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Developments in Practice XIII Electronic Communications: Strategies for Coping with the Deluge

James D. McKeen
Queen's School of Business, Queen's University, jmckeen@business.queensu.ca

Heather A. Smith
Queen's School of Business, Queen's University, hsmith@business.queensu.ca

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DEVELOPMENTS IN PRACTICE XIII
ELECTRONIC COMMUNICATIONS:
STRATEGIES FOR COPING WITH THE DELUGE

James D. McKeen
Heather A. Smith
School of Business
Queen's University
jmckeen@business.queensu.ca

ABSTRACT

The "good" news is that technologies (e.g., PDAs, mobile computing) allow individuals to communicate with others virtually anytime, anyplace, and anywhere. Among other things, the expanded communications allows business to be transacted in real time by curtailing traditional lags. The "bad" news is individuals now communicate with others virtually anytime, anyplace and anywhere. As a result, the volume of messages increased significantly, extraordinary demands are placed on managers' time, and businesses face increased costs and liabilities. A new set of management issues were created to manage electronic communications effectively. Based on the insights of a group of senior IT managers from leading edge organizations, the authors explore the issues arising from the proliferation of electronic communication channels and share proven strategies for tackling the issues.

Keywords: Electronic communication, SPAM, filtering, email, communication channels, privacy, encryption.

I. INTRODUCTION

The proliferation of communication technologies (e.g., e-mail, voice mail, mass mail, messaging, enhanced PDAs, WIFI, Bluetooth) ushered in the "always on … always connected" world of today giving us the ability to communicate virtually instantaneously irregardless of time or place. The array of available communication technologies simultaneously eased the burden of communication; multiplied the number of communication options; increased accessibility; lowered costs; and expanded both the reach and range of targeted audiences with whom to communicate. In addition, it comes with its own lexicon ("Let's ping him", "Can I IM you?", "Is this a hotspot?"). While it is interesting to speculate about the reasons for this growth (Is it simply catering to an enhanced need to communicate? Is it a reflection of an increasingly mobile workforce? Is our basic human need for connectedness behind the growth in adoption of communication technologies?), it is a fact of modern organizational life. It is also an area in which IT management is increasingly necessary. Whereas just a few years ago, electronic communications was a relatively straightforward commodity, today a wide variety of issues must be managed.

To gain insight into the issues surrounding electronic communications management, we convened a focus group of senior IT managers from a variety of leading organizations to discuss the practices that they have developed within their organizations as well as their challenges. Each focus group member was asked to investigate the following questions within his/her organization:

- **Storage** – as the volume of electronic communications increases, storage needs increase. How is your organization addressing these needs?
- **Overload** – Individuals increasingly complain about being swamped by e-mails. What is the severity of this problem?
- **Ownership, legalities and liabilities** – Are electronic communications the property of the individual or the firm? Has your organization developed a strategy for ensuring that all electronic communications are protected and available should there a need to produce them for legal reasons? Is it clear where liabilities reside in the sending/receiving of electronic communications?
- **Etiquette** –Etiquette covers a broad range of topics such as the use of communication devices during meetings and e-mail responsiveness. How are electronic communications expectations and manners evolving in your organization?
- **Spam and Viruses** – Spam continues to clog electronic communications and constitutes a nuisance factor. Viruses, on the other hand, can potentially inflict enormous damage.
- **Quality of communication** – There is a hierarchy of bandwidth (richness) in terms of sending/receiving messages. For example, face-to-face is high bandwidth because you can "read" body language and facial expressions. With other forms of electronic communications, bandwidth is reduced. Are standards evolving about what types of communication should be used in certain circumstances?
- **Mobility of workforce** – What issues does our growing mobility introduce for managing electronic communications?

Focus group members were encouraged to share their failures as well as their successes in each of these areas. In Section II, we explore electronic communication and differentiate it from other forms of communication. We then discuss its management under each of the above headings (Section III). Each discussion outlines a number of proven strategies based on the collective insights of the focus group of senior IT managers for managing electronic communications effectively.

II. ELECTRONIC COMMUNICATION: DEFINITION AND TECHNOLOGIES

To frame the discussion, we asked focus group members to share their definitions of the term "electronic communication". To no one's surprise, definitions varied substantially (see Sidebar 1).

