Technology & Innovation

Pierre Boucher, President of Canadian Construction Innovations discusses the use of drones.

With stories on: beacons, cloud computing—and more!

Plus a feature on profile lottery winners RHC
The official publication of the Grand Valley Construction Association

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MESSAGE FROM THE PRESIDENT

Excellence ABOVE ALL

It’s a pleasure for me to tell you that the Canadian Construction Association recently named GVCA its National Safety Award recipient for 2014. That’s a big achievement for us.

The award speaks in large part to the remarkable work done by our safety consultant, Ellaline Davies, as well as the staff and members who run and participate in the GVCA Safety Group. Our group scored highest in the construction sector last year and we’re on course to be just as successful this year.

We also recently introduced Safety Group Lite so that members who cannot commit the time to meet the rigorous requirements of the Safety Group program can still participate and take the extra year if necessary to complete their program.

COR has become very popular, but achieving it can be difficult. For that reason, we introduced a COR tutorial course to help our members.

The GVCA strives for excellence in everything it does. Board and staff members alike devote countless hours to researching the best products and services for our members and bringing them to life every day. Safety programs are but one example of that work. So too is our electronic plansroom, education courses, social events, training programs—the list goes on.

It’s my hope that in my year as chairman, I can help build on those successes—and perhaps change your thinking a bit. I want GVCA to offer services in such a way that not only do our members see value in the GVCA’s work, but so too do their employees. Stay tuned!

MESSAGE FROM THE CHAIR

Innovation in Service Delivery

When you think about ideas such as innovation and technology, it’s easy to let your mind wander. We imagine how mobile computing, 3D printing and other advancements will change the way we live, work and play. But innovation in particular doesn’t have to be anything as advanced or as radically transformative as this.

We here in the GVCA offices are constantly thinking about new ways to connect members with services and to present the best possible offerings to our members. I’ll be frank. Part of the reason we do this is because we work in a competitive environment. My board and staff and I know that you have a choice of a half dozen or so associations all within an hour or two’s drive of Waterloo Region, and only so many dollars to spend on annual membership. So in order to attract and maintain the best members, we have to be at the top of our game.

It’s not enough to simply implement programs and expect good results. We have to be constantly working to refine these and add value.

As Jeff mentions in his column, our focus for the year ahead is to bring association services not only to the companies that are our members, but also to their employees. The training, education and social programming that we offer is about helping people connect with people. But sometimes members think that these belong to company owners only. Nothing could be further from the truth. We want all members—everyone in a member firm—to sign up, participate and succeed.

Innovation in service delivery is one of the ways we can offer even more value for your member dollar. Keep an eye out for announcements and invitations in the months ahead.
The traditional benefits management model leaves you up in the air.

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The pervasive use of technology to transmit and store information introduces a wide variety of risks to your business. These include legal/regulatory risks and competitive risks.

One legal risk of particular concern to companies is the release of confidential client information. Aside from the harm to a business reputation and damage to client relations which may result, a negligent company could be responsible for civil damages if its client suffers harm as the result of the unauthorized release of their confidential information.

The release of personal information of either employees or clients is also a matter of concern. The Personal Information Protection and Electronic Documents Act regulates the collection and use of personal information. Any company that collects personal information must take appropriate measures to safeguard this information including appointing a specific individual to oversee the management of personal information. Companies must take adequate steps to safeguard personal information. The Federal Court of Canada has authority to award damages to complainants for the unauthorized release of personal information.

Inadequate safeguards on your stored data can put your business at a competitive disadvantage. Commercial espionage—exotic sounding as it may be—is real. The release of confidential information such as pricing strategies to a competitor can have obvious negative consequences.

The transmission and storage of messages, sensitive documents and data has become routine for many companies. Construction companies routinely send information back and forth between employees, peers, clients and subcontractors over email. Businesses also maintain and store information and move it about in other formats such as USB keys and CDs. Some of this information is highly sensitive.
Implement safeguards today

There are relatively easy and inexpensive safeguards which can be implemented to protect your data.

In general, always be aware of what you’re doing with your information. Never assume any device or storage method is secure by default because it probably is not.

It is important to secure any over-the-air transmissions. Never use unencrypted wi-fi as this exposes transmissions to interception. Always be sure that you are on an encrypted network before transmitting.

Avoid the use of Bluetooth accessories (e.g. headsets, keyboards) in areas where an eavesdropper could easily connect to them. When using cell phone networks ensure that the wi-fi function on your device is turned off entirely.

Employees should be instructed that if they work from home they must use strong password protection (WPA2 or higher). In the workplace access to networks must be controlled and passwords should be changed regularly. Employee passwords should be kept track of so that they can be revoked or changed if they leave the business.

This article was written by Greg Murdoch of Sorbara, Schumacher, McCann LLP. Greg can be reached at 519-741-8010 and gmurdoch@sorbaralaw.com.
If you’re into marketing and branding, you’ll know a bit about user-generated branding. It’s the latest and greatest fad to hit the industry where consumers are placed directly at the centre of the brands they know and love.

**Starbucks** did it with their White Cup Contest, where coffee enthusiasts were asked to draw their own perfect coffee cup designs and share them back to the retailer.

**Belkin** did it too, by teaming up with Lego to offer a special iPhone case that users can customize with the familiar and much-loved building blocks.

**Coke** tried going that route by printing people’s names on cans, which was a bit of a failure initially, but more successful when it allowed people to send personalized cans to friends and family.

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**The point of all this?**

That consumers are at the centre of brands now more than they ever have been. The Internet has made everything about “me”. Collectively, our identification with brands has always been personal. We associate with those products and services that stand for things we like: value from Walmart and Tim Hortons, prestige from Apple and BMW. Increasingly, that’s not enough. People want to see themselves reflected in the brands they love. They want their Tim Hortons online experience to be about the dark roast they love, or for the BMW website you are accessing from Waterloo to tell you that lease rates on a three-series have dropped to below two percent at all local dealers.

