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Info Tech Talk

A Newsletter on Enabling Information Technologies by the IRMC E-Government and Technology Department

eGovernment and IT Highlights from FOSE

By Les Pang and Ai-Mei Chang, Professors of System Management, IRMC

Here are highlights from panels and several keynote speeches by prominent individuals in the e-government and/or IT community. These were presented during last March's FOSE exposition on IT held in Washington, D.C.

John Chambers, President and CEO, Cisco Systems, Inc.

Mr. Chambers emphasized the importance of changing business processes prior to applying technology. He mentioned a 2003 Cisco survey that showed about a 30 percent cost *savings* when business processes are changed before automation is applied. This is opposed to a 9 percent cost *increase* when blindly automating a process (i.e., paving the cow paths) without changing the relevant business practices.

The future looks promising for e-learning. He cited supporting technologies such as video-on-demand, learning management systems, virtual classes, content portals by role, and global streaming networks. He suggested changing the teaching process to a more just-in-time delivery. Also, he said that education should shift from a teacher-centric to a student-centric model.

Networks have evolved to "intelligent information networks" consisting of intelligent devices which track where everything is on the network and with security features built-in. This will help isolate attacks on network devices. Architecture is important in network implementations. He suggests focusing on "systems and not boxes." Instead of replacing an entire network device, it is better to add a card to provide more functionality.

Government has driven technology in such areas as encryption, voice, security, and IP telephony. He sees IP telephony as an advancing technology driven by operational cost savings and greater end user productivity. He stressed the need for cross-functional improvements. He mentioned that the net-centric operations initiative as another example of government leading innovation. Two examples of successful e-government initiatives include DC-NET, the District's city-wide information network, and Centrelink, Australia's online service delivery system.

For a government organization, he proposes "stretch" goals which require substantial effort to attain. Lesser goals achieve only temporary gains and the organization eventually returns to the status quo.

Clarence Crawford, Associate Director of Management and Chief Financial Officer, OPM

OPM is responsible for five out of the 25 e-government initiatives in the Federal government. These five initiatives are expected to result in $2.7 billion in taxpayer savings. The goal is to "make a difference" and change the human capital process. This involves integrating silos into a single framework that integrates policy and technology.

The five initiatives were described:

1. *USA Jobs* – promises to be a recruitment one-stop source of Federal jobs.

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Inside this issue:

Government has driven technology in such areas as encryption, voice, security, and IP telephony. [John Chambers] sees IP telephony as an advancing technology driven by operational cost savings and greater end user productivity.

Issues in eLearning for Business and Students

By Lori Prussing, Project Leader, US Army Human Resources Command, and IRMC AMP Student

The popularity of distance learning or eLearning continues to grow in business and in academia. Businesses, faced with training scores of employees and clients around the world can no longer afford the luxury of traditional classroom training. College students of all ages, balancing their academic life with home and work responsibilities, seek greater flexibility in their educational options. First, this article examines some of the issues facing business, followed by corporate eLearning best practices. Then, it explores eLearning as it relates to the academic student in terms of pros and cons followed by best practices.

The rapid growth of eLearning can be attributed to the:

- Availability of high-speed computer networks to deliver information and services,
- Urgent need to update skills continually in order to "work smarter,"
- Flexible "anytime, anywhere" education for learners, and
- Cost-effective alternative to traditional classroom education and corporate training.

Advances in technology turned the paper-and-pen correspondence courses of the past into real-time Internet classes. Today's optimal version of distance learning uses more than just text; it incorporates a rich blend of video, sound, simulations and collaboration with other students.

While distance learning offers a wealth of flexibility and options, it is not without its problems. Many eLearning companies supply their customers with course materials as opposed to a well-thought out learning methodology that takes how people learn into consideration. These vendors use memorization and multiple-choice testing as opposed to employing a method where students learn, think and do. Most people learn best when they apply their newly attained knowledge in multiple ways. When students participate in case studies, solve problems, interact with peers and take opportunities to reflect on what they learned, they become successful eLearners; this rings true for both academic and corporate students.