It was not that long ago that communications were limited to face-to-face conversations, telephone conversations, and/or written correspondence. Now, communications take place over a number of channels using a wide variety of technologies. While some of these technologies can be deployed interchangeably, they tend to differ in significant ways. For instance, they differ with respect to synchronicity in terms of time and/or location (Figure 1). Synchronous communication devices, such as the telephone, permits enhanced degrees of interactivity not possible with asynchronous communication such as e-mail.

Electronic communications also differ with respect to who is sending and receiving the message; that is, some electronic communications are person-to-person but many are increasingly person-to-system and system-to-person (Table 1).

Sidebar: Electronic communication is …

- *Any message sent in analog or digital form in a person-to-person exchange*
- *Anything that is broadcast, created, sent, forwarded, replied to, transmitted, stored, held, copied, downloaded, displayed, viewed, read or printed by any electronic communication system or service*
- *Entails the use of e-mail, phones (wireless and land lines), fax, pagers, PDAs, Intranet, public file storage, video, distance learning tools to exchange information from person to person(s).*
- *The World Wide Web, Internet-based discussion groups, electronic bulletin board systems, electronic mail, telephone, voice mail, fax, or any type of wireless transmission.*
- *E-mail (and attachments), internet web pages and downloads, instant messaging, voice mail, video conferencing, webinars, phone conversations, fax, and B2B (e.g., file transfers, EDI and web alternatives)*
- *Any communication not hand-written or spoken face-to-face*
- *IVR (interactive voice response) systems, customer contacts, call-outs (e.g., customer notifications), e-mail (internal, external to customers, B2B), and calendaring*

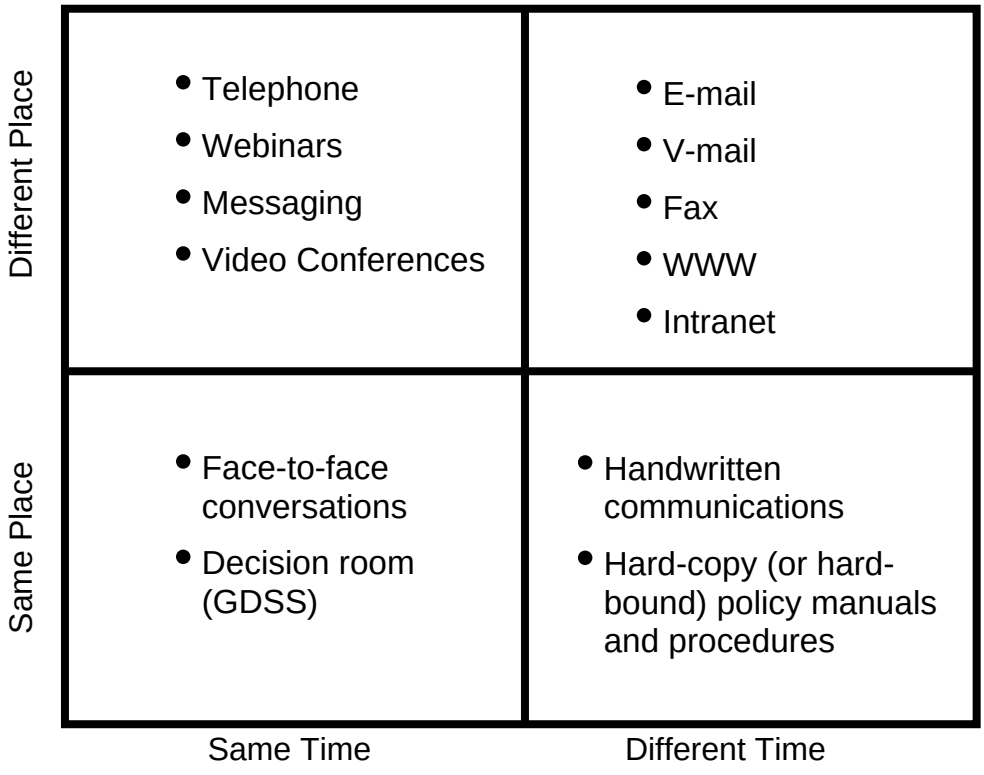

Figure 1. Synchronicity of Communications

Table 1. Sender-Receiver Targets

Person-to-person (P2P)	System-to-person (S2P)	Person-to-system (P2S)
• E-mail • Instant messaging • Telephone • Fax	• Mass mailings • Spam • Subscriptions	• Surveys • Forms • E-commerce

Because our study focused on its *management*, we adopted an inclusive definition of electronic communication: *any form of electronic communication which could be recorded and therefore retained*. This definition includes written materials, such as hand-written notes, that can be easily scanned and recorded. Only unrecorded face-to-face conversations are excluded.

