Canadian Card News

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Skills Data Card Initiative

Big Brother meets the Holding Company

The construction industry in Canada is set to jump onto the leading edge of smart card technology, if the **Skills Data Card Initiative** (SDCI) reaches the rollout stage. The project provides a means for companies to assess whether the construction workers reporting for duty on site are adequately qualified to carry out the work that they have been contracted to do. Smart card technology is being proposed as the ideal solution for simplifying the assessment process, saving construction companies heaps of money. Or so the theory goes.

There are some 800,000 construction workers working in Canada, according to Statistics Canada (StatsCan) (see page 12 – Industry Statistics). Many of these workers have to prove that they have certain qualifications before they can work on a specific job, site or project. The smart card used in the SDCI will contain information which will allow contractors and hiring companies—as well as trade unions—to determine whether a particular construction worker has the necessary skills, qualifications, experience or training to work on a particular job or project.

Status quo

Allen Wright, **Vice President** responsible for the SDCI at **BIT Integration Technology**, says that the need for a card-based system stems from a number of different factors. First, the construction industry is characterized by a number of disciplines where highly qualified, skilled and experienced workers are required. There are some 24 trades in the construction industry, and many areas of specialization within each trade. For example, YIG welding is a highly specialized field, and a welder needs to undergo specific YIG training to be able to do YIG welding. When a company recruits workers for a specific, say, welding job they need to ensure that the applicants have the appropriate qualifications and training to be able to do the job properly.

One of the biggest problems that companies have to deal with is verification of worker qualifications. **Jim Steketee**, **Manager of the Labour-Management Department** at the **Construction Safety Association of Ontario** says that, currently, workers have to carry wads of paper—certificates showing their qualifications and the training programs they have attended—with them in their wallets. Certificates get damaged or lost, and sometimes the worker forgets to bring the appropriate certificate to the construction site. This makes it very difficult for contractors or companies employing construction workers to verify the qualifications and training of any particular individual.

"Some people carry up to seventeen or eighteen different certificates and cards on them," says Wright. This would include anything from St. John's Ambulance certificates, to welding qualifications and certificates outlining specific safety and training courses that the worker has been on—for example, confined spaces training, or training to work at certain heights.

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Site processing delays

Another important factor—closely allied to verification—is that of job site processing delays. Verifying a worker's qualifications can take a significant amount of time. Wright cites the example of an automotive manufacturer at the time of shutdown. He says that when these plants shut down, they can sometimes take on 1,500 construction workers to carry out various modifications, repairs and upgrades to the plant. In some cases, validating a worker's qualifications can take up to four hours per individual.

Jim Steketee concurs. He says that processing workers onto a construction site is a particular headache for companies. Workers have to queue for hours before they can start work. Companies sometimes even have to set up tents in their parking lots to process workers onto a site. The reason for the processing delay is that someone has to go through each of the worker's certificates to ensure that they comply with the company's requirements. This is particularly important from a due diligence and safety perspective. In many cases, workers forget to bring certain certificates or cards with them, which then forces the company to undertake follow-up investigations if the worker is admitted onto site.

Due diligence

Then there is the issue of worker and public safety. Companies need to ensure that inappropriately trained or qualified people are not put on jobs, since this could increase the risk to the public, other workers, or the worker him- or herself. The situation is complicated by the fact that certain types of training expire after, say, two years, which means that the worker has to undergo retraining in that area before he or she can be used on that type of job again.

Apart from the fact that it makes good sense to ensure adequate training on hazardous jobs, companies that put unqualified people—or people that are not suitably trained—into potentially hazardous jobs face huge fines should an accident occur, especially if the accident is deemed preventable.

Closely allied to the safety issue, and very much related to the question of corporate liability, is that it is the responsibility of the hiring company to ensure that the individual working in a potentially hazardous situation is appropriately trained and qualified. This means that the hiring company, whether it be a construction contractor or a manufacturer, needs to ensure due diligence in examining worker qualifications and certificates, and ensuring that they receive the necessary safety training. This is one area where failure to ensure due diligence results in large fines, ranging from $30,000 to $750,000 per event, should some preventable injury or fatality occur.

Due diligence is probably the most important aspect for companies, says Wright. The requirements are quite stringent. Company's have to ensure that:

- Workers are competent, and competently supervised
- Prescribed measures and reasonable precautions are taken, and procedures followed, to avoid hazardous situations
- Work is conducted in compliance with the Act
- Occupational Health and Safety Act regulations are followed
- Records are kept of safety training
- Companies have the necessary systems in place to allow safety audits
- The company has an effective Internal Responsibility System in place

Some companies have been heavily penalized, with multiple fines being handed down for a single accident, because of failure to comply with due diligence requirements.

Please see 'Duplication of costs' on page 8

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US health smart card project

The **Health Passport Project**, designed and implemented by **Siemens Information and Communication Networks, Inc**., was demonstrated recently to 13 US Governors and three Canadian Premiers. It is believed to be the largest health smart card pilot program in the US to-date.

The project will allow mothers and children who are eligible for health and food benefits in three Western states to have greater access to services, and more responsibility for managing their health care. The application will also help the states manage health information and simplify administration of health and food benefits.

The project is to be rolled out over the next four months in the three Western communities of Bismarck, ND, Cheyenne, WY, and Reno, NV. The goal of the pilot is to demonstrate how electronic health cards can be used to improve information sharing and administrative efficiency among public and private health care providers. Funded by federal health and nutrition agencies and numerous partners, it is the first effort by states to develop a multipurpose, standard smart card that can be used by many different programs within the state and, eventually, across state lines. Nearly 25,000 families will participate in the trial project. ¤

Cards Canada Conference

AIC's Cards Canada '99 Conference and Exhibition held at the end of June 1999, drew a sizeable attendance, despite the unfortunate timing of the event. **Colby Hunter**, **Conference and Exhibition Manager** for the event, said that some 70 delegates attended the conference, with about 300 passing through the exhibition hall. Approximately one third of the visitors were from senior management positions—namely President or Vice President/General Manager.

