Wireless emails: Issues, Challenges and Guidelines for Implementation

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Abstract

This paper provides some generic information in integrating data arising from wireless emails into organisational data resources. The concept, while generic, can be applied to aged care data as well. Email represents just one of the many channels through which one person can convey information to another, within or among organizations. The advent of wireless technology has enabled emails to be accessed via a network or remote access has transformed email into a mobile tool. These wireless emails, equipped with devices such as wireless phones and personal digital assistants (PDA) are competing for wireless data access. However, the unexpected growth in recent months in using these wireless emails has opened up a gamut of management problems. This paper discusses two specific issues relating to wireless emails that effect both organizations and end users, namely, data integration at organization level and ad hoc collaboration among mobile workers along with the technical guidelines needed for an organization to changeover to wireless emails.

Keywords: wireless emails, Management Challenges, Software Management

Introduction

Today's wireless emails are still in their infant stages (Smith & Andrews, 2001). These emails enable users to access organization emails in a non-connected mode. When such connections are established, security, access and privacy of data become important issues. A number of solutions have emerged in recent months to provide mobile email services in a secured manner for organizations (Simpson, 2003). These solutions use some form of wireless technology such as Bluetooth protocol, a wireless application protocol used by Ericsson. Gartner Research predicts that by 2005, about 65% of Fortune 2000 companies will be offering wireless emails and personal information managers to their mobile employees. IS organization managers will need to deal with an ever-increasing amount of traffic to meet this demand to support numerous operating systems, devices and users that are not physically located in the office, and to address security issues and other management issues associated with this traffic (Schiller, 2000). These issues will become prominent very soon because the mobile user's first requirement is predicted to be access to emails, calendaring and contacts. If organizations ignore these mobile user's data needs, they will force these users to move to unsecured and unauthorised methods of remotely accessing emails, such as redirecting to a public website or through PC based software (Gururajan & Vuori, 2003). This could, in turn, place the entire organization at risk, as corporate email will sit vulnerably on a public server, which can be accessed by unauthorised users. Therefore, while the IS managers have a responsibility to provide high quality service to their users, they also have the responsibility to protect corporate networks and data from any unauthorised use. The implementation of these responsibilities in a wireless context throws open issues and challenges that have not yet been encountered so far by IS managers (Oritz & Clancy, 2003). This paper highlights two specific issues in the wireless email usage, namely data integration at organization level and ad hoc collaboration among mobile workers. The discussion is followed by implementation guidelines for IS managers who are not familiar with wireless email technologies.

When the concept of wireless emails is applied to the aged care environment, some interesting scenarios can be thought of. For instance, would it be possible to provide access to corporate data

using wireless emails? This question, while theoretically provides an answer, opens up a number of issues. For example, the issue of data arising from wireless emails into organisation data resources appears to be complicated than initially thought of because currently organisational data bases based on a definitive data structure model, where emails are not. Further, current email solutions have not yet caught up with this issue. Therefore, it is envisaged that this will become a major issue in the near future and this paper provides some initial discussion as to how to manage wireless emails.

Data Integration

Data integration refers to the collection of data in an organization either at one point or at several points (Arena, 2000). Usually raw data is captured using forms, telephone interviews or by other mechanisms and then transformed into a form suitable to an organization's needs (Wisnicki, 2002). Traditional emails are used as a tool to collect data such as a user's profile. Although information is submitted in an email message, all too often it is re-transcribed for one of the back-end systems. When such transcription takes place, valuable information is often lost due to typographic errors and lack of other verification systems. In many cases, organizations do not capture data until the transaction is fully realised. For example, an aged care provider inquires about a product and asks to buy 10,000 units of a product by a certain date. The selling company is unable to meet the requirements of the provider and does not win the bid. The selling company usually does not capture the provider details from the email, such as which products the provider was interested in. If this information was captured in the customer database, then this would allow it to be leveraged into future business. This leads to incomplete data integration in an organization because when this product line is re-evaluated there is no means of cross-referencing the information with customer needs. Further, the lack of data integration introduces a barrier when analysing the reasons for the loss of the bid – whether caused by timing, product quality or product availability? Therefore, data integration is an essential ingredient for an organization's success. One of the reasons cited for such problems is the high cost involved in transcribing data and verifying the accuracy of the data once it is transcribed (Shroeder, 1999). Further, there is a time lag between the original data and transcribed data and businesses may not be able to afford such time delay.