III.STRATEGIES FOR MANAGING ELECTRONIC COMMUNICATIONS

One focus group member offered a general strategy for managing electronic communications based on three criteria: purpose, content, and delivery. He described it as follows –

- the purpose of the electronic communication and
- its content should suggest
- the appropriate delivery mechanism.

Highly confidential information should not be conveyed over unprotected communication channels. Large attachments should be placed on an Intranet where individuals can be directed via e-mail. This approach obviates the "reply all" with massive attachments syndrome. While this tactic provides general guidance, the group presented a number of strategies to handle specific issues in managing electronic communications.

STRATEGY #1: EXAMINE STORAGE STANDARDS

Electronic communication storage issues relate to volume (i.e., the amount of electronic communication to be handled) and the legal requirements to retain information. Suffice to say, if further legal requirements are imposed on information to be retained, storage requirements will increase.

Volume is directly related to the number of communication transmissions. One focus group member, who had been tracking them, reported that e-mail volumes in his organization are growing at over 400% annually. As a result, storage requirements are growing at an annual rate of 300%! Other focus group members agreed that the volume of electronic communications is increasing significantly within their organizations. One suggested that the growth in electronic communications is partially offset by the decline in non-electronic communications – basically, the trade-off between filing cabinets and disk drives. However, the group suggested the trade-off is unbalanced with the growth in electronic communications exceeding the decline in non-electronic communications by substantial multiples. Volume is also related to the *size* of electronic transmissions and their retention. If each communication doubles in size, storage requirements double even if volume remains constant. Similarly, if an organization doubles its retention period, storage requirements double.

The focus group agreed that addressing storage issues requires both clarifying retention requirements and setting limitations and guidelines for how and how much storage should be used. They identified several ways in which this could be done.

- **Store and administer electronic communications centrally.** Storing messages on central servers ensures that electronic communications will be both protected (e.g., auto-

archive facilities) and accessible via a number of different devices. Central administration ensures that standards can be uniformly adopted, applied, and enforced. Policies governing electronic communications retention should be developed centrally and communicated to (and promoted throughout) the organization.

- **Charge for storage but allow the business to set size limits.** The majority of organizations now impose limits on e-mail, such as the size of messages and the total size of individual mailboxes. These limits should be justified and set by the business with the proviso that they satisfy existing legal requirements. In the opinion of the focus group members, current limitations tend to be set somewhat arbitrarily by organizations. The consensus of the focus group was that limits should be based on sound business needs as well as the ability and willingness to pay. Stated differently, if a business unit demands extra storage and is willing to pay for it, they should have it.

- **Enforce limits.** Once set, limits can be applied with varying degrees of enforcement. Some organizations provide (increasingly impolite) warnings to staff whose mailboxes are full. Other mail systems are programmed to disallow new messages when a mailbox reaches capacity. Communications must also be aged. At one organization, the mail system is programmed to delete all mail older than 90 days automatically unless it is flagged as "business critical" in which case, it is moved to a secured server. In this organization, business critical information is "information deemed necessary for satisfying corporate legal requirements, corporate tax requirements, or for conducting business operations". The enforcement of these limits motivates managers to remove unnecessary communications.

- **Delegate responsibility to individual managers.** Individual managers should take responsibility for deciding the "criticalness" of their communications, said the focus group. They must actively delete messages and e-mails as they become unnecessary and ensure that information is moved to a secure server before it is removed accidentally. Awareness of the criticality of managing personal communications must be promoted to all staff so that they understand the reasoning behind the limitations. One member argued:

> *… a retention policy is the starting point for managing electronic communications. Retention policies are different from enforcement policies – managing storage is different from managing security. While education is an effective way to help reinforce policies, culture is the best way to proceed. Managing communications must be seen by everyone as essential to the ongoing success and viability of the organization.*

- **Consider all costs.** One focus group manager suggested that mailbox management activities consume critical managerial time. IT managers should consider three critical questions.

    - How much time and effort should managers expend on this activity?
    - How critical is this activity?
    - Can it be accomplished by any other means?