In total, eleven exhibitors signed up to showcase their products and services at Cards Canada '99. About twenty five delegates attended the one day workshop on the third day of the conference.

Hunter says that feedback from delegates was very positive, especially with regard to the content of the presentations. And although the number of paying delegates could have been higher, he says, AIC now has a good base to build on for the next year. One of the things that will be happening is that the timing of the conference will be changed—to September 2000. In addition, Hunter says that AIC have decided to include Information Security as a parallel theme, a move which is being instituted for all of the organization's smart card conferences around the world. ¤

Canadians ranked first in world for ABM use

The latest edition of **Canadian Bank Facts**, released recently by the **Canadian Bankers Association** (CBA), contains some interesting nuggets of information about the world of banking in Canada.

Debit Cards: As of May 1999, there were some 33 million debit cards in circulation in Canada. An estimated 276,000 retailers now offer **Interac Direct Payment** (IDP), and there were 1.4 billion transactions in 1998, totalling $58.5 billion. Last year, for the first time, IDP transactions surpassed cash as consumers' preferred method of payment at supermarkets and department stores. Indeed, 57% of people prefer to use debit or credit cards to make purchases rather than cash or cheques.

Credit Cards: There are currently more than 600 issuers of credit cards in Canada. The average credit card interest rates for standard cards—issued by the six largest banks—has dropped by 3.4 percent since October 1990 and co-branding has become an increasingly popular practice. Fifty five percent of Canadians pay off their credit card bills each month. In the year ended October 30, 1998, there were a billion credit card purchases worth $84.1 billion.

Automated Bank Machines: The number of ABMs across Canada has increased by more than 27 percent, to 15,481, since 1993. Canada ranks second in the world, behind Japan, in the number of ABMs per person, and third, behind the UK and France, in the number of debit card terminals available. Canada is number one in the world when it comes to ABM use, logging 52.7 transactions per Canadian in 1997, followed by the U.S. at 41.1 and Sweden at 35.3.

Electronic Banking: According to the CBA, Canada is a world leader in electronic banking usage with some 85 percent of daily bank transactions now being done through ABMs, debit cards and telephone and online banking. Indeed, telephone banking has grown by 50 percent each year since 1994. A 1998 **Ernst & Young** Report on Banking and Technology estimates that phone banking will grow by 374 % over the next three years, Internet banking by 292 % over the same period, and ABMs by 19%.

In their look ahead at what lies on the horizon for banking and financial services, the CBA predicts that in-store banking, already widely used across the world, will grow in Canada. Supermarkets, retail stores and mega-retailers will join together with banks and other financial institutions to offer financial services in their stores. The CBA goes on to postulate that in the near future Canadians may find themselves carrying a multi-purpose card designed to process credit, debit and stored value transactions. ¤

THE CHIP

By Bruce J. Brittain

The computer chip now runs the show
Cooks our food, flies the plane
Sends e-mail to Aunt Elaine.

The computer chip has become quite small
Shrinking, shrinking to nothing at all

But there must be more we can make it do
Open doors or track our ills
Hey, let's see if it will pay our bills.

We can put the chip on a plastic card
Put value on the chip, like a secret stash
This little puppy could replace cash.

No more bulging pockets of pesky coins
bulky quarters, nickels and dimes
To pay for a latté or the New York Times.

Consumers and merchants will embrace the card
Transactions, they'll flow with ease and speed
There is no doubt that there is a need.

The computer chip has become quite small
Shrinking, shrinking to nothing at all

So, let's build the system and make it go
Revolutionize money and then we'll gloat
There are millions to be made on just the float.

Atlanta in '96, the initial roll-out
Facing the challenge, we did not blanch
Got the blessings of Juan Antonio Samaranch.

With Olympic success as the launching pad
Smart Card victory will turn the tide
Then, the big time, the Upper West side.

With Chase and Citi taking the lead
It's VISA cash in the bank's backyard
Not to mention Mondex and MasterCard.

The computer chip has become quite small
Shrinking, shrinking to nothing at all

The merchants are signed and given hardware
From sandwich shops and coffee bars
to jewelers and newsstands that sell cigars.

Thousands of Smart Cards are sent out free
To Citi and Chase customers they come in the mail
With all this hype, the program cannot fail.

But history, alas, is writ large for all
The chinks in the armor, the flaw in the plans
of smart cards, consumers and merchants are not big fans.

So, with a final smart card thought
The story will be told and this chapter done.
You can build it but they don't have to come.

The New York program has become quite small
shrinking, shrinking to nothing at all.

Presented by Bruce Brittain at the Cards Canada '99 Conference and Exhibition

Event Roundup

CTST Canada Conference
August 24-26, 1999 Toronto, Canada
905 420-3520

Multi-Application Cards Asia '99
August 25-26, 1999 Singapore
+65 325 6330

ESCAT '99
September 1-3, 1999 Helsinki, Finland
+358 9 560-7500

Cards Australia '99
September 7-9, 1999 Sydney, Australia
+61 2 9210-5700

Scandicards '99
September 8-10, 1999 Stockholm, Sweden
+46 0 8588-31036

Future Payment
September 12-15, 1999 Chicago, IL, USA
1 800 829-1370

Branding and Co-branding Smart Cards
September 13-14, 1999 London, UK
+44 171 915-5055

Biometric Consortium Fall '99 Conference
September 16, 1999 Crystal City, VA, USA
info@biometrics.org

Brasil Cards '99
September 21-24, 1999 Sao Paulo, Brazil
++55 11 3676 0688

Health Cards '99
October 5-7, 1999 Milano, Italy
(CNR-ITBA)

ICMA Manufacturing Expo
October 17-20, 1999 Granada, Spain
609 799-4900

Cards Africa '99
November 10-12, 1999 Johannesburg, South Africa
+27 11 463-2802

Cartes '99
November 16-18, 1999 Paris, France
+33 141 18-85-55

Company News

NBS Card Technology Corp. has appointed two new Marketing Managers. **Thomas Laudicina** will be Marketing Manager for the NBS Horizon Series and **Anthony Titone** for Tabletop Embossers.