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**What does that mean for you?**

It means that your digital assets have to be more than just static. Every user is different. You can’t offer the same digital experiences to suppliers as you would customers. To stay ahead of the curve, you have to be aware of the different experiences these people expect from your digital presence. And then you have to make your presence respond to those.

That’s not easy. It requires a great deal of thought, time and attention. It starts with knowing the messages that each customer group needs to hear. It extends to knowing where a customer is located and proposing area-specific information. And it includes making recommendations for products and services based on user data.
Examples

If you’re a general contractor, wouldn’t it be valuable to a customer who accesses your site from Guelph to know that your company built two outlet stores in that city just last year? They should learn about that fact well before they ever think to ask about it.

If you’re a brick supplier, your site could suggest newer, more durable products to regular home-building customers based on that contractor’s past purchasing history. Retailers like Amazon and Chapters use algorithms to recommend content to consumers every day. You should do the same.

Potential

The potential for companies of all stripes—contractors, design professionals, and suppliers alike—to benefit from the Internet of Me is limitless. Think about how your company expresses itself digitally and think about how to bring the users of your products and services directly into the centre of that experience. This is the way forward.

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Can you hold employees financially responsible for damaged workplace equipment?

Not long ago, we asked: “Can you hold employees financially responsible for damaged workplace equipment (e.g., cellphone, laptop)?” Of the 462 people who responded, 36 percent indicated yes, 32 said no and 31 percent were not sure.

**What is the right answer?**

In general, all employees are responsible for the proper use of a company’s physical resources and property. All employees are also responsible for the protection of the company’s assets, both tangible (such as material, buildings, people, property, information, revenues) and intangible (such as communications networks, information systems, intellectual property). All employees must act reasonably and take appropriate measures to prevent losses arising from willful action by others, both outside and within the company, which may result in personal injury, property damage, theft, loss, abuse or unauthorized access to physical or logical assets, and intellectual property (including data).

Generally, an employee is not normally responsible for the replacement of lost or damaged employer-owned equipment at a central or remote workplace unless the employee intentionally omitted or committed a wrongful act or negligence that caused the loss or damage.

In short, this means losses occurring without any fault on the part of the employee or that are merely the result of simple negligence are inevitable in almost any business operation and thus, the employer must bear such losses as a cost of doing business.
Suing employees

However, the law does not generally stop the employer from suing employees for causing property damage in the course of their employment. For a court to hold the employee financially responsible, the onus will be on the employer to prove that any breakage or loss of equipment was caused by a dishonest or willful act, or by the employee’s gross negligence.

In addition, a company does not have a legal duty to bear the cost of replacing or repairing employees’ personal property that has been lost, stolen or damaged at work.

Liability

Employer/employee liability for damage to company-owned or personal property can also depend on a number of other factors, including whether there are any terms governing liability in the employment contract, whether a custom, policy and practice exists in relation to previous incidents of damaged or stolen employer-owned or personal property, and the circumstances in which the loss or damage to property occurred.

To ensure employees understand their responsibility with respect to company property, employers should include a clause to this effect in their standard terms of employment or any policy. Specifically, the clause should explain the employee's duty of care to company property and that the employee will be held financially responsible for any breakage or loss of equipment caused by a dishonest or willful act, or by the employee’s gross negligence.

To minimize employer liability, another standard term or policy should exclude the company from liability for personal property; for example, stating the company will not accept liability for personal property that has been lost or damaged during the course of employment, and that it is the responsibility of employees to safeguard their personal belongings.

Whether or not an employer justifies holding an employee responsible for breakage or loss of equipment, the employer does not have the right, even with the authorization of the employee, to deduct such costs straight from the employee’s pay.

The Answer is YES

In short, the answer to the poll question is yes, employers can hold employees financially responsible for damage to company property, but the employer must prove that the employee acted with blatant flagrant disregard for foreseeable harm, or acts intending to cause harm, in order to recover damages.

It is in very rare cases where the courts will find an employee grossly negligent. Employers should keep this in mind when considering what actions they will take in response to the damage of company property. A thorough investigation of the events should happen before deciding whether it is worth pursuing damages.

This article was written by Yosie Saint-Cyr LLB, Managing Editor, HRinfodesk, published by First Reference, September 2013.
How Kitchener-Waterloo’s construction and technology companies are building a better community

The Kitchener-Waterloo area has been home to a thriving technology community for decades and is currently on the verge of another promising boom. The tech town once anchored by areas like Waterloo’s RIM Park, has now expanded to include large technology centers in downtown Kitchener’s newly coined “innovation district”.

The Tannery Building

The Tannery Building in Kitchener is home to Communitech—the region’s premier innovation-centre—as well as the Velocity Garage and LaunchPad, the startup incubators of the University of Waterloo and Laurier University respectively. Across the street, you can find the new Breithaupt Block, an innovation-centre by Perimeter Development Corporation which is the future home to an expanded 185,000-square foot Google office. According to Perimeter’s president, Craig Beattie, the signing of a major tenant like Google is “further evidence of the strength and interest in companies to locate in the urban core of the city”.

However, it’s not just companies that are relocating to the Kitchener-Waterloo region. An increase in jobs means an increase in people, leading to greater demand for urban housing. Local developer, Momentum Developments is meeting this demand with a series of new condos, including the One Victoria Condominiums located right beside the Tannery and slated for completion in 2015.

Tech in KW

“Tech is one of the largest drivers of the region’s economy and has encouraged many skilled people to move to or stay in the area,” says Peter Maxwell, a partner at Momentum Developments. “Our goal is to provide these people with exciting places to live in an urban context.” According to Maxwell, many purchasers of units in One Victoria are those moving from Toronto...
to Kitchener in order to pursue careers in the area.