Issues Affecting Business

Selecting the right eLearning vendor is probably the most difficult challenge facing corporate training executives. Contracting with one of the numerous small companies specializing in eLearning systems poses many risks. The Gartner Group estimates that by mid 2005, nearly 25 percent of the major eLearning vendors will either merge or be acquired. In addition, some of these firms only offer eLearning systems as opposed to end-to-end solutions which link learning management, content and collaboration tools. This often results in unsuccessful, cumbersome integration of learning tools into existing enterprise applications.

While some of the large software giants – IBM, PeopleSoft and SAP – are just beginning to compete with these small, "pure-play" companies, they have yet to pursue it full force. If and when they increase their focus, these corporations will have a significant advantage over their smaller counterparts. First, their clients will have to worry less about them being acquired or going out of business. If they market eLearning solutions to their current customers, they will be able to leverage its tight integration with existing applications, something most small firms cannot offer.

Advantages and Best Practices in eLearning for Business

- Employees retain more since training occurs "just-in-time"

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- eLearning reaches more workers, with fewer resources, more quickly

- Only create your own content if it is unique to your business

- Due to the complexity, outsource creation of the initial courseware and assemble a team of employees to shadow the contractor and learn the best practices

Students and eLearning

A study conducted by University of Western Ontario's Richard Ivey School of Business examined the interactions of MBA students. It concluded that distance learning is not an isolated experience. They found that in a collaborative team environment, the online format fostered a higher degree of communication, deeper thought and reflection among the students. In eLearning, students communicate asynchronously. For example, a class of 8 to 10 students may make 200 contributions in a week; many more than time would permit in a traditional classroom. Those who feel uncomfortable speaking in an onsite class, often feel less inhibited in online discussions. Today's distance learning courses promote student interaction and real-time conversations through the use of discussion boards, video conferencing and synchronous chat.

Here are some additional advantages of eLearning:

- Convenient for students who work or have children
- Great for independent learners
- Eliminates commuting to classes
- Offers immediate feedback
- Flexible schedule, learn when and where it is convenient for you
- Access to courses at institutions that would be otherwise unavailable
- Work with fellow classmates without regard for race, ethnicity or prejudice.

Here are some disadvantages of distance learning:

- Must be very self-disciplined to succeed
- Requires a high degree of motivation
- Technical problems can cause "cyber stress"
- No face-to-face contact with students and faculty
- Must have excellent writing skills
- Can be easy to let yourself be interrupted
- Requires a certain level of technical skill

In 1987, A. Chickering and Z. Gamson published their "Seven Principles for Good Practice in Undergraduate Education." These are important guidelines for any learning situation:

1. *Encourage Contact Between Students and Faculty* – Frequent contact motivates students.

2. *Develop Reciprocity and Cooperation Among Students* – Learning is collaborative and social, not isolated.

3. *Encourage Active Learning* – Students must discuss, relate and write about what they learn.

4. *Give Prompt Feedback* – Students need to know how they may improve.

5. *Emphasize Time on Task* – Instructors must supply deadlines and assist students in developing effective time management.

6. *Communicate High Expectations* – Expect more and you will get more.

7. *Respect Diverse Talents and Ways of Learning* – Give students the opportunity to show their talents and learn in ways that work for them.

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Issues in eLearning for Business and Students (cont.)

(Continued from page 3)

Conclusions

In their continuous improvement of eLearning, academic institutions must not overlook important lessons learned from the traditional classroom. If they employ their best practices from that environment, such as Chickering's "Seven Principles," and adapt them to the online world, they will ensure the success of their eLearning programs.

Students who have the motivation and self-discipline required by distance learning will do well, while those who do not will most likely perform better in onsite classes. Businesses who invest in eLearning systems have the potential to realize many benefits, but should proceed cautiously when selecting a vendor.

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Metacourse Inc., Problems in eLearning. Retrieved on February 29, 2004 from http://www.metacourse.com/elearning/problems.html

Links to eLearning Information

http://www.geteducated.com/

The Get Educated site offers great information about the best distance graduate and undergraduate schools.

http://www.elearners.com/

eLearners allows you to search by institution, by major or degree level.

http://www.earmyu.com/

eArmyU promotes anytime, anywhere learning by offering undergraduate and graduate degree programs to service members.

http://www.cio.com/research/learning/

CIO Magazine's Learning Research center contains useful information on educational topics such as executive and staff training and eLearning.