Visa International: The Board of Directors has elected **William P. Boardman** as its new **Chairman**. Boardman succeeds Peter Ellwood, who has served as Visa International chairman since 1994. **Paul J. Vessey** has been appointed **Vice Chairman**, succeeding F. Phillips Giltner. Vessey is **Executive Vice President** of **Canadian Imperial Bank of Commerce**.

IVI Checkmate *and* ***ICL*** have announced a new agreement in which ICL will offer IVI Checkmate's **eN-Touch 1000** customer-interactive touch-screen and signature pad terminal to the North American retail market. The agreement compliments a previous agreement in which ICL provided IVI Checkmate cheque readers and customer-activated debit/credit terminals.

Certicom has adopted the new Elliptic Curve Cryptography (ECC) parameters released by the USA's **National Institute of Standards and Technology** (NIST). The company said it was pleased to see that the NIST specifications support its cryptographic standards and technologies. The new parameters were released in June (see: **http://csrc.nist.gov/enpt.html**). The endorsement by the U.S. Government will enhance interoperability and scalability of ECC technology worldwide.

BIT Integration Technology: **Eugene Lo**, former President of BIT Integration Technology, has filed a $750,000 wrongful dismissal lawsuit against BIT. The spat comes after Lo was dismissed, allegedly for poor performance, at a time when the company was going through financial problems as a result of cancellation of it's Guang Xi **Driver's Licence and Infraction Management System** project in China. Management at BIT have said that they will launch a vigorous defence against the legal action being brought about by Lo. ¤

E-cash over the Net at Sherbrooke

Residents of Sherbrooke will be the first in Canada to load **Mondex** electronic cash onto their **Royal Bank Client Card** via the Internet.

Royal Bank is providing customers with a smart card reader and software developed by the bank that will make their PCs e-cash ready. Net users will be able to access their chequing or savings account via the Internet to load e-cash onto the **MULTOS** chip on their Client Card, or to make e-cash deposits to their own bank account.

Internet loading of e-cash will form part of the Mondex pilot project in Sherbrooke. It is one of the first in the world to meet the standards of Internet Open Trading Protocol (IOTP) V 1.0.

"[This] provides a…way to load e-cash onto a bank card …from the office or home. [It] is another important step for e-commerce and smart card technology in Canada," said **Al McGale**, Vice-President for Smart Cards and Electronic Commerce at Royal Bank. ¤

Royal Bank buys stake in AOL Canada

Royal Bank and **America Online, Inc.** have announced a strategic alliance that includes Royal Bank's acquisition of a 20 percent equity stake in **AOL Canada**, for US$60 million. Royal Bank and its US subsidiaries **Security First Network Bank** and **Bull & Bear Securities** have also committed to enter into interactive marketing agreements across AOL properties in the US and Canada, totaling more than US$7.5 million.

The alliance will enable AOL Canada to accelerate its growth strategy, and will enhance Royal Bank's ability to offer greater electronic access and functionality to its clients. It will also provide both companies with opportunities to co-brand and bundle services, and collaborate on a range of e-commerce initiatives. Under the agreement Royal Bank has the option to acquire a further interest in AOL Canada. ¤

Wireless terminals at Pan Am Games

Scotiabank, **Rogers Cantel** and **IVI Checkmate** have introduced a new wireless mobile point-of-sale (POS) terminal, to debut at the **1999 Pan Am Games** in Winnipeg. Spectators and participants will be able to use debit and credit cards at mobile terminals located at concession stands in the stadium during the games.

The IVI Checkmate terminals operate on the **Cantel AT&T Mobitex** data network. They have been piloted at various locations in Ontario with **Pizza Pizza**, **Harvey's** and a **Snap-on Tools** franchise. They will be introduced later this year at **Pearson International Airport**'s **Park 'N Fly**. ¤

BC gets wireless payment technology

Vancouver City Savings Credit Union (VanCity) has launched a new wireless point-of-sale (POS) pilot program for business members. The wireless terminal is capable of remotely handling credit and debit cards, plus other cash register functions such as coupons, cheques and customer loyalty programs.

The new terminals are also capable of reading chip-cards. The terminals will use a variety of cellular mobility networks, typically the latest CDPD (cellular digital packet data) technology, providing secure data transmission from remote locations without incurring long distance phone charges for the merchant.

Developed in co-operation with local software developer **Soft Tracks**, the new remote POS terminal is now being used by a VanCity business member—**The General Store**—a company offering interactive home shopping and grocery delivery service to customers in the Lower Mainland. VanCity expects its new terminal to appeal to businesses operating in remote locations and needing immediate payment from customers. In-home trades such as plumbers and carpenters, food and beverage delivery services, seasonal recreational operators such as ski resorts and special events operators are all potential users. ¤

Company News (cont'd.)

MDC & First USA form partnership

MDC Corp. and **First USA Partners**, the **Affinity Card** division of **First USA Bank N.A.,** have entered into a comprehensive five-year marketing partnership agreement. Under the agreement, First USA will directly market a series of affinity credit cards to the 13 million customers of MDC's direct-to-consumer cheque unit.

The marketing program will provide unique card designs that are aligned with the special affinity interests of MDC's product offerings. First USA and MDC will also develop cross marketing links that will include the marketing of MDC cheque products to First USA's customers and the linking of their web sites— a move which is expected to generate substantial cross-referral traffic.