While wireless emails provide a "good enough" technology layer that has some significant advantages such as accessibility, reliability of addressing and minimum effort in setting up, real economies can be realized when the information is collected on location, as a series of fields of information, and transmitted electronically to the home office, where it was directly inserted into a database (Redman, 2002). This process is one-step better than that of capturing information using traditional emails and then transcribing them into appropriate databases (Young, 2000). When using wireless emails, re-transcription of the information can be eliminated and the time taken to process data can also be significantly shortened. However, from an organization's point of view, emails need to be identified properly in order to integrate data to relevant databases. Further, for monitoring purposes, the originator and other signatory elements involved in the email need to be identified for security and authentication purposes. In addition, data transmission security issues become a major concern to organizations. This concern can be addressed by using Email response management systems (ERMS) to sort messages, allocate them to automated processing or human review as required, and track the turnaround time to ensure quality answers and timely response to the customer. However there are other challenges to be met and these are discussed later.

Ad Hoc Collaboration

Mobile email is an ad hoc communications tool. These ad hoc networks are formed for specific purposes and once the purpose is no longer required, they are easily abolished and the communication channel discontinued. Using the wireless technology, it is possible to form ad hoc

networks quickly. Wireless application protocols claim that these ad hoc networks can be formed in a secure and reliable manner. With voice and data a definite reality in the wireless domain, such ad hoc communication will soon be realised using wireless email (Smith & Andrews, 2001). While tools to facilitate these ad hoc communication channels are not commonly available to date, a number of vendors are building on the ubiquity of e-mail to create ad hoc collaboration tools that use generic e-mail — independent of vendor platform. Examples of vendors include Abridge, Intraspect and Quickplace. These tools allow the easy creation of working groups composed of people who may not all work for the same division or organization, or who may not even be in the same country. E-mail is the common denominator that links them all. Such grouping is of extreme importance in service sectors.

However, not all email applications improve ad hoc data integration. For example, IMAP, a fetching protocol allows the user to keep and organize files on the server. It enables only a shared folder. While the shared folder is one of the ways in which communication can be established, such communication is very restricted. IMAP by itself does not provide any other collaboration tools. In wireless email, if such collaboration is not fully endorsed, then these communication channels do not provide the full capabilities of communication (Lovell, 2000). There are, however, other ways to leverage simple generic wireless emails to perform a rich level of collaboration, but this is beyond the scope of this discussion.

A number of users have questioned the reliability of SMTP, message-oriented middleware (Hu et al., 2002). The strength of SMTP messaging is its ubiquity because its ease of implementation and use are contributing factors to its ubiquity. Building more capabilities directly into the protocol (with requirements for more-sophisticated implementation everywhere) is probably not advisable; building more reliability into a particular service is more desirable. In the 'last mile', an organization is at the mercy of the destination system which it cannot always control as it doesn't own the destination system's budget. Depending on how much of the path an organization can control (and how much it is willing to pay for it), it can either improve the service, or layer on top of e-mail some tracking numbers, receipts, encryption or check sums to provide assurance of delivery, non-tampering and authentication of the recipient. Without the 'last mile' it may be difficult to establish reliable collaboration.

The Challenges

Both data integration and ad hoc collaboration brings in new challenges to both oganisations and end users (Evans, 2000). In addition, service providers who provide a number of services to facilitate access and communication also face new challenges when it comes to wireless emails. Three specific challenges are as follows:

1. For the organization, wireless e-mail moves further away from corporate control — threatening to undo the effort and expense of the past five years in standardizing e-mail, ensuring reliability and reducing cost of ownership.

2. For service providers, the fragmentation of messaging technology, delivering multiple e-mail, voice mail and instant messaging services, becomes even more apparent. These service providers would like to know how does a user process a single stream of communication when working with multiple services and multiple devices.