Self-Evaluation Tests

Think you've got what it takes to be a successful eLearner? Visit these links and take the tests!

http://www.umuc.edu/distance/de_orien/dequiz.html

University of Maryland, University College

http://www.panola.edu/instruction/dl/self_test/selftest.htm

Panola College, Carthage, Texas

Truth or Dare?

By Russ Mattern, Professor of Systems Management, IRMC

Getting to the truth of the matter can be difficult if not impossible, especially in the areas of law enforcement and background checks. The venerable polygraph requires sterile attachments to an individual's body, a trained operator and a significant amount of time. Often the results are inconclusive and are subject to the experience and judgment of the operator.

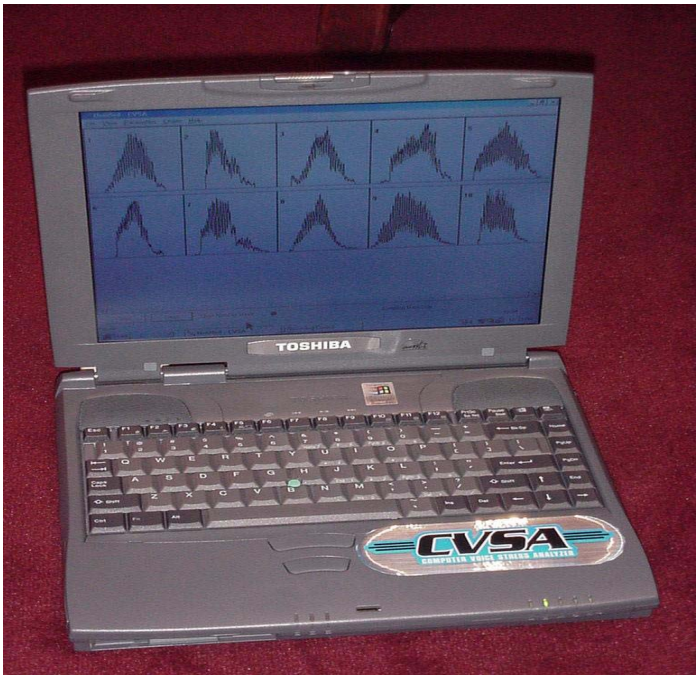
Enter the Computer Stress Analyzer (CVSA) demonstrated at FOSE by a Florida-based company. It requires no bodily attachments. The subject simply answers questions while a microphone captures their responses for analysis. The CVSA measures micro tremors in the subject's voice that occur when they answer questions. These tremors arise from within the autonomic nervous system and increase in frequency when subject is being deceptive. The company's software program analyzes the responses, plots them on the screen and renders an evaluation of each response at the end of the testing session. Currently, the system is loaded on ruggedized laptops for the sake of portability. They claim 98% accuracy, an average testing time of 40 minutes and costs that run about a third less than a polygraph. Operators must complete a 59-hour certification course to achieve the published accuracies and must renew it every three years.

This device is used throughout the United States in many police departments—Orange County, CA; New Orleans, LA; Baltimore, MD; Cincinnati, OH; and St. Louis, MO are just a few. In addition to the obvious use of the CVSA for interviewing crime suspects, others are using is as a screener for job applicants, especially for employment in trusted environments. Who knows, maybe we'll see job advertisements in the future that say the applicant must possess a Top Secret Clearance and pass a CVSA test vice the polygraph? Others have used it to check the accuracy of witness statements.

Cold cases are some of the most difficult for law enforcement departments to solve. With the passage if time, suspects, clues and tips drift away. Departments that have retained video and/or audio recordings from suspects have been playing them into the CVSA, finding deceptive responses and cracking some of these cold cases.

Perhaps the most interesting to DoD members is that this system is "on the ground" in Iraq being used in Baghdad and other cities as well as locations in Afghanistan. According, to the company, it has trained individuals from the Defense Intelligence Agency in its use. DoD has apparently requested that the software be placed on a PDA platform to increase portability so that troops may carry it with them. In the quest to root out terrorism, this device may help give our troops the upper hand.