Miles S. Nadal, **President and CEO** of MDC said, "The establishment of a strong relationship with a sophisticated organization like First USA is our first step in leveraging the phenomenal asset that we have built in our database of about 13 million customers. To date, we have spent over $100 million in building this customer base. We will be looking at other interesting ways to leverage this asset in the future with the formation of MDC Data Mining Ventures."

HyperSecur to offer Oberthur smart card products in Canada

HyperSecur Corporation has signed an International Agency Contract for Canada with **Oberthur Smart Cards USA**. Under the provisions of the agreement, HyperSecur has exclusive Canadian rights and non-exclusive worldwide rights to sell Oberthur's magnetic stripe, memory and microprocessor card products, as well as personalization products.

According to the newly appointed President of the company, Montreal based entrepreneur and financier, **Charles P. Villeneuve**, "We have discussed with Oberthur the possibility of manufacturing smart cards using our **HyperProximity** chip but no decisions have been made at this time".

The HyperProximity chip is a dual proximity level contactless solution based on ISO 14443 Type B. All of the transactions between the card and the reader are carried out by radio frequency (standard 13.56 megahertz). The chip communicates in two ways. Remote mode, up to a distance of approximately 10 cm. from the reader, is for rapid transactions such as is required in the transportation field or for fast ID-access to buildings. HyperProximity mode, at less than 5 mm from the reader, is used for secure and high data processing transactions required, for example, in the financial world.

The HyperProximity technology was introduced at the recent **CardTech/ SecurTech Conference** in Chicago, and is being implemented in the ST16HF52 contactless smart card from **STMicroelectronics**.

HyperSecur is hoping to promote the technology with key partnerships. ¤

Biometric Security expands

Biometric Security Corp., based in Vancouver, Bristich Columbia, has signed an agreement to acquire 45 percent of the private, California-based **Biometric Identification, Inc**. (Biometric ID) for an investment of US$5 million of convertible debentures. To date, Biometric Security has invested US$3.6 million in the company for research, engineering, marketing and working capital.

Biometric ID announced recently that its OEM fingerprint verification devices have been selected by a number of keyboard and point-of-sale manufacturers, including **Ingenico**, **Key Source** and **Tipro**.

The OEM fingerprint modules produced by the company are smaller than a business card and can reliably verify an individual's identity in less than one second. Each product employs Ridge Recognition, the company's proprietary fingerprint verification algorithm. ¤

Schlumberger enters Brazilian market

Schlumberger Smart Cards & Terminals has purchased an 80% share in **CardTech**, a Brazilian magnetic card company serving the financial markets. This move is in keeping with the company strategy of having a local industrial presence in regions that have an important smart card market potential.

Schlumberger has ten smart card manufacturing facilities around the world, including one in Mexico. According to the **President** of **Schlumberger Test & Transactions Europe**, **Gerard Leger**, "This equity stake reinforces our commitment to the Brazilian and South American markets at a time when the demand for smart card technologies is gathering momentum throughout the region. An industrial presence is critical to the Brazilian banking community as it undertakes a strategic shift from magnetic stripe cards to smart cards which are more secure due to digital encryption."

The company predicts that the market in Latin America is set to double over the next three years and will represent an increasingly important share of the world smart card market. CardTech was founded in 1983 and currently supplies magnetic cards specializing in credit and debit. It is one of the few Brazilian companies certified by **Visa** and **MasterCard** for card personalization. ¤

New CEO for Oberthur Smart Cards USA

Philippe Tartavull has been named as **President and CEO** of **Oberthur Smart Cards USA**. The former COO takes over from **Kirk Hyde** who was CEO since 1980.

Tartavull stated, "Oberthur Smart Cards USA will aggressively pursue existing markets for our chip-embedded cards as well as opportunities resulting from the explosive growth of the Internet in the U.S."

The company also plans to hold onto its share of the magstrip market. ¤

Industry Update

Financial industry could spark the growth of wireless e-commerce

Wireless Internet & Mobil Computing (WIMC), a consulting firm for wireless computing, has reported that financial applications—including stock trading, banking and credit card authorizations—will be major drivers in creating an international market for wireless data products and services.

The consulting firm cautions, however, that the success of the emerging wireless financial business will require more than just the right applications. Success, they say, is dependent upon reliable wireless networks, appropriate pricing, and very importantly, on "rock-solid security".

Wireless subscribers are very concerned about the security of financial transactions, but, according to WIMC consultants, several companies are working on security solutions.

Diversinet in Toronto is embarking upon a major effort to provide security software for pagers and digital cellular/PCS phones. Diversinet's security solutions are specifically designed to be "wireless-friendly" to accommodate the bandwidth and memory contraints of wireless devices.

Other Canadian initiatives include **Scotiabank** working with **Rogers Cantel** to offer wireless banking capabilities.

Consultants at WIMC say that rather than creating a single "killer app", the financial industry has an opportunity to create more lucrative "killer combos" of services. A wireless financial package could include: banking (everything from accessing account balances to transferring funds between banks), stock trading (combined with breaking news and financial analysis) and credit card authorizations (including alerts whenever a subscriber's credit card is used). ¤

Contactless smart card market to soar

The market for chips for contactless smart cards is expected to grow at an average 80% p.a., yielding a 15% share of the smart card chip market soon after 2000.

The recent survey, published by **SJB Research**, says that demand for phone cards will spur the market for security memories—both contact and contactless—resulting in an average annual growth rate of 10% through to 2003.

The survey goes on to say that after last year's growth slowdown and overcapacity problems in the smart card chip market, manufacturers are looking forward to an upturn that will see chip prices stabilising and even increasing. ¤

Korean consortium invests in Mondex

A south Korean consortium led by **MasterCard Korea** has signed a deal to invest in **Mondex Korea** in order to obtain rights to operate electronic cash money systems in Korea.