An internal study at this manager's firm showed that the total cost of mailbox management is roughly four times the actual cost of storage. Thus setting communication policies and limits too stringently and/or too rigidly may increase the time spent in compliance beyond that which was truly intended. The full costs of a storage strategy should therefore be considered.

Strategy #2: Address perceptions of overload as an organization

Overload is reached when it is no longer possible to respond appropriately and timely to electronic communications. Overload is a relative term. Individuals may differ as to how much communication their job entails and how much they can tolerate. Given the increase in the

volume of electronic communication, it comes as no surprise that perceptions of overload are also widespread. One focus group member stated that it is not uncommon for individuals within his firm to receive in excess of 200 e-mail messages per day!

The severity of the overload problem is dependent on the nature of a particular role. It is often quite severe for senior professionals and management. One cited reason is the misuse of two e-mail features: "cc" and "reply all". The focus group felt strongly that both individuals and the firm have roles to play in tackling this problem. However, they also agreed that currently the burden falls mostly on the individual as firms are reluctant to offer either formal or informal assistance. Thus it is common for individuals to spend considerable overtime and/or personal time dealing with electronic communications. One member opined "e-mail manages us – we don't manage it"!

Some strategies suggested by the group were:

- **Communicate best practices as a productivity issue.** Individuals often feel that they are "on their own" in dealing with communication overload. To combat this feeling, it was suggested that organizations treat overload as a "productivity" issue. If it is treated as a "rules" issue, then individuals see it as a compliance matter and behavioral changes can be prolonged. When viewed as a productivity issue, however, the organization can suggest "helpful hints and tips", "shortcuts", and "lessons learned". This can also provide an opportunity to explain advanced features of various communication packages. In one organization where this approach proved to be successful, the manager observed that "individuals tend to continue doing the same things the same way. Therefore there is a need for the organization to offer training and education".

- **Deploy technology to combat overload wherever possible.** The focus group felt that, while formal technological solutions existed, none were overly effective and most offered only limited assistance. Nevertheless, they should be deployed where possible. For example, the mail system could automatically sort mail for individuals with respect to urgency and/or upcoming calendar events. Although it is easy to abuse the "urgent" designation, it can also be very effective when there are established expectations surrounding its use. Another member said that his organization limits the "reply all" function. However some more sophisticated technologies which attempt to channel communications based on message attributes such as content, committee membership, and events show limited applicability and accuracy to date.

Strategy #3: Be proactive regarding communication responsibilities

The focus group agreed that all electronic communications are owned by the organization. Individuals are held personally responsible for proper use of electronic communication. Misuse is grounds for termination. Furthermore, most firms require their employees to sign a Code of Business Conduct annually which specifies:

- The appropriate use of any form of communication;
- The appropriate usage of the Internet;
- Compliance with security regulations; and
- Respect for individual privacy.

Signing a Code of Business Conduct is typically a condition of employment because the firm is liable for the actions of their employees. These codes stress that the organization has the right to monitor email and Internet usage and that, as a result, employees should consider all messages to be public. One manager stated that anyone in his company found visiting a pornographic site, for example, would be given a warning against continuation of this practice. Personal usage, while unsanctioned, is tolerated within reason by most organizations.

- **Assign overall responsibility for communications within the organization**. The question was asked "who is the expert on communications within your organization"? The

answers provided by members of the focus group varied. While IT assumes ownership for some of the technical issues (e.g., storage, archiving, encryption standards), they are reluctant to take on the role of compliance enforcement of communication policies. If not IT, then who should assume overall responsibility? Legal? HR? The focus group argued that there is probably no best answer other than *there should be someone charged with this responsibility*. Otherwise, communication policies, behaviors, and compliance become happenstance.

Strategy #4: Articulate accepted rules of etiquette

Rules of etiquette evolve with experience using a new technology. Often unwritten they gradually become part of the generally-accepted norms and values. One member of the focus group shared her firm's "unwritten but strictly adhered to" rules of etiquette with the group (Table 2).