For more details, visit this informative web site: http://campus.umr.edu/police/cvsa/cvsamenu.htm



Wi-Fi Invasion

By Jim Pappafotis, Director, Strike Weapons,
Lockheed Martin Missiles and Space, and IRMC AMP Student

Wi-Fi (also known as "802.11b", "802.11g" and "802.11a") has emerged as the dominant standard for wireless LANs (WLANs) worldwide. Anyone can set up a Wi-Fi network and cover an area of typically 100-500 feet with Internet access hundreds of times faster than a modem connection. Unlike other wireless technologies such as CDMA and GSM, Wi-Fi enjoys 100% global acceptance. It has become the "TCP/IP of wireless", a single networking standard for all developers, equipment manufacturers, service providers and users. As with TCP/IP, any innovation in Wi-Fi benefits everyone else in the Wi-Fi community.

Hundreds of original equipment manufacturers (OEMs) are now flooding the market with millions of Wi-Fi cards and access points or hotpoints ("APs" -- wireless hubs).

The single Wi-Fi standard ensures these devices all interoperate with each other, so, for example, an access point made by Netgear will communicate with a network card from Linksys.

The price of Wi-Fi components is dropping rapidly. In 2002, a Wi-Fi radio chipset cost about $16 wholesale, a number that is expected to drop to $8 in 2003 and under $2 by 2006. Prices are falling so fast that between 2002 and 2003, total revenue from chip sales are predicted to decrease by almost 8% while unit shipments increase by over 80% during the same period.

Wi-Fi Outlook

"Build it and they will come," may be fine for the movie "Field of Dreams." However, for Wi-Fi technology the analogy doesn't apply. The new mantra for Wi-Fi technology is: "When they come, we will build it."

The business model does not lend itself to free access. There is a tendency now to pay-for-service Wi-Fi access.

Simple Wireless Network for Home and Small Office

The home Wi-Fi network enables everyone within a house to access each other's computers, send files to printers and share a single Internet connection. Within a small business, a Wi-Fi network can easily improve workflow, give staff the freedom to move around and allow all the users to share network devices (computers, data files, printers, etc.) and a single Internet connection.

The small office Wi-Fi network also makes it easy to add new employees and computers. There is no need to install new data cables and install cabling. Just add a Wi-Fi radio to the new computer, configure it and the new employee can be up and running in minutes.

How does Wi-Fi Work?

Hardware is connected through the airwaves using a wireless standard described earlier in this paper. Any conceivable hardware (PC, printer, FAX, radio tuner) can be connected through a small radio that transmits at a (UHF) ultra high radio frequency near the 2.4 GHz level. The advantage with Wi-Fi is that there is a common standard and hardware is designed around this standard. The disadvantage is the limited range (100-500 feet). Security has been addressed through the use of algorithms called WEP (Wired Equivalent protocol).

I have bought and installed NETGEAR as my home network system, and it works seamlessly with the IRMC network. If you don't have a Wi-Fi network, you can install one quickly and easily with a very affordable option to get your home fully wired.

To allow access to the Internet, the Internet connection (DSL, ISDN or cable modem) connects to the Wi-Fi gateway. Several Wi-Fi laptops can then wirelessly connect to the gateway. The laptop computers can connect through a built-in, or

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For hotspot locations, visit:
http://www.jiwire.com

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embedded, Wi-Fi radio or through a standard slide-in PC Card radio.

The desktop computers can use a variety of types of Wi-Fi radios to connect to the wireless network: a plug-in USB (Universal Serial Bus) radio, a built-in PCI Card radio or an Apple AirPort module.

A single printer attached to one of the desktop computers enables all of the computers on the network to print to it. Of course, the connected computer must be turned on to enable the printer to function and communicate with the rest of the network.

It is also possible to use a stand-alone Wi-Fi equipped printer, or a printer with a Wi-Fi print server.

If you have a combination multifunction printer, scanner and fax machine, you could access and operate this combo device, and its various capabilities, from any computer on the network.