MasterCard Korea, **Kookmin Bank**, **Korea Credit Communication Inc**., **TeraSource Venture Capital** and U.S.-based **Amdahl Corporation** will invest in Mondex Korea. South Korea's state-run Korea Telecom formed a strategic alliance with Mondex Korea to make the telecommunications infrastructure in the country, including 1 million public payphones, compatible with the Mondex system.

Under the deal, Mondex Korea will be given the rights to issue cards carrying the Mondex electronic cash application. ¤

Visa launches Global Smart Path

Visa International's Board of Directors has endorsed the first phase of the **Visa Smart Path**, a global initiative that it hopes will act as a catalyst for smart card and e-commerce growth.

The initiative is aimed at helping banks to differentiate their products and services and strengthen customer relationships through the use of chip technology and new delivery channels, such as the Internet. A core part of the initiative is a set of milestones that will help guide member banks and their merchant/vendor partners to begin moving to a chip-enhanced payment infrastructure in a planned, proactive way. Some of the milestones that have been identified by Visa include the following:

- All new chip-enhanced Visa debit/credit programs which start after 31 December 2000 must be EMV-compliant
- All existing chip-enhanced Visa debit/credit programs must become EMV-compliant by 31 December 2003
- From January 2001 all new chip card terminals must be EMV-compliant and meet Visa's specifications for international operability

In addition to the above milestones, executives at Visa say that Visa Smart Path provides banks and merchants with recommendations on how to avoid making costly investments in equipment which they may not be able to upgrade to accept smart cards.

As part of the initiative, Visa has also announced a program to encourage and speed the deployment of smart card acceptance devices. Called "Accelerating Acceptance", the new program will enable Visa members to take advantage of exclusive offers which Visa has negotiated with device manufacturers.

In developing the program, Visa conducted a global cost-benefit analysis, which found that the investment necessary to transform the payment infrastructure for multifunction smart cards and e-commerce over the next decade could be offset by fraud and operational cost savings and increased Internet payment volume. The study also found that, globally, Visa members could stand to lose as much as US$30 billion in business to competitors if they fail to make the most of new smart card technology. ¤

Product News

Compaq Computer has introduced the new **Aero 8000**, the company's first Handheld PC Professional device and the first mobile device to offer built-in smart card technology. Weighing just 2.9 pounds with a 10-inch SVGA screen, a keyboard 95 percent the size of standard portable keyboards and up to 13 hours of battery life, the Aero 8000 offers more secure remote access to corporate data and provides a secure PC for reading and sending confidential e-mail. The Aero has an embedded smart card reader/writer and a suite of advanced security applications, making it ideal for mobile workers in field sales, service and healthcare organizations. **Schlumberger Smart Cards & Terminals** is to provide the smart card technology for the device.

Gemplus has introduced a new software technology, **smartX**, that will simplify smart card-based application development and deployment, enable card and terminal independence, and allow for web-based maintainability.

SmartX is an open systems technology, and allows software developers who have not been exposed to smart card architectures to be able to develop applications. The new software technology separates application development from the complexity of smart card device management. Based on the eXtensible Markup Language (XML) standard, smartX allows developers to write smart card applications independent of manufacturer-specific card management protocols.

The company has also introduced the **GemCombi/MPCOS** card, the first to provide two "de facto" standard interfaces on a single chip. MPCOS is used mostly in banking applications. **Mifare** (ISO 14443-type A) is used for contactless operation, typically in applications such as transit systems. With the GemCombi/MPCOS, Gemplus offers extension of existing MPCOS and Mifare applications without any modification on the current smart card readers.

Entrust Technologies: A new payment system that uses PKI (public-key infrastructure) technology provided by **Entrust Technologies** allows Dutch consumers to use debit cards for secure shopping over the Internet.

The new system, **I-Pay with SET**, is operated by **Interpay**, a co-operative owned by Holland's banks. It uses an enhanced version of the international SET (Secure Electronic Transaction) protocol to authenticate Internet merchants and customers to each other, and to protect both debit and credit card numbers. The SET solution, **Entrust/CommerceCA 4.1**, is the first commercial product to support both credit and smart debit cards and uses an extended version of the recently ratified SET 1.0 protocol.

The organization's head of **New Business Development**, **Fred Stolk**, says that "Generically, SET had a patchy start in Europe, but we believe that by supporting both debit and credit card transactions, Interpay is going to be a real catalyst for growth. Merchants in 18 European countries are already SET-enabled."

I-Pay with SET is expected to have as many as two million users by the end of 2000. ¤

Duplication of costs

An important aspect of the way things are done at present is that there is often a great deal of duplication of effort and/or cost. Companies, rather than risking hefty fines in the case of an accident, will often train all of the workers coming onto the site, even though half of them may have received appropriate training previously. There is a case, or course, to be made for site-specific training, but in many cases workers being enlisted for a shutdown may well have taken that specific company's safety training programs a few months prior to the shutdown.

Steketee points to another source of duplication. He says that his organization—the CSAO—trains between 45,000 and 55,000 people a year. But being a provincial organization, the training that a worker receives in Ontario is not necessarily recognized in New Brunswick. The Skills Data Card, he believes, will facilitate increased accreditation of training courses across jurisdictional boundaries, so that at least part of the training given by one organization is accredited by another, thereby obviating the need for complete retraining.

A consequence of training so many people in any given year is that the CSAO needs to be able to provide some form of service to past trainees who may have lost their cards, or who need to be retrained. Steketee notes that their present paper-based system is simply inadequate to meet the demands of the industry. Over a period of, say, five years, the CSAO has to keep track of more than 200,000 trainees, a mammoth task, consuming many hours of administrative labour in the process.