3. For individuals, many of whom already find the volume of e-mail a major problem in work scheduling, a new source of peremptory interruption will arrive.

The Organization Challenge

Providing e-mail to wireless devices is more complex and demanding than providing it to desktops. Organizations must move toward a service provider model as the demands of e-mail services become more diverse. The challenges that threaten to drain the organization of time and resources are:

- o   The increased complexity of multipart communication chains.

- o   The diversity of ever-changing devices.

- o   The need to accommodate not only e-mail access, but also access to other applications.

These challenges will cause many organizations to consider using external services providers (Arena, 2000). Even where organizations continue to operate internal services, the approach will shift from a standardized package of pre-configured services delivered to each employee, to a "cafeteria service" where options and service levels are defined. This will enable employees to select options and service best suited to their particular needs. This will also enable organizations to provide varying services to departments based on their needs. This has an influence on the organization's cost and impacts practical and cultural shift.

The Service Provider Challenge

Users are looking for communication services but very often what they are offered is a jumble of service plans for different capabilities, on different devices, with inconsistent coverage. At the most basic level, few communications providers can even offer unified billing or customer service arrangements for wireless and fixed-line voice services. Moreover, inside the organizations there is rarely any coordination between those responsible for providing voice services and data services. Unified messaging remains for the most part a discussion only and not implemented fully. Each locus of control might attempt to offer "unification" of various message media, but they often miss the mark. For the user, it is important to unify messages between services, even for a single medium, rather than all message types coming into one destination because unification will facilitate to organize messages based on specified criteria.

The fundamental problem is that messaging technology enables organizations to deliver messages to addresses, not to people (Green, 2000). Once mobility is introduced, the inadequacy of this approach becomes apparent because users with different addresses will not be able to link services. This will force users to access different services using different devices. Responses are slowly emerging, reflected in vendor realignments such as the merger of Phone.com and Software.com to create OpenWave, and in a few innovative services such as Linx, I-Link, AccessLine and Call Sciences. However, due to the infant stages of the wireless and associated technologies, it may take some time before vendors providing provisions for integrating various services in order for users to access them using one access. For instance, in Australia, Telstra, the national telephone carrier, offers one billing service for mobile phones, the Internet access, mobile phones and other fax services.

The End User Challenge

Once users gain some control over fragmented channels, another problem becomes apparent: there is no management of messages delivered to multiple devices. Most messaging software assumes that there is one message origination point and one end point, and that a user is equivalent to a single device (Evans, 2000). When using multiple devices, there may be multiple copies of each message, some perhaps transcoded to accommodate different device capabilities. If one message is deleted, what happens to others? Is a reply from one place visible from other devices? These are difficult issues that software vendors are just beginning to address and that service providers have not even considered. If these difficulties were not resolved quickly, this would result in wireless e-mail adding substantially to the burden of message management; in a significant number of cases and hence the rejection of the wireless opportunity.

Wireless e-mail is about to hit the "Peak of Inflated Expectations" on the Gartner Hype Cycle. However, it is likely that once it falls into the "Trough of Disillusionment" within the next year, it may take two or three years before it hits the "Slope of Enlightenment" and finally reaches the "Plateau of Productivity." However, there is value to be had now from wireless e-mail. Organizations and service providers need to give more consideration to end-user needs.

What to Do: Mobile Messaging Best Practices

Best practices guidelines for e-mail or any implementation include:

1. Recognizing a problem

   Recognizing that there is a need is the first step. A lot of technology is invented before a need actually exists, but technology works best when it provides a service or makes a product faster, cheaper or easier to use. The same concept works here. Are users requesting access to e-mail when they are out of the office during work hours? Which users fit this description best? As e-mail increasingly becomes a main communications method in the workplace, more users will demand "anytime, anywhere" access. Wireless is the only technology that fits this description (Crow, 2004).