Security Concerns

Most of us would say, "It's not secure, anyone can roam around and hack my network". This has changed with recent Wi-Fi technology. However, since most wireless devices incorporate 128-bit encryption and with the addition of MAC address access lists, wireless networking is not only secure, it is virtually fool proof. You may have even heard of a wireless network that was hacked. The first question is, "did you use encryption?" or "how about MAC access lists? What MAC address access lists do is to only allow those network adapters with a specific MAC address to communicate with the wireless access point. It's sort of like only answering the phone if you know the caller-id information and feel like talking to that person. Otherwise the request to connect is simply ignored. Every network adapter in the world has a singularly unique MAC address; much like every phone has a unique phone number.

Generally, Wi-Fi technology uses a handshake algorithm called WEP (Wired Equivalent Protocol) to query at a 128-bit encryption rate. Although this algorithm can be "hacked" it does provide a certain level of security in a home system. It also prevents outside sniffers from finding where your network is.

Summary

Wi-Fi is here to stay. Its application is best achieved in close proximity to larger populations and concentrated hotspots. This technology makes for ideal application to airlines. In fact, as the changes to airlines are incorporated from 9/11, the next customer service offering will come in the form of an onboard wireless network. *Bon Voyage!*

Dr. Kathy Emmons, Professor of Systems Management, IRMC, uses Wi-Fi to access key data.

eGovernment and IT Highlights

(Cont.)

Six characteristics of high-performance government...

1. Customers are behind the wheel.
2. Change ahead of the curve.
3. Focus on the ends and not the means.
4. Hold employees accountable for doing the right things.
5. Super-size for the customer.
6. Open the floodgates for citizen participation.

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2. *eTraining* – provides career development for Federal employees. It presently offers about 3,000 courses. Over 160,000 courses have been completed.
3. *eClearance* – aims to speed up background investigations and offer cross-agency security clearances when an employee moves from one agency to another.
4. *Enterprise Human Resource (HR) Integration* – eliminates paper records for Federal employees, allows for sharing HR data among agencies, improves accessibility to employee data, and offers better tools for work force planning.
5. *ePayroll* – integrates Federal payroll services and promises significant cost savings. The target is to reduce 22 payroll providers to two partnership teams.

Direct line authority allows agencies to hire IT candidates on-the-spot for difficult-to-fill positions. Job fairs can therefore be more effective in attracting qualified recruits. Recruitment and relocation bonuses can be offered to candidates for difficult-to-fill positions. Offers can be made to pay off Federal student loans.

The IT exchange program provides for the temporary assignment of Federal IT employees to work in the private sector for up to two years. Conversely, private sector IT employees can be assigned to Federal agencies on a temporary basis.

When many of us started our Federal careers, we used typewriters. We cannot go back to typewriters and we cannot go back to September 10th -- we need to move into the 21st century. OPM plays a key part in the promise of e-government and in setting technological standards because "our government needs it, our citizens expect it, and America deserves it."

Scott McNealy, President and CEO, Sun Microsystems, Inc.

Mr. McNealy discussed the popularity of Java devices including Java-based smart cards used for authentication and holding stored value. He anticipates RFID tags to be linked to networks thereby allowing all inanimate (and, in the future, possibly living) objects to be connected to the network. However, there are issues of privacy, information overload, and logistics related to this approach.

The mission is to solve complex network computing problems for government. The goal is to have *trusted* network computing.

He outlined three strategies:

1. *Attack cost and complexity* - take the system difficulties out of the view of users and provide end-to-end security. He presented this analogy: instead of selling car parts, sell the car. In other words, instead of components, sell the architecture. He described the "Java Enterprise System" which consists of a collection of Sun products on a CD that have been tested to interoperate with each other. This CD updated quarterly at a price of $95 per employee per year.
2. *Accelerate network service deployment* – he advocated Java-based web services (versus Microsoft's .NET web services based on 32-bit computing).
3. *Mobility with security* – he demonstrated a thin client appliance which had no motherboard or hard disk. Using a Java card, he was able to authenticate himself and access his personal desktop from a server. He then proceeded to another appliance and accessed his desktop again. He also displayed a wireless laptop-sized thin client appliance ("Sun Ray") made by Tadpole. This appliance can also support IP telephony. If stolen, no internal data can be compromised.