Table 2. Suggested Etiquette Rules

E-mail	**Phone-mail**	**Using Electronic devices in Meetings**
Include subject lines	Issue standard messages containing expected turnaround time	Ground rules are established by the meeting facilitator
Use categorization	Change message daily	Shouldn't handle mail
Include signature information	Offer contact options (e.g., an assistant's number, a direct line, paging instructions)	Shouldn't talk on the phone
Use "out of office" notifications		Okay to use pagers for critical support/contact
Never "blind copy"		Okay to take minutes or to note action items

- **Create soft-skills HR courses within the firm.** Most organizations (and particularly global organizations) are culturally diverse among their personnel. As a result, there is ample opportunity for different communication behaviors to be misinterpreted. At one focus company, HR offers a number of soft-skills courses on topics such as ethnic diversity, thinking styles and interpersonal behavior all played out within different business scenarios. These scenarios involve common business situations, such as meetings, correspondence, sales contacts, and hosting clients. These courses provide opportunities to introduce individuals to the accepted rules of etiquette while at the same time explaining why some behaviors might not be as obvious to individuals of different ethnic backgrounds.

Strategy #5: Deploy the "big guns" against spam and viruses

Spam is interpreted to be "unsolicited commercial electronic mail" in a bill before the US House of Representatives [US Congress, 2003]. Research by the Radicati Group [Rola 2003], claims that "while current spam levels are quite high, representing 45 percent of all e-mail numbering 35 billion messages, they are expected to skyrocket to 70 percent by 2007 numbering 53.8 billion messages". One focus group member reported that his organization found that their weekly total of spam mail increased from 1,000 to almost 24,000 over a period of only 42 weeks! The impact of this growth is significant. Rola cites a Gartner Group report that shows that a "business would experience a 30 percent savings in the time employees spent managing e-mail if it rid itself of spam".

Focus group members suggested the following strategies.

- **Use anti-spam and anti-viral technologies.** The majority of anti-spam technologies involve content-based filters. Some are based on the "the Bayesian combination of the spam probabilities of individual words" [Graham, 2003]. Filters can incur two types of errors – false positives (i.e., innocent e-mails that are mistakenly identified as spam) and false negatives (i.e., spam that gets through). Graham points out that false positives are considered much worse than false negatives and therefore most filtering software guards against false positives at the risk of false negatives. Implementing filtering software incurs two types of costs – degrading the performance of mail servers and the costs of the software itself (plus continuous upgrades). The focus group felt that these costs were easily outweighed by the benefits to the organization in productivity gain and nuisance avoidance.

Viruses, being contagious, pose an even nastier problem for electronic communication where the potential for damage and/or disruption is significant. Anti-viral software is essential. It must be current and all devices scanned regularly. Constant vigilance is required.

- **Develop a policy regarding usage of corporate identification for personal use.** The problem of corporate identification (ID) for personal use is tricky. On the one side are employees saying that "I spend so much time at the office I need to be allowed to do some personal stuff at work (online banking, telling the spouse I'll be late ...)". On the other side are the raft of abuses that can occur in addition to the virus and other risks noted. Furthermore, the amount of spam one receives seems to be directly related to web usage. It would appear that the greater the number of sites visited, the greater the chances of your e-mail address being detected. In some organizations, personal usage of corporate IDs is formally disallowed. Individuals adopt separate e-mail addresses for personal usage. In contrast, some organizations argue that personal e-mail access through free addresses such as hotmail generate more viruses and problems than do corporate ids. This conundrum aside, it is important that organizations tackle this situation and respond with a clearly articulated policy to govern personal use of corporate IDs.

- **Actively support legislation.** While most of the discussion focused on incoming spam and viruses, organizations must ensure that they are not sending spam. One of the focus group members rather apologetically suggested that his organization might be considered a source of spam given their e-marketing practices! As these activities may be subject to privacy legislation, the majority of the focus group firms were already quite proactive in assessing and implementing privacy practices in their organizations. One organization routinely asks its customers for permissions (e.g., do they wish to receive a confirmation via e-mail?) which are maintained in a database.

Strategy #6: Enhance communication quality

The purpose and content of a given message should dictate the appropriate delivery channel. Communication channels differ with respect to bandwidth (i.e., media richness) as well as security. Once the delivery channel is selected, it is imperative that senders transmit the full intent and meaning of the communication to avoid miscommunication. Technological aids, such as emoticons (e.g., ☺, ☹, 😐), are often used to convey feelings to complement text and enrich the quality of communication. Focus group members observed that emoticons tend to be used more frequently during instant messaging. Usage, however, implies knowledge of emoticons by recipients, which can not always be assumed. They suggested adopting the following practices.