2. Assessing needs and solutions

   Assessment is twofold (Gururajan & Vuori, 2003). First, organizations must understand what type of devices is preferred, what is the travel and coverage needed, and how much usage is expected. Wireless e-mail incorporates three main components: the terminal (phone, notebook, pager or PDA), the network (cellular/PCS, CDPD or dedicated data) and the application itself. By performing a self-assessment, an organization will have a better understanding of its general needs and potential service rollout costs. Evaluating what applications, networks and terminal suppliers fit those needs is also important. One device or network does not suit all, so choosing a solutions provider (one that packages hardware, software and services for easy implementation) or putting the pieces together in-house will be easier when the organization's initial assessment of needs is completed.

3. Implementing a solution

   Implementing the service should be the easiest part. Most applications for wireless e-mail reside on a server and directly integrate with both Outlook and Lotus Notes (most e-mail applications target Notes or Exchange). Most solutions are shrink-wrapped and designed to work out of the box with little customization. Implementation also includes providing terminals and training for users, as well as adopting network services. Testing the wireless service for coverage is essential, as some of today's wireless e-mail solutions do not reach all users because of wavelength problems (Hallet et al., 2003). So if signals don't adequately reach where the majority of users live, work and play, the service can't be effectively used. Multiple networks may be needed and are common, especially when the organization is supporting multiple devices across a large number of geographically dispersed users.

4. Administrating the application

   Administration should deal mainly with the day-to-day issues, such as security for those forgetting mobile passwords, working with network service providers, and supporting mobile devices and their peculiar behaviour. Requests for IT support can increase by as much as 25 percent during large-scale projects, especially at the beginning.

5. Evaluating the results

Evaluation is the last step — but an ongoing one — in supporting wireless e-mail. Organizations should ask themselves the following questions:

o   Which devices do users prefer?

o   What's new on the market?

o   What are the main issues/problems that users have?

o   What are the usage amounts, and are they increasing, decreasing or staying level?

o   What coverage is needed, and is that changing?

o   Are there any revenue increases or cost decreases that can be associated with this application?

Best Practices – Wireless emails

Organizations should consider the following before implementing wireless e-mail (Lovell, 2000; Stowe, 2000). Gartner Research Group also provides guidelines along the following lines:

o   Leave device preference to the user as some may choose phones, others PDAs, depending on their style of work. In the end, an organization may need to support more than one device, depending on preference and network service available. This should last only until 2004, when devices become less tied to local applications for sending and receiving data.

o   Adopt a solution that isn't restricted to a proprietary device, network or server. Don't try to manage multiple e-mail systems internally, but develop a centralized one that supports both wired and wireless architectures (Anogeianaki et al., 2004).

o   Roll out a pilot program first, making sure security issues and user expectations are worked out before distributing email access organization wide (Smailing, 2003).

o   Decide on the level of security needed as some networks offer end-to-end encryption, while others go through third-party gateways or are converted, and thus may be less secure (Caffery & Manthey, 2004).

o   Use filters to help with the e-mail load as sometimes even simple delineating between read and unread messages can save time and money; prioritisation rules also can be used.

o   Training is important, but those experienced in e-mail should have no trouble picking up the wireless element, so keep it short and don't plan too much.

o   Expect help desk calls to increase, especially as the service is rolled out. Common complaints are security lock-outs or issues related more to the wireless service (e.g., delays and holes in coverage) than organization issues.

o   Limit the number of mailboxes per user. Supporting e-mail from multiple sources is complicated enough. Enforce the use of a one e-mail box solution, and look into unified messaging systems, if necessary.

Conclusion

While the potential of wireless emails is not fully realised, the indications are that by 2005, vendor applications will appear in the market making wireless emails a common feature of communication. However, the management of messages and hardware devices is identified as a problem in the area of wireless emails. This problem provides initial doubts in the area of ad hoc collaboration, which is claimed as one of the major strengths of wireless applications. When there is an impediment to this ad hoc collaboration, an organization may find it difficult to realise the concepts of data integration. Without proper data integration using wireless emails, achieving success becomes a problem. Therefore, organizations should take necessary steps to ensure that data is properly integrated and ad hoc collaboration is appropriately facilitated to realise benefits.

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