He demonstrated StarOffice which he touted as a translation tool for different versions of Office documents. He also showed a 3-D desktop environment. An application window can be repositioned like a book with its

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title along its binder edge. The 3-D window can also be flipped over, spun and rotated.

He closed by saying that "there is an alternative…"

Steve Rohleder, Accenture

The theme of his presentation concerned attaining a *high-performance government* that provides maximum public impact with better outcomes, associated with transformed service delivery and based on new effective business models. He provided an analogy of a Ferrari-Prius hybrid that is supercharged and yet super-efficient.

He outlined six characteristics of high-performance government:

1. *Customers are behind the wheel.* Government needs to be customer-centric and focused on the most important drivers.
2. *Change ahead of the curve.* Government should be agile, adaptable to change and responsive. For example, New York City's 3-1-1 phone system provides access to non-emergency government services. It helped divert calls away from the critical 9-1-1 phone number during last August's massive blackout.
3. *Focus on the ends and not the means.* Government needs to focus on outcomes as opposed to inputs and outputs of a process, a method which leads to silo behavior.
4. *Hold employees accountable for doing the right things.* Government needs a new reward system based on merit and not longevity. The U.S. Postal Service uses an automated bar coded tracking system to identify bottlenecks and then comes up with ways to make system-wide improvements.
5. *Super-size for the customer.* Government agencies need to collaborate with other agencies and external partners. For example, Singapore's interactive web site, MyLicense, uses a shopping basket metaphor for citizens to pick and choose the licenses and permits they need. It provides the capability to check on the status of the approval process.
6. *Open the floodgates for citizen participation.* Government needs to provide multiple channels to reduce barriers to government services. South Africa has tried e-voting where election results can be viewed in real-time and transaction logs can be used to ensure valid results.

He next addressed issues surrounding e-government today:

1. Technology has been used to retrofit poor systems or mirror traditional processes resulting in minimal citizen acceptance. For example, 20 percent of regular Internet users in countries that have well-developed e-government programs such as the United States have never logged onto a government Web site, according to one of Accenture's e-government surveys.
2. Human capital is often not understood and not well-managed.
3. Cultural resistance is the result of avoiding risk to maintain job security and promotions are granted based on time on the job and not performance.
4. No standards exist on what constitutes "value." Information is fragmented throughout the Government so that politicians cannot make informed decisions.

He identified the following opportunities for achieving a high-performance Government:

- Technology
  - ◊ Grab hold of innovation and turn it into results -- such as the application of RFID technology. This requires building a standardized technology architecture.
  - ◊ Enable seamless services across agency boundaries. This is where the Federal Enterprise Architecture plays a critical role for horizontal and vertical collaboration. An example is the General Registry Office in Ireland where the birth of a child will trigger the equivalence of a social security number. This also notifies other government departments for future services.
- Process
  - ◊ Retirement is an opportunity to innovate. For example, reductions resulted in closing a data center and redistributing employees.
  - ◊ Shared services resulted in a 25 percent reduction in costs.
- Environment
  - ◊ Performance measures such as Accenture's Public Sector Value can be used to measure the value of an e-government initiative in terms of outcomes and cost efficiency. For example, Indiana's Department of Tax Revenue identified a number of key outcomes to drive future value such as a link to the State's e-government agenda.

The impact of high-performance government includes the following:

- More accountability
- Seamless access to data via multiple channels
- Integration of services
- High return on tax paid
- Identify the value of the e-government initiatives

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eGovernment and IT Highlights (cont.)

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- Funding diverted to support more social programs
- New insight on citizen behavior (using business intelligence tools)
- Citizen will engage the government more – to the point of participating in policy development
- Employees can focus on value-added activities

He closed with "Start your engines!"

Eleanor Clift, Contributing Editor, Newsweek

Ms. Clift of the "McLaughlin Group" served as the moderator of a panel focusing on whether e-Government is making a difference.

Brad Stone, Newsweek, related a story in which his car was stolen in the San Francisco area. After many weeks of not hearing from the police, he checked a web site maintained by the S.F. Department of Parking and discovered that his car was left near the waterfront with numerous tickets. He was able to locate and recover his car. He concluded that government entities need to communicate better with each other in order to support citizen services.