It’s clear that the thriving tech scene in Kitchener-Waterloo is keeping local construction teams busy, but that’s only the tip of how the two industries are working together. In the past few years, several construction-focused tech startups have launched in the region and local developers and general contractors have been quick to welcome the innovation on-site.

Bridgit and RenoMii are amongst two of the region’s companies focused on building software for the construction industry. Bridgit offers a cloud-based mobile and web app for handling construction punch lists on commercial and large scale residential projects, called Closeout. RenoMii caters to smaller contractors looking for a way to track change orders and improve communication with their clients.

Knowing that the technology being used on-site was built next door is bound to ease the reluctance towards new-technology that is often associated with the construction industry. “I do think in general [construction professionals] here are more open to technology than in other markets,” Maxwell admits.

Construction technology is such a hot topic right now, but many companies are left unsure of what the next step should be. By opening up the lines of communication between innovation centres and the construction industry, companies in Grand Valley will continue to find success with technology and lead the charge for construction innovation in Canada.

Anyone interested in talking to the Bridgit team about technology trends related to construction or otherwise can reach out to lauren@gobridgit.com

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WEARABLE TECHNOLOGY
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There has been a lot of talk among construction technology people recently about how wearable technology will transform the way we work on site. But if you’re among the skeptics who thinks that the idea of wearing a set of computer glasses to overlay a 3D model of a building over a construction site is a bit far-fetched, you probably aren’t alone.

Wearable tech

The thing is, wearable technology can be used for much more obvious and practical purposes. For example, Fhoss Canada makes a line of illuminated high-visibility safety gear. Made from the usual bright orange or bright yellow fabric that’s easy to see in the daytime, these threads are also embedded with light-up reflective strips that glow at night. The strips are located on the shoulders of the wearer, and also at the bottom of pant legs—to create a pool of light just near the wearer’s feet to help him or her avoid trip and fall hazards.

And that’s not all. Imagine embedding biometric sensors into safety vests that can be powered by a worker’s movements, and which provide continuous streams of data on heart rate, blood pressure, body temperature, even repetitive stress on joints. When combined with proximity sensors, automated systems can tell a worker—and a piece of machinery—when they’re about to collide with one another, or when a worker goes too close to a hazard or even simply when a worker isn’t where he or she is meant to be on site.
A smart hard hat could immediately warn of impact to a worker’s head, or even report back to base when it’s not being worn at all.

Smart hard hat
A smart hard hat could immediately warn of impact to a worker’s head, or even report back to base when it’s not being worn at all. Two companies in particular are busy developing souped-up hard hats. Daqri out of Los Angeles is building a model that looks like a bike helmet, but with a built-in display that superimposes instructions and images. That enables the wearer to see 3D and 4D views of the project as he or she works. Atheer is developing something similar, but more rugged—and designed in particular for use on construction sites.

Look, it’s a difficult enough job to build on a construction site. Monitoring worker behaviour to ensure they work safely, according to the law, and with their own best interests in mind only adds another dimension of difficulty to the job. Wearable technology can empower workers with the resources to manage their own safety experiences, to discover when they’re in danger of getting too cold or too hot, or when they’re within a few feet of a known hazard. And if they forget to address any of these hazards or simply ignore them, your site managers can discover—and perhaps prevent—an accident before it ever happens.
In today’s competitive real estate market, developers are highly conscious of the risks major construction projects entail. Despite this, more than half of large construction projects continue to either fall behind schedule or exceed their original budget. While being able to adapt to project problems on the fly is important, it’s far more critical to anticipate and prevent them by having the proper controls in place. There’s simply no reason to lose time and money to lack of preparation.

**Complexity and change increase project risk**

In any construction project, managers always face a three-fold challenge: reduce costs, ensure quality and stick to the schedule. These goals—difficult enough on their own—must be balanced against one another, making the process even more complex. For instance, trying to meet an aggressive deadline might prompt a ramped up work schedule which could result in reduced quality. Similarly, using new technology or materials to improve quality might result in unforeseen cost over-runs. Getting this give and take wrong can have serious consequences. Not only could this affect overall project success, but as approaches to project and contract management have evolved, project owners may assume greater risks with respect to specific cost, quality and scheduling issues.

**The need for oversight**

In today’s construction environment, effective oversight is a key component in the successful execution of capital projects. It starts before the project itself, with an assessment of major project risks followed by testing to determine if proper controls are in place, and functioning, to control those risks. Next comes the development of a project risk controls framework for monitoring and reporting on project performance and compliance with cost controls throughout the construction and close-out phases. The goal is to create an oversight framework that will reduce your risk by increasing transparency, accountability and value-for-money across your capital project.

**Common issues can lead to uncommon difficulties**

There are numerous ways small missteps can cause big problems. Unintentional errors or overpayments—typically referred to as contract leakage—are common on large design-build, guarantee-maximum-price, or fast-track capital projects. Project managers, of course, play a key role in preventing such errors, but they are often focused on driving the completion of a project on time and within budget, and may miss other risks and red flags—from simple mistakes up to fraud. As a result, strong project oversight is critical in helping to identify and manage these risks, develop and maintain financial controls, identify overcharges and avoid litigation.
Capital project oversight begins with three key objectives:

- Assess the risks along with the likelihood and impact of them materializing.
- Assess the design and operating effectiveness of existing or planned project controls.
- Provide practical and appropriate recommendations to address risks.

Real estate developers need to find ways to detect and deter cost overruns while significantly reducing risk. Inaccurate payments or invoicing, fraud and theft, subcontractor rework charges, unforeseen equipment charges, charges outside contractual parameters—these are just a few of the numerous cost issues that can arise during the capital project life cycle, threatening to impede or derail the initiative. All can be nipped in the bud by a robust oversight process.

No one can afford the losses involved in major project failure. With the proper project management, execution and monitoring controls in place, you can potentially identify and mitigate construction project risks—before something goes wrong.

