting it to the 1 million receivers will cost $300 to $800 million which doesn't include the additional personnel, installation and down-time. It's like saying that because Chevy has an all-electric car on the market we can shut down every gas station in the U.S. next year or all analog TV's need to be replaced the day the digital switch was turned on."*
>
> (Rick Greene, Precision Agronomy Manager at MFA Incorporated - Testifying on behalf of the Agriculture Retailers Association)

While he was primarily on the defensive, Lightsquared's Executive President, Jeff Carlisle consistently made points that could resonate with the US government, especially in light of the economic problems the country is having. Much of his testimony focused on the economic effects of Lightsquared's $14 billion investment. Further, Carlisle repeatedly mentioned the 15,000 jobs created during the implementation of Lightsquared.

Finally, on the matter of interference, Carlisle stayed on point with the rest of his company, arguing that GPS manufacturers are wholly to blame for these interference problems. He said, "The manufacturers themselves should step up to cover this cost, as it was their technology choice that created the situation."

Surprisingly, Carlisle was not grilled in any depth on his company's connections to President Obama and his administration. While that has little to do with small business, concerns about the FCC's regulatory process have been circling around - even being repeated by US Presidential candidate Michele Bachmann.

C-Span's coverage of this hearing is available online at http://www.c-spanvideo.org/program/LightSq

Spatial Cloud Computing (SC2) Revisited: Enterprise GIS as a Service

By Hugh Williams and Darko Poletto, O.L.I.P.

Reprinted From "Ontario Professional Surveyor" - Volume 54, No. 3 - Summer 2011

Two years ago, this magazine ran an article[1] authored by us that discussed cloud computing and how geographic information services and spatial data could be provided in the "cloud" as a service. We call this "Spatial Cloud Computing". Today, the spatial cloud computing concepts have become a viable option for many organizations looking to map-enable their data and/or improve their overall business intelligence and information access capabilities.

To recap, Spatial Cloud Computing (SC2) is the array of services associated with the online provision of:

a) computing, network, and security infrastructure;

b) applications; and,

c) spatial data.

The benefits associated with SC2 are like any map-based solution:

- the ability to better visualize and understand information through geographic relationships; and,
- the ability to more easily find, access, and integrate information.

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Plus, the benefits associated with cloud computing:

- Lower overall costs to implement a solution and operate it;
- Faster implementation;
- More opportunity for innovation; and,
- Higher reliability.

The 2009 article also highlighted how SC2 could significantly expand the overall market for GIS, because something that had been expensive and time consuming to implement could now be done more quickly, with less expertise, and with fewer risks. This also means almost any organization can take advantage of the use of maps and the inherent benefits associated with this.

In the intervening two years, the landscape for the use, acceptance and understanding of map-

based applications has changed significantly. In fact, the appearance of spatial data and services within online applications is becoming so common that the whole distinction of "GIS" and map-based capabilities as being a separate or unique technology is being lost. GIS is becoming "mainstream" in both the IT sector and among the broad user community.

Our Ontario Experience

In November 2010 we launched a hosted cloud solution within the Ontario Government for 1300 users in several ministries and agencies.

Implementing this solution meant we needed to de-couple the services, data, and infrastructure that already existed at the primary client location; and, re-establish the data and services in a secure, hosted environment outside the client's firewall. The implementation went off smoothly without any service disruptions. The solution has over 1600 named user accounts, using business solutions dealing with real property management, facilities management, asset management, land use, aboriginal consultation, emergency management, mining title verification, and customer service management. The aboriginal consultation solution is also available to all Ontario government staff on the government's Intranet, and will soon be available to the public with an Internet-facing site to be launched this summer.

The whole process has taught us a lot about working in the cloud and delivering on those "promises" of the cloud that the clients expect. We believe that the movement towards cloud-based GIS applications, data, and technology services will grow rapidly over the next several years. And although you probably won't see this on Letterman any time soon, here's our "Top 10" list "Why..."

Top 10 List - Why GIS Will Succeed in the Cloud

Reason 1. Maps Make Business Information Better

Those of us in GIS have long understood that maps can help communicate and build understanding of business information. Maps are also a natural platform for analysis and they help us integrate information — because they provide a common spatial reference.

So, given the choice of using maps or not in support of business information access, integration and intelligence (if cost / usability are not an issue) then it makes sense to adopt GIS capabilities within a business system solution.

Reason 2. No More Maintenance

With cloud-based applications there's no longer any software maintenance and licensing. Not only are costs kept in check, but the migration of one version to the next, and the installations on multiple machines throughout an organization are a thing of the past.

In the cloud, applications are updated and maintained as part of the service subscription. And, since everyone's using a web browser or a common mobile device — the application changes for everyone at the same time, and usually in incremental stages.

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Reason 3. Data

This could be reasons 3 to 10! Google and Bing each provide a base that is for the most part current and well maintained; and a programming interface that makes these data available. Hundreds of data providers are on board with their own data services and interfaces. What used to be the most difficult and costly aspect of a GIS, is now, in many cases, easily accessible.

So, for surveyors, who produce some important and valuable spatial data, this is a great example of what is possible, and reason to explore opportunities.