Donald Murphy, National Park Service, spoke about the Park.Net web site which provides virtual park visits, a convenient way to make reservations, and a source for teaching materials in schools.

Casey Coleman, FirstGov.Gov, gave an example of the reach of the U.S. Government's official web portal. She said that 139 different government agencies sell surplus to the public. FirstGov consolidated all of these activities into one web site. Recent improvements include the addition of an index, the capability of sending e-mail to the portal, integration of e-mail and phone channels for USA Services and support for Spanish-speaking users.

David McMillen, U.S. House of Representatives, related the history of legislation which led to e-government for the citizens. He said that data needs to be consistent among all sources. More can be done in this area.

Mary Ellen Corridore, Internal Revenue Service, explained that people do not like to pay taxes but the IRS is trying its best to make paying taxes easier. One recent accomplishment includes "Free File" where qualified individuals can file Federal taxes returns online and for free. She mentioned that XML is used to support systems involving corporate income tax and tax exempt corporations.

Online Banking: Changing the Way We Do Business

By Col. Heinz "Dieter" Naskrent, "Information Highway" Student and German Air Force Officer

Introduction

In 1990, the Wells Fargo Bank, based in California USA, introduced the world's first online banking services. It was not until 1997 that the Nationwide Building Society launched a similar service in the UK. Since the introduction of the first services many banks have started their electronic banking services with access available via PC, mobile phone or an interactive TV, offering Internet based services alongside their traditional banking facilities. In this article, online banking, its advantages and disadvantages as well as security challenges, are discussed, and, after the presentation of personal experiences, the respective conclusions will be drawn.

What is Online Banking?

Besides other services like electronic banking, electronic brokering, Internet stock exchange and Internet insurance, online banking (or Internet banking) is part of the e-commerce. Online banking is defined as "banking service that allows customers to access and perform financial transactions on their bank accounts from their computers with Internet connection to banks web sites using web browser software, such as Netscape Navigator or Microsoft Internet Explorers."

Since 1995, Internet has become less expensive and more available for customers to access information, exchange products and services world wide from their PC at home or at work. Online banking normally offers all the main banking services with the added flexibility of being able to manage your banking needs online. It allows one to:

- Check balances and statements,
- Transfer funds between accounts,
- Pay bills,
- Set up standing orders,
- Track recent account activities,
- Order traveler's, cashier's, regular checks,
- Apply for auto, mortgage, home equity, student or personal loans, and
- Receive investment product and service information.

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Online Banking: Changing the Way We Do Business (Cont.)

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The increasing population of Internet customers (today, 68% of U.S. households have access to the Internet), and the growing demand for payments via the Internet have an impact on banks, forcing them to extend their banking services to customers on the Internet. Thus, many traditional “brick and mortar” institutions have complemented their services, and so-called “brick and click” financial institutions offer online banking services as well. In addition, a lot of “virtual” banks have emerged which have no public buildings and only provide their services via the Internet. They pass the money they save on overhead like buildings and tellers along to the customer in form of higher yields, lower fees and more generous account thresholds.

Advantages and Disadvantages of Online Banking

Both types of online banking institutions, "brick and click" as well as "virtual", explicitly underscore the fact that they do not intend to change customers’ money habits. Instead, online banking uses computer technology to give the customers the option of bypassing the time-consuming, paper-based aspects of traditional banking in order to manage the finances more quickly and efficiently. Unlike a corner bank, online banking sites never close, they are available 24 hours a day, 7 days a week. Bank holidays or weekends will not be a barrier in the future.

If you are not in your state or country when a money problem arises, you can log on instantly to your online bank and take care of business. Today, many online banking sites offer sophisticated tools, including account aggregation, stock quotes, rate alerts and portfolio managing programs to help the customer manage all his assets more effectively. Some online banking facilities even offer up-to-the-second account information.