This article was written by David Florio, Partner, Operational Advisory Services at Grant Thornton LLP. He can be reached at 416-369-6415 and David.Florio@ca.gt.com.

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GVCA SIGHTINGS

Jason Ball (left) wins the CCA General Contractor Award of Recognition for 2014.

GVCA wins the CCA National Safety Award 2014

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GVCA AGM

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Imagine, for example, checking your workers onto the job site without ever asking them to punch a card, sign a form or report to the site super. Beacons can do that. They can also send alerts to users if they enter a zone that they’re not authorized to, or where they might find hazardous conditions.

**Beacons:**

A new way of delivering site information

**Location-aware technology delivers context-specific data**

If the word “beacon” conjures up ideas of the flashing orange light that sits atop an orange and black striped sign that stands by a road worksite, then you’re probably showing your age. A beacon is the latest in wireless communications technology that is being used as a tool to help deliver information to users as they stand in specific locations.

**What are beacons?**

Beacons are tiny signal-emitting devices that connect with apps installed on a user’s mobile or wearable device, and which emit context-specific information as and when the user approaches the beacon’s emitted field.
Beacons in construction

Interestingly, construction is one of the industries for which beacons are best suited. By placing beacons at select locations throughout a site, project managers can push up-to-date project information directly to employees in the field. For example, when a worker first arrives at a site, a beacon may immediately push the site’s specific health and safety plan directly to the worker’s mobile device. From there, he or she can log in and read the plan—and in the process, give the site management assurance that everyone working on the jobsite has received and read the documentation.

Beacons can also be installed at a site entrance to log visitors and employees in and out as they visit.

Mike Crooks, commercial director of Mubaloo, a UK-based company that manufactures beacons, says that’s just the beginning of the role beacons can play on construction sites.

“We’ve had clients request more than just the user-specific data for construction sites, but also aggregated data to understand which areas of the site are busiest and how the site is used every day.”

Beacons can also trigger updates as site conditions change. They can be leveraged to warn workers of changing safety conditions, or even of changing conditions to design or assembly.

Not for every construction site

While radio-frequency identification tags have been proven effective on major engineering projects that span acres of space, beacons may be able to do the same job on smaller spaces. Their effective range is smaller (30 to 180 metres in radius) and they’re more affordable to implement.

Each beacon retails for about $40 to $50 and, says Crooks, become even more affordable when clients order in bulk. Mubaloo can then design a custom-built app that addresses the user’s precise needs. These can cost as much as $100,000, or can be bought through a software as a service sales model, which is more along the lines of $2,000 per month.

To work, beacons have to be on and running all the time. That’s not a problem from a battery-life perspective. Some can run for six months, others for five years, others can run indefinitely on solar power. They also have to married up with the right app on a user’s portable device.

Yet once they’re set up, beacons offer real value. They enable companies to control their on-site experiences, they can collect massive amounts of data from the devices being used (which in turn can be aggregated and turned into real intelligence by managers), and they encourage employees to use apps to improve operations.
Cloud computing is big business these days. More and more major industry players such as Google, Apple, Microsoft and Dell are introducing their own cloud computing systems in an effort to capture their share of a market that is currently growing at about 50 percent annually.

Strong as demand is for the service, cloud computing is a polarizing idea. Some people swear by it, while others won't touch it with a ten-foot pole. Supporters say that the technology allows companies to cut capital infrastructure costs—hardware can cost tens of thousands of dollars to buy—to reallocate business assets toward core functions (rather than IT departments) and to scale IT requirements up and down quickly according to current business needs. This is to say nothing of additional features such as instant access, continuous technical support, leading-edge security and the capacity to collaborate on documents from anywhere at any time.

Those who argue against it worry about security. They don't trust the idea that something not in their offices is secure, and they worry about the threat from cyberattacks, which become evermore sinister. They also worry about where their data is stored. The location of the servers on which your data resides can leave your company open to all kinds of legal issues. They are also concerned about attacks from inside their own networks, a lack of standardization in a growing marketplace, and liabilities associated with document lifespan.

The truth of the matter is that if you have sensitive data, security will always be a concern. Even the tightest locked office in the securest building in the world is not immune from cyber threats.

By now you’ve probably heard of cloud computing. Fundamentally, it’s the idea that your files and software and hardware are stored on servers outside your office. Using secure logins and encrypted systems, you can access your critical data from anywhere at any time.

The global market for cloud computing is growing at 50 percent annually.

Security above all
The truth of the matter is that if you have sensitive data, security will always be a concern. Even the tightest locked office in the securest building in the

Up in the Cloud

May/June 2015
Kevin Pulowski, president of Pund-IT, a Waterloo business technology service and consulting firm, says that the so-called human factor is often the greatest barrier for small firms looking to adopt cloud computing systems.

“People feel more comfortable knowing that their sensitive data is stored just down the hall than they do on a remote server,” he says. “The reality is the opposite. Data stored in the cloud is far more secure over what you have in the office. Cloud providers eat, breathe and sleep security. They use security protocols that go way beyond anything that the average company would ever do in its offices.”

Up in the cloud – You said it!

We asked GVCA members about whether they’re using the cloud and why (or why not). Here are a few of your answers.

“At this point, we are really only using cloud computing to pass large files (anything too big to be attached to an email) between our office and the offices of general contractors with whom we are working.”

“We don’t use the cloud. Our software cannot be placed in the cloud. We have agreements with providers that their products cannot be used offsite.”

“Yes, I use the cloud. Recently started a pilot project with Microsoft Office 365 to try and leverage the cloud-based systems further.”

“We use remote access through a virtual server on our main server. One might say that is a vulnerability, but at least it is in my control.”

“We are using cloud computing mainly from within the office as a way to share files from one desk to another without having an on-site server. As an added benefit, we are able to access those files from anywhere.”