Reason 4. Lower Costs and Faster to Deploy

Many of the aspects that made a GIS expensive to implement in the past are dealt with through spatial cloud computing, such as: the initial upfront software; the hosting of the web server; training; and specialized development requirements.

From a software / data perspective, cloud providers offer multiple solutions with varying levels of functionality. The applications in the cloud don't necessarily have all the functionality specifically required for each business solution, but they do offer commonly-required capabilities to make them worthwhile. For example, our SC2-GeoPortal solution has basic "GIS" capabilities, but its strength and focus is on making it easy to access and integrate data.

From a hardware / infrastructure perspective, cloud providers offer immediate access and scalability. Building a similar or custom infrastructure environment takes a lot more time and effort.

Reason 5. User Expectation

Your cell phone likely has GPS built in it and you use applications on it that support location awareness. In other words, GIS is everywhere now. So, business users increasingly expect their applications to have maps to support data input and reporting. If yours doesn't, they'll find one that does. It's a challenge to meet ever changing needs, but also an opportunity.

Reason 6. The "Pie" is Bigger

Ten years ago any GIS software vendor could describe their market as a few key sectors / industries: local/provincial/federal government; utilities; resource industry; and large businesses. The market today is anyone conducting business with a browser or cell phone. Most clients do not need the functionality of a large GIS system offered by the traditional software vendors, and certainly do not want to pay the cost. They want functionality that is easily delivered through the cloud for multiple uses and users in virtually any market.

A corollary to that — the traditional GIS markets are also making the pie bigger, because GIS is being liberated from the specialists and being put into the hands of program and policy and frontline service. And, this is NOT a threat to GIS professionals. What it typically means is that they are freed up to dedicate resources to areas that matter more — such as more advanced spatial analysis, creation of cartographic products, and data maintenance.

Reason 7. The Term "GIS" is No Longer Required

Just as there is a huge new market, spatial applications are being developed by non-GIS companies. The gory

technical details have been abstracted and therefore made more straightforward to deal with, the data are available, and the application development interfaces and standards are published and understood. So, instead of a few dozen companies developing spatial solutions, there are literally thousands around the world, which means that there is significantly more innovation and more choices for the consumer.

Reason 8. Security

Developing, testing, and implementing appropriate security can be expensive and time consuming and it requires expertise. Therefore, this has been a barrier to organizations that want to get on the web with their information, especially for governments that need to protect specific types of data. However, cloud application providers offer security within their solutions.

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Some security concerns do need to be addressed. With our SC2-GeoPortal solution, we have done the following:

a) Hosting Sensitive Data. Some clients will never feel comfortable having sensitive data hosted outside their "firewall". In architecting the SC2-GeoPortal solution we enable clients to keep data hosted on their servers, while still using the GeoPortal services and 3rd party data that we host. While some applications require the data to be hosted in the cloud, this "hybrid cloud" or "distributed model" solution gives clients an alternative option. Other solutions are adopting similar approaches.

b) Data in Canada. Because of international law and jurisdiction, our Canadian clients often need assurance that their data will physically reside on servers in Canada.

c) User Access. All user access is done over a secure encrypted channel. As well there are a number of other layers of security to ensure that the user is properly authenticated, that all requests are coming from valid users, and that each user's account dictates what functionality they have and what data they are able to "see".

d) Reliability and Threat Tested. It's vital that the solution have enough redundancy and fail-over capability that it stays running even if one or more components fail. The solution must also be hardened to withstand hacking and denial of service type threats.

Reason 9. The Spatial Cloud Computing Community

One advantage of today's connected world is that new trends and concepts can be discussed, challenged, and refuted in blogs, forums and other open online services. LinkedIn©, for example, has a few independent discussion groups that focus on GIS and cloud solutions. One group that we helped start — Spatial Cloud Computing — continues to attract new members from around the world. Ideas are varied and the subjects deal with everything from applications, to infrastructure, to the spatial data. For everyone, the focus is on how to do it, and how to do it right. So mistakes made by someone are less likely to be repeated, while more collaboration and sharing is leading to more informed decision-making and new ideas.

Reason 10. Money

Billions of dollars are being invested by the technology sector putting the cloud infrastructure in place. Billions more are being spent developing solutions. If the financial picture is telling us anything, the cloud is here and growing.

Endnotes:

[1] - *Ontario Professional Surveyor, Vol.52, No.3, Summer 2009, pg. 11.*

About the Authors:

Darko Poletto is President of SKE Inc. He has been involved with enterprise GIS implementations for over twenty years both with the Ontario government and for the past 14 years in the private sector. Darko is an Ontario Land Information Professional and member of AOLS. He can be reached by email at: dpoletto@skeinc.com.

Hugh Williams is VP of Business Development at SKE Inc. Hugh's varied career and experience over the past twenty-something years both in government and the private sector have focussed on the implementation and marketing of information management solutions, and those using GIS in particular. He can be reached by email at: hwilliams@skeinc.com.

If you are interested in finding out more, please contact us or join the Spatial Cloud Computing discussion group on the "Linkedln" web site (www.linkedin.com).

If you have any articles, pictures, or announcements to include in our winter version, please email them to info@slsa.sk.ca before the last Friday in December.

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