Joseph Maloney, **Director of Canadian Affairs** for the **Building and Construction Trades Department** of the **American Federation of Labour Congress of Industrial Organizations** (AFLCIO), says that another important feature of the construction industry is that it has a highly mobile workforce, where workers tend to follow projects rather than operate continuously from one site. Union halls are called on to provide people with appropriate skills and qualifications to work on specific projects. The union then has to search through the list of workers registered at a particular 'local' to find the right people. The union then has to be at the front line in the verification process. Most importantly, it needs to ensure that worker records are accurate and up-to-date. This does not let the contractor or owner off the hook from a due diligence perspective, but it does facilitate more rapid processing of people onto site.

In an environment where about three quarters of the workforce is unionized, keeping track of qualifications and training of workers becomes a pivotal task for unions.

Origins

So the present system in the industry is fraught with problems. Is there a better solution? The SDCI was originally conceptualized by the CSAO in association with the **Millwright Regional Council of Ontario** (MRCO). Steketee says that the status quo in the industry was untenable.

Stephen Coleman, **Executive Vice President** of the **Mechanical Contractors Association of Ontario** (MCAO), says

that his association—an employers' organization—has been "chipping away at the problem for the past fifteen to twenty years". The realization that improvements are needed is not new.

The nature of the problems faced by the construction industry makes the search for a more elegant solution compelling. In an effort to find suitable solutions, Jim Steketee of the CSAO and **Ron Thibodeau** of MROC, approached a number o different card companies to find out if there was some way of overcoming some of these problems using card technology.

Steketee says that, initially, all the card companies that they approached told them that there would be very few problems in setting up such a system. But as discussions deepened, they found few were capable of meeting the industry's needs. Their search eventually teamed them with BIT Integration Technology, their current 'technology partner' in the SDCI program.

But the technology aspect was just one of the issues that had to be addressed in conceptualizing the system. Buy-in from various stakeholder groups was equally important.

"We have learnt, a long time ago, that you don't do anything without involving both sides of the table from the get-go," says Steketee. Both sides, in this case, refers to labour and management.

He says that CSAO, and in particular the Labour-Management Department which he runs, sits down to discuss various issues relating to safety and training, with representatives from labour and management every month.

The SDCI concept was raised less than eighteen months ago. In order to coordinate the efforts of the initiative, a **National Construction Industry Skills Data Card Committee** was established. The Committee is broadly representative of the industry, with a number of employer organizations, companies and trade unions participating in the committee.

The project has received the full support of **Human Resources Development Canada** (HRDC)—currently the major benefactor, bankrolling the early phases of the inititative. **Industry Canada** has also shown some interest. BIT's involvement, as a technology partner, is but a year old.

A card for all seasons

How does a smart card, then, provide a solution for the construction industry? Allen Wright says that the idea is to place all the information about a worker's relevant qualifications and training onto the card. This will enable an employer or union to ascertain a person's training status within seconds of the smart card being inserted into a card reader, rather than having to sift through the worker's wad of certificates, and inspect each one. The system will also be able to notify the system operator whether any training that the worker has undergone has expired.

Initially, then, all of this information will have to be captured and the data entered onto smart cards issued to the workforce. Once this has been done, the database will merely have to be kept up-to-date, essentially a maintenance function. The validation process can thus take place "off-line", so to speak, and does not create problems when engaging thousands of workers. By placing all of the necessary information on the card, the signing up process can be relatively effortless.

Maloney says that the card will also help the unions a great deal because, when an organization approaches a union hall requesting workers with particular skills, the union will be able to search through the validated database and find suitably qualified workers within minutes.

Storage of information on a construction worker's skills, training and qualifications is but one application of the card. Another, which is also likely to be on the system, is tracking of the number of hours worked by apprentices. This is useful at the individual level to determine the amount of experience that an apprentice is gaining, but also at the aggregate level where industry level statistics are required.

Stakeholders have identified a number of other applications which could, potentially, be placed on the card, including:

- Link to payroll systems
- Work history
- Medical information required for emergencies
- Identification
- Job site security
- Company- and/or union-specific information
- Time card functions

There is, however, no universal agreement on these, although it seems that the card will very definitely carry the photograph of the bearer.

But who would issue the cards? Various options exist. Some of these are peculiar to the structural features of the construction industry. Approximately 600,000 construction workers are unionized. Unions would therefore be able to issue cards to members. They would then also assume responsibility for validation of skills, qualifications and training. As members then move through the system, for example undergoing CSAO training, accredited training organizations would have the facilities in place to update cards.

The system is not, however, aimed only at unionized workers. Coleman says that a significant proportion of his association's membership is not unionized, and for this system to work effectively, widespread adoption is essential. It is envisaged, then, employer organizations—whether they be unionized or not—would also be able to issue cards.

Indeed, Coleman says that before the SDCI was announced, a number of large employers of construction workers were contemplating establishing their own in-house systems to deal with some of the problems faced with keeping track of workers' qualifications and training. But a national industry-level effort makes much more sense, something that has been recognized by employers and unions alike. This has led to strong support from most stakeholder groups in the industry.

While non-unionized workers and companies will be able

to participate in the system, it is widely acknowledged that the underground economy—namely, those companies and workers working outside of the regulatory and legislative framework of the industry—will suffer the most from the introduction and adoption of the skills data card. Coleman says that the underground economy is also where most of the accidents and problems occur. The government also has a specific interest in this segment of the construction industry because several of the companies operating in this grey area do not remit taxes or worker insurance premiums. Plus, they are difficult to control from an occupational health and safety perspective.

"Is this a form of Big Brother? Absolutely! Absolutely!" Steketee asserts.

But he goes on to say that it is an employer's right to protect itself from fines and litigation, and to ensure the safety of co-workers. The formal part of the construction industry, he says, will very definitely benefit from the introduction of the skills data card because of the cost savings that it will introduce. In addition, it will allow contractors and owners to exert tighter control over important aspects of construction work. There may be less acceptance amongst companies and workers operating in the informal sector.