“I use secure.logmein. I basically take control of my computer at the office. The only drawbacks are: my computer in the office must be on and people can see what I am doing if they are sitting at my desk.”

Be part of our May/June 'Health & Safety' feature issue! Contact the GVCA for more details.

The Grand Valley Construction Association is an approved sponsor of the WSIB Safety Group Program.

Improving safety and improving the bottom line. Through the Safety Group program, the GVCA and the Workplace Safety and Insurance Board (WSIB) are working together to help you do just that.

By joining the GVCA Safety Group, your business will gain access to a network of firms all dedicated to improving workplace health and safety by networking, sharing best practices and pooling their resources. Safety Groups gives your company a competitive advantage by managing your WSIB costs and provides an opportunity to earn a rebate of up to 6% of your WSIB premiums. GVCA guarantees a minimum $3,000 rebate (based on successful completion of the program).

The program runs for one calendar year, beginning in December, and includes:
• 9 monthly working meetings
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• Templates (first year members only)
• Industry expert and guest presentations
• Year-end binder review to confirm completeness of work
• Audit ready

For more information, please contact admin@gvca.org or call 519-622-4822 x 120

GVCA Safety Group members consistently score high in audits. In 2013, GVCA was the highest scoring group among construction safety groups in Ontario and members received a total group rebate of $477,193!!
Different points of entry

If you’re still concerned about safety in the cloud, consider implementing solutions gradually. Pulowski says that most business start by outsourcing their email services to entities such as Gmail or Office365. Your office email still looks as though it came from ABCContracting.com, but in fact it’s working off one of those big service providers’ platforms and is accessible from anywhere.

“The next step in cloud adoption is to outsource your file management services to something like Dropbox, Google Drive or Microsoft OneDrive,” he adds.

Online file management enables people to share and collaborate on documents remotely, access documents from their phones, tablets, laptops and desktops, and create secure backups as they work. And it’s about as far as most companies get with cloud adoption, says Pulowski.

“The hardest step to get companies to take is the one to full cloud adoption: where there is no server in the office and everything resides on offsite computers.”

It’s tricky to do so because the monthly recurring cost can be high—much higher even than it would cost to average out the price of an expensive piece of hardware over the unit’s useable life. Yet businesses that think this way don’t account for the costs of maintaining that asset, the cost to run it, and the cost of downtime if the unit were to fail.

Choosing providers

When choosing a cloud provider, it’s easy to get caught up in options. A few simple guidelines can help narrow the field. For one, start with a reputable provider. Google, Apple and Microsoft are industry-leading brands that know their stuff. Prefer these companies over names you don’t know as well. Second, take the time to learn where your data is being stored. For legal reasons, ensure it’s in Canada, rather than say in the United States or anywhere else abroad. Third, make sure you have the bandwidth to handle the move to the cloud. If your office isn’t on fibre or DSL lines, your network may have trouble handling the bump in traffic.

Moving to the cloud is a big decision. Even if the timing isn’t right for your company right now, says Pulowski, don’t dismiss the idea altogether.

“Especially as more companies hire more people from Generation Y and the Millennials, cloud computing will become more important,” he says.

“Think of this as another business investment decision to be evaluated regularly, not just as a one-time thing.”
RHC was founded nine years ago when Grant Roughley, RHC President, was given the opportunity to start a commercial construction firm.

“The old linear model of design-build was flawed and often problematic. Our goal at RHC was to build a company around a project management process that relied on collaboration and an understanding of the holistic value of the building process – that being that every part affects the whole and the more you can align the parts the better the whole.”

With this direction and vision RHC has built teams around a collaborative model where team members have mutual respect for expertise no matter the discipline. Good effective planning and stakeholder involvement at the early stages are also crucial in this process.

Roughley commented, “we have developed our corporate culture and values so that they support the environment for an integrated project team model. To support and enhance this we invest heavily in training to ensure that a collaborative mindset is filtered throughout project teams and we view suppliers and trades as partners in the process. Communication and an understanding of the project objectives and constraints are vital to aligning the teams around the same priorities.”

The goal in pursuing this model of collaboration is to put a best value system in place from design to completion. RHC teams work with project stakeholders to understand priorities for their project, which may be capital expenditure or building life cycle and operational costs. RHC teams encourage wide stakeholder involvement even during the design development stages.

This process requires a larger upfront investment on the part of the project teams but the outcome maximizes value for investment. The final built form balances capital expenditure with building performance and operating costs. The end result is a better building.

RHC has grown from a staff of 5 and one million in sales in its first year to a current staff of 55 and 60 million in sales with close to 80% of its business coming from referrals and repeat clients.

“We utilize the integrated project team approach in about 85% of our work which is delivered under a form of construction management,” commented Roughley. “Our methodologies lend themselves very well to corporate and institutional clients. We have had a great deal of success working with these types of clients who are looking for a well-structured and transparent process where the traditional design-build adversarial model is replaced with a model that has all parties aligned around the clients’ priorities and objectives.

We have developed a strong base of seniors’ care projects and invest in our own staff development to enhance our knowledge in the construction of care facilities. This includes having field and project management staff complete the CSA Infection Control in Healthcare Facilities training course.”

Roughly considers RHC’s investment in their team members to be an essential part of their success and this is reflected in being named one of Canada’s 50 Best Small and Medium Employers by Aon Hewitt and Queen’s School of Business in 2014, and this year being included in the AME list of top 100 companies in Canada.

RHC’s strategic plan involves continuing to grow within the corporate and institutional markets where there is an appreciation for best value as opposed to lowest price. This is also a valuable model which can be applied in facilities where financial constraints restrict the ability to re-build, and instead require extensive upgrades and renovations. Roughley definitely sees growth opportunities for RHC in servicing this growing demand.