As online banking generally saves banks money on transactions, and these savings are largely handed back down to the costumers, transfers are currently cheaper than drawing a check, so even small amounts can be transferred very easily. For example: a banking transaction involving a teller averages $1.07, a telephone transaction costs $0.54, an ATM transaction costs $0.27, and an Internet-based transaction costs only one cent.

Like most comforts, online banking has some disadvantages as well. The start up may take time. In order to register for a bank’s online program, it will probably become necessary to provide an ID and sign a form at a bank branch. Banking sites can be difficult to navigate first. So it is recommended to invest some time and read the tutorials in order to become comfortable with online banking. Even the largest banks periodically upgrade their online programs, adding new features in unfamiliar places. So from time to time, a customer has to get acquainted with new software and procedures.

Finally, for many people, the biggest hurdle to online banking is learning to trust it. However, the more a customer gets familiar with it, the more even the strongest skeptic will be convinced of the above mentioned advantages.

Risks and Security

Due to the open nature of the Internet, web-based systems such as Internet banking are inherently subject to risks such as those related to virus attacks, hacking, unauthorized access and fraudulent transactions. Although the bank has put in place necessary security practices and measures to safeguard against these risks, it is still unable to fully guarantee the complete security of your transactions against such malicious attacks. As the end user, the customer also plays a key role in safeguarding his account information.

Most online banking institutions have installed “distributed security” -- rather than rely on one security measure, they use many lines of defense to protect account information, including encryption, firewalls, timed log off, virus protection, and a secure login process.

Data security between customer browser and web server is handled through a security protocol called Secure Socket Layer (SSL). SSL provides data encryption, server authentication, and message integrity for an Internet connection. For each online transaction session a unique master key is used to encrypt messages, and once the customer signs off, the master key becomes useless. Prerequisite for most online banking security systems is an Internet browser that supports 128-bit encryption, currently the highest level of security available.

In addition, firewall technology is used to prevent unauthorized access. Normally, a double firewall completely isolated the web server from the customer information SQL database. As the World Wide Web interface is the only process capable of communication with the Internet-

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Online Banking (Cont.)

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banking server, the Internet-banking server is the only process able to send requests to the SQL database. Thus, the outside world is removed from the customer database by two dedicated private networks. Furthermore, security analyzer constantly monitor login attempts and recognize failure that could indicate a possible unauthorized attempt to log into an account.

Timed log off is another security measure used by online banking institutions. If a customer forgets to log off or his session is inactive for a certain amount of time (more than 5 or 10 minutes), the current banking session will be ended automatically, and no one will be able to access your secure information.

Computer virus protection and intrusion detection protect online banking servers from potential malicious activity and prevent computer viruses from entering the bank's computer network systems.

It is also important to verify that only authorized persons log into online banking. Therefore, access to online banking is password protected. The customer authenticates his online banking session by entering his unique user ID and password, both of which are encrypted as they pass over the Internet and before they are stored on the banking system. No one can use an online banking access without knowing correct user ID and associated password.

While online banking institutions take numerous steps to keep accounts and personal information secure, the online banking customer plays an important role in maintaining security of banking information as well. A variety of protection measures and security tips are strongly recommended by all online banking institutions and software producers.

Personal Experiences

Several moves within Germany during the last decade, but especially the transfer to the National Defense University in June 2003, have undoubtedly demonstrated the advantages of online banking. After previous moves it frequently became necessary to establish a new bank account in another city, and, as a consequence, to change all existing direct-debit mandates, standing money orders as well as to inform insurances, governmental institutions, and other entities of the changed bank account.

Today, in the era of online banking, all these time consuming and often confusing actions are no longer necessary. Even a transfer in a foreign country does not limit the opportunities of worldwide online banking. All account transactions can easily be conducted from abroad via online banking.

Conclusions

Online banking is changing the banking industry as well as the behavior and demands of the customers. The latter are embracing the many benefits of online banking. Access to one's accounts at anytime and from any location via World Wide Web is a convenience unknown a short time ago. Although online banking security will always be threatened by malicious attacks and computer viruses, both online banking institutions and software companies will make tremendous efforts to guarantee the highest possible security level in this expanding and lucrative market.

Personal experiences in dealing with online banking have led me to recommend strongly intensive use and further development of this effective and convenient tool.

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