> ***"Is this a form of Big Brother? Absolutely! Absolutely!"***

Privacy issues

Joseph Maloney says that one of the few problems that has been raised regarding the use of the card is that of privacy. He says that some people are afraid that their privacy will be compromised. He goes on to say that a concerted effort will need to be made to market the card to workers in the construction industry, and to allay fears regarding perceptions of their privacy being compromised in any way.

Coleman points out that there is no information on the card that an employer does not have the right to know, anyway. Hence there is no need to secure the approval of Povincial Privacy Commissioners. All emergency medical health information placed on the card will only be included with the permission of the cardholder—based on the premise that it will be beneficial to the cardholder to include it—plus, there will be controlled and limited access to that information. He says that the structure currently envisaged is that the National Governing Committee will determine—in consultation with stakeholders—who has access to what information. This will be controlled through third party guarantors, from government, or possibly even from the banking industry.

Steketee says that some groups—for example, accredited training organizations—will have the ability to read or write information onto the card. Others will only be able to read information. In both cases, the domains that they are able to access will be strictly controlled.

Business case

Is there a business case to be made for the SDCI? Given the support for the initiative, there very definitely appears to be one. Indeed, all of the members of the National Committee interviewed pointed out that various stakeholder groups have provided written letters of endorsement of the project to the Committee. Some companies that have been involved with the initiative have also made it know that they would like to have a solution sooner rather than later, because of the benefits that such a system would bestow on their organization.

At this stage, though, few companies, associations or organizations have had to shell out any money for the SDCI. Being bankrolled largely by the HRDC makes it relatively easy to endorse. Whether employers, unions and associations will actually pay for the system remains to be seen. The feasibility study conducted by industry consultant, **Rosemary Sparks**, earlier this year included some tentative figures on the potential for cost savings, illustrating that the system would pay for itself quickly. But many of the benefits of the system only accrue if the card is universally adopted, therefore obviating the need to support both a paper verification channel as well as an electronic verification channel.

Adoption will be as much a function of organizations issuing cards as construction workers accepting them. Acceptance at the worker level has yet to be tested. Coleman, Maloney and Steketee all suggest that construction workers take pride in their skills and qualifications, and the card would therefore be an important way for them to make themselves more marketable to the industry. Also, the fact that workers would not have to carry a wad of certificates around with them will be very attractive to most.

But there are those who fear for their loss of privacy, or perhaps who have less to be proud of than others. Whatever the situation, it is highly unlikely that workers will beg to have cards issued to them.

Coleman says that, over time, with more and more construction workers carrying cards, it is distinctly possible that use of the card will be legislated. He says that the benefits to government could be so great—because of how it will facilitate enforcement—it could result in legislation mandating the use of the card in the industry.

The smart card

What about alternative technologies? Allen Wright says that the feasibility study specifically examined a wide range of technology alternatives, in particular, bar coded cards, magstripe cards, optical memory cards and smart cards. The evaluation took into account numerous factors, including cost, performance, suitability for the intended purpose (including the ability to read and write to the card), security and fraud potential, privacy and durability. Smart cards won hands down, largely because of security, the ability to read from and write to the card in a controlled manner, the lack of reliance on vast complex back-office systems, and flexibility.

Wright says that he envisages that a 16K smart card would be more than adequate for the needs of the industry. In fact, the skills card application would require less than 10K for data storage, even taking into account that the card would be used for numerous different skill categories, and would be updated regularly.

The system itself could be accommodated on a PC with a smart card reader. In simpler applications, where just a reader is required, an operator can be armed with a stand-alone card reader. This may even manifest itself as a wireless device for field use.

Project status

As yet, however, nothing has been implemented. The feasibility study was completed in April this year. Since then, the National Committee has adopted all five recommendations flowing from the feasibility study. These include the adoption of smart card technology for the SDCI, the launch of pilot projects, securing approximately $700k in government funding (primarily from HRDC), keeping BIT Integration Technology as the technology partner, and ensuring that the National Committee continues its advocacy role.

At present, consideration is being given to the selection of pilot sites. It is envisaged that pilot projects will be implemented at between three and five sites, all with differing characteristics. Maloney says that short-term, high-density work, typical of shutdown or turnaround situations, will very definitely be a target for at least one of the pilot sites. It is also likely that a greenfields site will be piloted. Locations menioned thus far include Sarnia (Ont.), Alberta and Quebec.

Pilot implementations are scheduled to start in the fall, and will run for anything from six to nine months. Thereafter the results will be evaluated, and specifications changed, taking into account learning from the pilots.

Wright says that the current thinking is that the pilot projects will make use of a test group of card-carrying workers, and a control group of workers—namely those that do not carry any skills data cards. This could provide an important comparative basis for evaluation of the results.

The scale of the pilot projects is likely to involve the issuing of "a few thousand cards"—to be supplied by **G & D Security Card Systems**. There will be "tens" of terminals, most likely to be provided by **IVI Checkmate**. The central database will be simulated, but the validation process used in the pilot implementation will be identical to that used in the final system, barring any changes arising from the pilot.

Controlled rollout, if the project does eventually get to that stage, is likely to start happening within about two years, followed by national rollout. At this stage details of the rollout phases are, for good reason, non-existent. But it seems that controlled rollout could take place within a set of trades at a provincial level.

Multi-application role

One of the central issues in systems implementation, especially in the event of national rollout, is where the master database resides, in the event that there is, indeed, a master database. One of the interesting recent developments on the SDCI is that a banking institution has shown interest in using the card as a vehicle for an electronic cash application. This would also put the bank in a position to act as the trusted third party controlling the data. The idea is to enable construction workers to use the electronic cash application on the card at their work site. This could provide a convenient means of cost sharing. However, it adds a different set of stakeholders to the pot, and could well exacerbate privacy fears—even though banks generally have exemplary records and codes of conduct. On the other hand, it could promote adoption of the card because of the enhanced functionality of an electronic cash application.