Commenting on a particular client’s performance requirements and cost constraints Roughley says that we require an understanding of whether they are capital cost driven versus a long term performance and operating cost view. Some corporate clients may restrict their return on investment model to 5 – 7 years. As a result any decisions around costs for building assemblies must show a positive return within 7 years, allowing for flexibility in holding or selling the property. Other clients taking a longer term view will often be looking at a much longer building performance cycle, often 20 – 30 years.

When asked about the future, Roughley says that the industry is evolving and clients that build all the time are really starting to appreciate the value of integrated project teams and the ‘Get out of your ivory tower’ attitude. Communication and mutual respect for the unique skills of individual team members is critical for success.

“The percentage of projects awarded under the stipulated-sum linear model is diminishing. It does not get the best value and it is often adversarial. We need to continually look at innovative thinking where we can leverage new technologies and ideas that add value. Utilizing electronic platforms have increased communication on project teams and leveraging knowledge from other industries such as lean manufacturing is really changing our industry.”
Eyes in the Sky

How drones make site inspections safer—and more data rich

Imagine a faster, safer and more reliable way of conducting building envelope or site inspections. A method where acres of space can be accurately surveyed in a matter of minutes and hard-to-reach or dangerous spaces can be assessed for trouble spots without a single worker ever strapping on fall arrest gear. All of this—and more—is possible thanks to drones.

Uses across many industries
Unmanned aerial vehicles (UAVs—or drones to most people) are taking industry by storm. And not just construction. Businesses around the world are finding new applications for these small, lightweight and highly versatile tools. Police forces, for example, use drones to collect evidence at crash sites. When layered with geo-referencing information, the images drones collect can be used to reconstruct accident scenes in a fraction of the time it would ever take to manually measure and sketch the site.

Drones are just as useful and just as versatile in construction. One of the more obvious uses is to fly over an unserviced site to understand topography, terrain changes, watershed and other such site selection issues. A drone can fly at heights up to 400 feet and capture about 10 to 20 football fields’ worth of data per half hour. And it does so with surprising accuracy. As the drone flies, its on board camera captures hundreds of thousands of datapoints relating to spatial location, elevation, speed of flight, etc. The resulting data can then be combined into single images that reveal a surprising amount of usable intelligence about site conditions—and about material types and volumes, and building location, as a result.

Restoration and inspection work
If renovation and restoration work is more your field, imagine sending a drone up to the tenth floor of a building to inspect damaged masonry without ever equipping a worker with a fall arrest harness. Dave Kroetsch, president and CEO of Aeryon Labs Inc., a Waterloo-based drone manufacturer, explains that its Aeryon HDZoom30 camera can deliver images precise to within millimetres from as far as 60 feet away.
“This type of application is perfect for building and powerline inspections,” he says. “Our imaging is of such a high quality that we can count the threads on bolts from tens of feet away.”

Michael Cohen, president of Industrial SkyWorks, which flies drones and performs aerial data analytics on behalf of companies across all manner of industries, explains that drones offer an added layer of safety over traditional inspection methods. Heat-loss inspections in commercial roofs, for example, are typically done at night by workers walking on the roof and carrying thermographic cameras. It goes to say that the risk of accidents is high. Even under the best of conditions, roof work is dangerous. It’s even more so at nighttime.

“Drones can do the same work of a person without ever deploying a single set of boots,” he says. “What’s more, they can cover a much larger area in a fraction of the time. And the data they return is worth way more than the proverbial thousand words that a picture tells.”

**Not a toy for hobbyists**
Drones have become popular among hobbyists, but the sort of tool that you buy for flying around the local park isn’t the kind you need for construction inspections, says Kroetsch. Just as pros use different hammers and saws than home handymen, they should use similarly sophisticated and rugged drones on site.

Not surprisingly, the price tag associated with these units can be large. Aeryon can set up a company with a professional-grade drone—complete with a sophisticated and intuitive user interface—for between $60,000 and $100,000. This is the kind of out-of-the-box solution built for a user who is not a pilot, and which accounts for variables such as wind, environment and even low battery life.

If that level of investment isn’t for you, then Industrial SkyWorks can fly a drone on your behalf on short notice for far less money, although the price varies with scope of intervention. At the end of the process, the company will deliver images and videos overlaid with exactly the data you need to make intelligent site decisions.

**CC Innovations to study drone use**
Canadian Construction Innovations, the new institute for research and innovation in construction, is working with providers such as Industrial SkyWorks to study the proven and potential applications for drone use in our industry. President Pierre Boucher says the institute hopes to publish a paper on drones in the first half of this year.

“There are a lot of specific applications to our industry that have yet to be explored,” he says. “What’s more there are a lot of pitfalls such as liabilities as well as legal requirements to be observed when flying drones. None of this is well understood by the industry and we want to clear up misconceptions in simple terms.”

The limits to the use of drones in construction, it seems, are bound only by users’ imaginations. ■
The 2014 Construction Technology Report takes a look at the IT strategies that support technology decisions and influence research and development of emerging technologies. Conclusions from the report are outlined below. However, it’s important to highlight the overarching conclusions that permeate through every section and stand to make a visible impact on the construction industry.

Budget allocations for information technology in the construction industry are abysmally low; reportedly lower than most other industries. The 1,000 builders that contributed data to this report confirm that common assessment, with more than 30 percent indicating their IT budget was less than one percent of 2013 corporate revenue.

Information technology provides unprecedented competitive advantages across all industries. There is a reason other industries spend, on average, two to three times as much on information technology as the construction industry. When done right, IT transforms resources, most importantly human resources, from expense lines into revenue drivers. Information technology is a sustainable resource with a disappearing learning curve: Consumer technologies push business technologies to be easier and more intuitive every day.