- **Adopt communication rules.** One company developed and circulated "rules of the road" covering such things as date-stamping entries/pages, ensuring accuracy, showing consideration for the source/destination/usage of the information, using spell checkers, and peer reviews (not for every message but perhaps for mass mailings). Others agreed with this approach but stressed that individuals must be provided with sufficient instruction and motivation in how to use such rules. Communication norms are cultural artifacts that are better adopted by group persuasion and example than by legislation. All

members endorsed the need for education feeling that it is unreasonable to expect individuals to adopt proper communication behaviors if not informed.

- **Recognize cultural differences.** In global organizations, language translation is often a requirement of effective communication. Due to the increased risk of misinterpretation, senders need to maximize the message content when working in a cross-cultural context. Something as innocent as different phrasing can cause messages to be interpreted incorrectly. Avoiding jargon and highly cryptic messages, allowing redundancy, and editing for clarity are effective practices.

IV. CONCLUSION

As with any new technology, the introduction and rapid escalation of the usage of electronic communications has created a unique set of management issues. This paper sought the advice of senior IT managers from leading edge organizations to explore these issues and suggest appropriate strategies for addressing them. It is suggested that these strategies, while far from perfect, are a good "first cut". Given the nature of communications and the rapid development of related technologies, communications management will continue to chase a moving target. Nevertheless, proactive steps taken now will most certainly reduce the risk of potential security breaches, inappropriate usage and their concomitant outcomes.

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REFERENCES

EDITOR'S NOTE: The following reference list contains the address of World Wide Web pages. Readers who have the ability to access the Web directly from their computer or are reading the paper on the Web, can gain direct access to these references. Readers are warned, however, that

1. these links existed as of the date of publication but are not guaranteed to be working thereafter.

2. the contents of Web pages may change over time. Where version information is provided in the References, different versions may not contain the information or the conclusions referenced.

3. the authors of the Web pages, not CAIS, are responsible for the accuracy of their content.

4. the authors of this article, not CAIS, is responsible for the accuracy of the URL and version information.

Graham, P. (2003) "A Plan for Spam", *2004 Spam Conference*, Cambridge MA, January 2004, http://www.paulgraham.com/spam.html.

Rola, M. (2003) "Spam battle hinges on awareness: Symantec", *IT Business*, http://www.itbusiness.ca/print.asp?sid=52371.

US Congress (2003), Bill H.R. 2515, 108th Congress, 1st Session, June 18, http://www.spamlaws.com/federal/108hr2515.html.

ABOUT THE AUTHORS

James D. McKeen is Professor of MIS at the School of Business, Queen's University at Kingston, Canada and is the Director of the Queen's Centre for Knowledge-Based Enterprises.

He received his Ph.D. in Business Administration from the University of Minnesota. His research interests include IT strategy, user participation, the management of IT, and knowledge management in organizations. His research is published in a variety of journals including the *MIS Quarterly*, *JITM*, *CAIS*, the *Journal of Systems and Software*, *the International Journal of Management Reviews, Information & Management*, *CACM*, *Computers and Education*, *OMEGA*, *Canadian Journal of Administrative Sciences, JMIS*, *KM Review*, and *Database*. He currently serves on the Editorial Board of the Journal of End User Computing and was the MIS area editor for the *Canadian Journal of Administrative Sciences* for seven years. Jim and Heather Smith's most recent book: *Making IT Happen: Critical Issues in IT Management* was published in January 2003 by Wiley.

Heather A. Smith is Senior Research Associate with Queen's University School of Business, specializing in IT management issues. A former senior IT manager, she is a founder and co-facilitator (with James McKeen) of the IT Management Forum, the CIO Brief, and the KM Forum, which facilitate inter-organizational learning among senior executives, and co-author (with James McKeen) of *Management Challenges in IS: Successful Strategies and Appropriate Action* (1996). She is also a Research Associate with the Lac Carling Conference on E-Government, the Society for Information Management, and Chair of the IT Excellence Awards University Advisory Council. Her research is published in a variety of journals and books including *CAIS, JITM, Information and Management, Database, CIO Canada,* and the *CIO Governments Review.* Her book, *Making IT Happen: Critical Issues in IT Management* with James McKeen was published by Wiley in January 2003 and she is co-author of a new book, *Information Technology and Organizational Transformation: Solving the Management Puzzle* to be published in early 2004 by Butterworth-Heinemann.

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