As Jim Steketee comments, the skills data card would be "bringing the (construction) workforce into the 22nd century". Proposing a multi-application card—one that includes skills data card functionality as well as electronic cash—may be a little too much to chew on at this stage of the game. ¤

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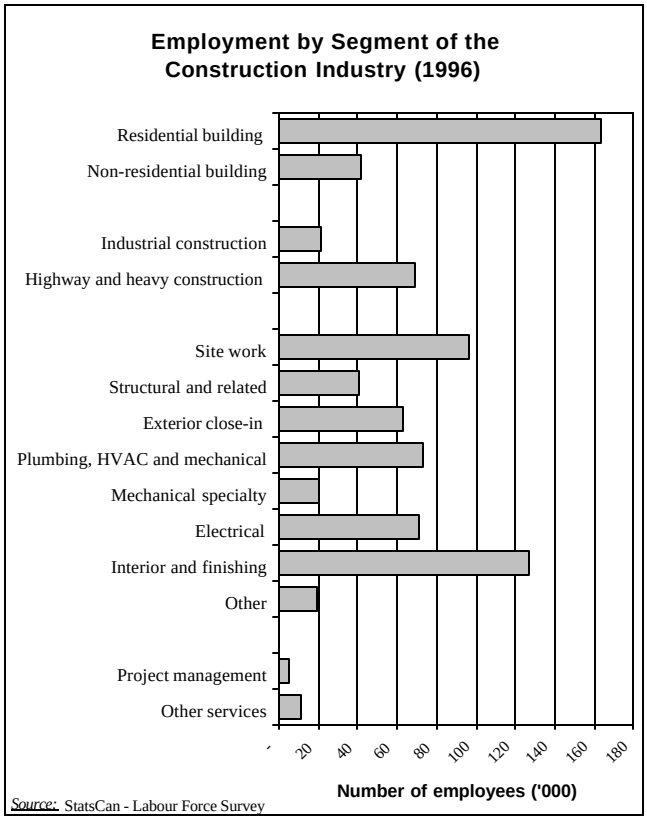
Industry Statistics

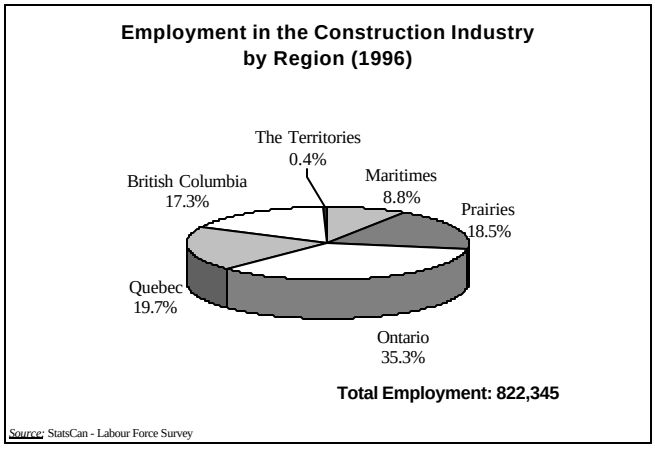
The construction industry is a significant element of the Canadian economy, contributing slightly more than 5% to overall gross domestic product (GDP), according to latest figures released by **Statistics Canada** (StatsCan). Growth in the sector tracks investment, which is subject to large cyclical swings. As a result, employment is highly variable. In June 1999, employment in the construction industry totalled approximately 770,000 people, an increase of more than 30% over the same period a year ago, but a decline of 20% over the previous month.

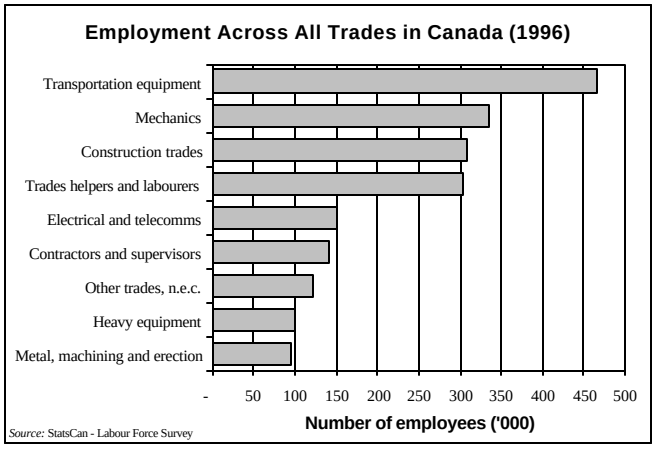
According to the StatsCan Labour Force Survey (based on the 1996 Census), employment stood at 822,345 in 1996. Residential building and development was the most significant employer in that year, employing more than 140,000 people. In the industrial and heavy construction segment of the market, highway and heavy construction dominated employment, accounting for more than three quarters of that segments total employment. Interior finishing was the most significant employer in the trade contracting industries, followed by site work. Project management and other construction-related services was a relatively small employer.

Employment by region in the construction industry tends to follow regional investment. Consequently, Ontario accounted for more than one third (35.3%) of the construction workforce in 1996. Quebec followed with about 20% of the total, closely followed by the Prairies (18.5%)—bolstered largely by the significant level of investment in Alberta.

The Skills Data Card Initiative (see feature story – p1) has the potential to be rolled out across other industries that are dependent on licensed or regulated trades. Employment in trades and equipment operation across all industries in Canada totalled slightly more than 2 million people in 1996. This represents a decline of 8.2% overall over the previous five years. Operation of transportation equipment was the single largest occupational category reported within this major group, accounting for about 465,000 employees. Some 308,000 workers were employed in construction trades—a category which excludes construction helpers and labourers. With the exception of 'tranport equipment operators' and 'other trades, n.e.c.', all other occupational categories reported declines over the period 1991 to 1996. ¤







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