Nearly 60 percent of companies responding have a dedicated IT department; most often these companies have 201 to 500 employees or more than 1,000 employees. The next generation of builders has been using Facebook and Google since before they could drive. Their work and personal lives are centered around technology and they will be the driving force behind technology adoption during the next couple of decades.
Mobile technology
Since 2013, the categories of software in which construction professionals have seen the most growth in mobile development are solutions for field data collection, BIM and customer relationship management. The proliferation of mobile devices connecting the office to the jobsite is being met by increased capabilities from field data collection solution providers. Project management solutions touch every phase of a construction project so it is fitting that mobile technology connects that data through the phases. Accounting lags behind in mobile offerings.

Forty-nine percent of survey respondents said they use a personal laptop, smartphone or tablet for work purposes, but only 32.7 percent of those professionals companies insist on securing those personal devices before they can be used at work.

Software integration
Companies are honing in on the optimal number of software solutions. They’re understanding the cloud, employing mobile technologies and implementing the best combination of solutions to serve their corporate missions. Then they are reverting to pre-Internet tactics to communicate that cloud data across departments.

The efficiencies of software solutions are severely undermined when dynamic data is seamlessly organized, only to be exported to static spreadsheet files for rough imports into software for the next phase of construction.

However, only 4.1 percent have full integration across their software platforms and more than 30 percent said they have no software integration whatsoever. Maybe construction professionals still don’t understand the power of integration—of two-way automatic data transfer from prequalification, bidding and estimating to project management, superintendents, subcontractors, owners and onward. More likely, construction professionals don’t think requesting integration from their solution providers will have much of a result.

The good news
It’s certainly not all bad news. Builders are trusting the cloud, they are demanding mobile operability and they are using fewer spreadsheets than ever before. Construction professionals are staying current on the next generation of technologies, such as augmented reality, virtual reality, drones and wearables, even if their companies aren’t budgeting for them yet. Survey participants are more receptive to IT solutions than ever before, even if those solutions come without the support of IT staff and involve a good deal of self-help.

The good news is that it’s not too late for companies to reassess their information technology strategies, learn from what they are doing right, and remedy what could be done better. Expanding the broader IT budget to match cross-industry averages also would enable the industry as a whole to not only keep up with, but eventually surpass, non-industry peers in innovation and technology adoption.
In construction, teams often need to capture information about existing conditions. Companies may need to quantify how much earth they are moving for a new development, measure buildings that are under construction or renovation, or survey roads and infrastructure for civil engineering projects. In all of these situations, reality-capture technologies like 3D laser scanning, mobile and aerial LiDAR, and unmanned aerial vehicle or handheld photogrammetry can help. When it comes to construction projects, reality capture technologies deliver four main benefits.

1. **Construction accuracy from precise as-built models.**
   At the outset of a construction project, it’s not uncommon for firms to begin work with excavation. For this project phase, contractors base their bids on volume calculations created by a civil engineer. If it turns out there is more earth that needs to be moved than initially estimated, contractors won’t be paid for the extra work unless they can provide definitive information about the soil moved out of borrow pits and into stockpiles. Unmanned aerial vehicles can quantify this data quickly and inexpensively. The construction site is scanned before earth moving begins and after the excavation work is complete. This can typically be completed in less than an hour and with the resulting data, it’s easy to calculate the volume of earth moved and compare it to the initial bid.

   Reality capture technologies are also valuable during the subsequent phases of construction projects. For example, façade companies are responsible for manufacturing metal panels that hang on buildings. In the past, panels often had to be shimmed to compensate for inaccuracies in the building measurements. With 3D laser scanning, these firms can now scan the building before panel manufacturing begins. On a recent project, a façade company used this technique and when the panels were hung on the building, they were accurate to within one quarter inch.

2. **More cost-effective than traditional data collection methods.**
   Many buildings, especially plants and factories, have complex piping and internal structures that are hard to measure. At one of our client’s sites, it took six engineers three months to measure a factory manually with tape measures! Reality capture technologies can achieve the same results in just a few hours.

   Scanning also can eliminate the need for return visits to a site. With manual data collection techniques, the team may forget to measure a particular element. With 3D scanning, LiDAR, and photogrammetry, everything that can be seen by the device is captured. That means that teams can extract information about particular aspects of a facility when they need it and can always go back to the data set, if additional data is needed about a particular element.

3. **Increased safety for team members.**
   One of the major benefits of reality-capture devices is their ability to collect data from a distance. Once a scanner is placed on a tripod, for example, it will capture information about whatever is visible to its lens. In the civil surveying arena, team members no longer have to stand in busy highways to obtain measurements of roads or bridges. For building renovation projects, it’s easy to gather data about ceilings or rafters from the floor. There’s no need for engineers to physically take measurements in hard to access places. In addition, areas of business facilities like factories don’t have to be cordoned off for measurements resulting in less disruption to revenue generating activities.
Accurate representations of buildings are valuable for facilities management and maintenance teams. Unfortunately, old CAD drawings aren’t usually helpful because they are out of date and don’t reflect the current as-built environment. A better solution is to create a digital model. Reality capture technologies, such as 3D laser scanning, can be used to create point clouds which form the foundation of building information models. With a model in hand, facilities management and maintenance teams can easily replace broken parts, like valves or door handles.

Point cloud data can be used in other innovative ways over the course of a building’s life. One client, for instance, created online plant maintenance training with this information where users participated in a video game-like simulation of the building, based on the point-cloud data.

If your construction firm would like to explore how reality capture technologies can be incorporated into your business, the IMAGINiT team has deep expertise with reality capture hardware and software, as well as the workflows needed to transform digital data into design and engineering deliverables.

This article was written by Daniel Chapek, Manager, Reality Capture Solutions Team, IMAGINiT Technologies. He can be reached at dchapek@rand.com or 402-718-8652.
Training for the Future

Myths and truths about training apprentice carpenters

There may be a lot of bad information out there about hiring an apprentice carpenter. Some people believe that the law requires you to have licensed carpenters on staff before you can register apprentices, or that your company has to be a member of the Ontario College of Trades in order to train an apprentice. Both are false.

It’s actually quite simple to register an apprentice carpenter. Start by reaching out to the Ministry of Training, Colleges and Universities at kitchener.apprenticeship@ontario.ca or 519-653-5758. The apprentice can then take his or her in-school training at a registered community college. Conestoga College, for example, offers all three levels of in-school carpenter training. Each level takes eight weeks to complete and schooling is scheduled in the late fall or winter.

The best part is, your business benefits from hiring an apprentice in more ways than one. First, you can take advantage of a tax credit worth up to $10,000 per apprentice per year. Second, research shows you’ll realize a return on your training investment within just two years. Third, you’ll add skilled employees to your workforce. Fourth, you’ll boost employee loyalty and company morale by demonstrating your commitment to your employees.

For more information about carpentry apprenticeships at Conestoga College, contact Suzanne Moyer, Chair of Trades and Apprenticeship at 519-885-0300, ext. 5234 or Smoyer@conestogac.on.ca.
A developer wants Cambridge city council's approval to bring a 200-unit hotel and condominium tower to the east bank of the Grand River in Galt. Pearle Hospitality is asking the city for a variety of site-specific bylaw amendments which would allow the 12-storey, 204-unit building to fit into a 0.63 hectare parcel of land between the Waterscape Phase 2 condo tower under construction and the Cambridge Mill restaurant. The developer wants the city to amend its zoning bylaw to increase the maximum permitted height of a building in that space from 21 metres to 54 metres and reduce the minimum yard setback on two sides of the property to zero. The east bank of the Grand River from the Park Hill GVCA members may access the report at no charge. Those who subscribe to it appreciate the opportunity to study the construction landscape well into the future and predict where their forces and efforts can be best targeted to ensure success.

No other local construction association in Ontario offers this kind of pre-bidding data and no other report provides this depth of forward looking information. The Crystal Ball Report is construction intelligence at its finest.

Here are two projects currently on display in the GVCA's Crystal Ball Report:

**Twelve-storey Riverside Tower proposed for Galt**
A developer wants Cambridge city council’s approval to bring a 200-unit hotel and condominium tower to the east bank of the Grand River in Galt. Pearle Hospitality is asking the city for a variety of site-specific bylaw amendments which would allow the 12-storey, 204-unit building to fit into a 0.63 hectare parcel of land between the Waterscape Phase 2 condo tower under construction and the Cambridge Mill restaurant. The developer wants the city to amend its zoning bylaw to increase the maximum permitted height of a building in that space from 21 metres to 54 metres and reduce the minimum yard setback on two sides of the property to zero. The east bank of the Grand River from the Park Hill Road bridge along Water Street is already home to one completed condo tower, the Cambridge Mill restaurant, and another condo tower under construction. Council will wait for city staff to analyze the proposal before voting on whether to approve it. The building will contain 90 hotel rooms, 114 condominiums, banquet rooms and "amenity space" for its permanent residents. The developer wants it to share one of its driveways with the adjacent Waterscape Phase 2 condo tower. To satisfy parking requirements, the plan for the site includes a 316-space underground garage spread between two floors. The area of land currently serves as a parking lot, and city officials say that the development might qualify for a tax increment grant, as the site is contaminated due to past industrial uses.

**Trinity United Church redevelopment**
The existing 42,000-square-foot 1905 building, which has no significant architectural or heritage value, would be torn down. The church is working on plans to preserve essential elements of the congregation's heritage, such as stained-glass windows and church archives. Plans are still in the early stages, but the church hopes to build at least one, possibly two, buildings of up to 20 storeys, with small units suitable for one or two people and limited parking. In keeping with the church’s social mission, Trinity would like the units to be modest and relatively affordable. As well, the developer would build 14,000-18,000 square feet of space that the church could use for its worship and offices, designed as flexible, multi-use space that other community groups could use for meetings and activities during the week when the congregation doesn’t need it.

Owner: Trinity United Church, 74 Frederick St Kitchener ON.
This is an exciting opportunity to join industry experts for a look into the crystal ball for upcoming construction opportunities. Listen to a panel of local public buyers discuss their budgets and plans for construction spending in 2016. This forum will provide highlights of the economy as it relates to construction.

DON'T MISS
GVCA's Economic Forecast Event in November 2015
2016 CONSTRUCTION SPEND

This is an exciting opportunity to join industry experts for a look into the crystal ball for upcoming construction opportunities. Listen to a panel of local public buyers discuss their budgets and plans for construction spending in 2016. This forum will provide highlights of the economy as it relates to construction.

EVENTS CALENDAR

May 12
WinC Spring Social
at The Pines – registration required

June 18
GVCA Annual Golf Tournament
Conestoga Golf Course – registration required

July 23
LinC Golf Day
Conestoga Golf Course – registration required

August 25
WinC Golf Tournament
Whistle Bear Golf Course – registration required

EDUCATION CALENDAR

April 29
Emergency First Aid Training

April 29 & 30
Standard First Aid Training

April 23
BIM Lunch ‘n Learn

TO REGISTER
To register, or request additional information please contact admin@gvca.org or call 519-622-4822 X120

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For more information, please visit www.liunalocal1059.com
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GVCA Members receive an exclusive $5,000 savings*

Sometimes getting to the job site is work itself. That's why we're introducing Canada's only 4-wheel drive commercial van – the Sprinter 4x4. Activated at the push of a button, the Sprinter 4x4 uses the 4ETS feature to electronically control individual wheels, giving these cargo vans some serious ground-gripping power when you need it. See what it's made of at Sprinter4x4.ca.

$5,000 cash incentive is valid for all 2015 Sprinter models, including Sprinter 4x4 models, valid for lease, finance, or cash purchase contracts and is to be deducted from the negotiated total price before taxes. Lease and finance offers available only through Mercedes-Benz Financial Services on approved credit. Dealer may sell for less. Offers may change without notice and cannot be combined with any other offers. Offer expires September 30, 2015.