

DaimlerChrysler's Extended Enterprise Network (EEN)

by

Chaelynn M. Wolak
wolakcha@scsi.nova.edu

A paper submitted in fulfillment of the requirements
for DISS 740 - Assignment Four, Task Two

School of Computer and Information Sciences
Nova Southeastern University

January 27, 1999

Abstract

This research project will take an in-depth look at DaimlerChrysler's Extended Enterprise Network (EEN). First, it will outline what EEN is and how it came about. Second, it will take a detailed look at the four major technologies that comprise EEN such as EDI, SPIN, E-mail, and EFT. In addition, it will look at how the ANX network integrates with EEN. Lastly, it will discuss the outlook of EEN.

DaimlerChrysler's Extended Enterprise Network (EEN)

Electronic commerce (EC) has been around for quite some time. It started in the 1970s when large companies created private networks to share information with business partners and suppliers. This was usually done via electronic data interchange (EDI). EDI is a process that transmits standardized data and streamlines the procurement process between businesses. EDI helps to eliminate the paperwork and human intervention required when doing business. It is the foundation for today's EC.

In today's information age, EC refers to business generally conducted over the Internet. Even EDI, a form of EC, is being brought to the Internet. In a recent industry study, North American businesses will spend almost \$9 billion with electronic commerce consultants, products, and services (Study: Businesses to..., 1998). "The worldwide market for Internet -related services is expected to mushroom from \$4.5 billion in 1997 to \$43.6 billion by 2002 - a boom fueled largely by the rush to deploy e-commerce web sites" (Seminario, 1998).

EC has transformed the way business is conducted with suppliers. One of the oldest automotive industry's rules is to never share demand or production information with suppliers because that gave them an unfair advantage in negotiations. However, EC has altered this rule. There is a fast-growing market for online procurement of maintenance, repair, and operation products. "Online procurement changes the rules between companies and their suppliers, and elevates the long over looked and barely automated purchasing function to a more strategic activity" (Wilder, 1998).

Information and communication is serious business today. It is becoming one of the most critical success factors or failures of business relationships. "How information is obtained, understood, and utilized in decision-making processes affect both organizational productivity and customer relations" (Communicating within... , 1998). DaimlerChrysler understands this importance and has developed one of the most extensive supplier information and EC networks called Extended Enterprise.

This research project will take an in-depth look at DaimlerChrysler's Extended Enterprise Network (EEN). First, it will outline what EEN is and how it came about. Second, it will take a detailed look at the four major technologies that comprise EEN such as EDI, SPIN, E-mail, and EFT. In addition, it will look at how the ANX network integrates with EEN. Lastly, it will discuss the outlook of EEN.

This research project provides a detailed look at how one major company has successfully implemented EC on the Internet. The research presented here is imperative to other businesses looking to move to EC with their suppliers. It also provides benchmarking alternatives to those who are already present on the Internet.

Extended Enterprise Network

It all started in the 1980s when DaimlerChrysler sought to obtain a strategic advantage within the automotive industry. DaimlerChrysler felt that building strong relationships with its supply trading partners was of extreme significance. “The Extended Enterprise concept began with the understanding that improvement of supplier relationships is key to achieving DaimlerChrysler’s long-term strategic business goals. DaimlerChrysler realized that the importance of supplier relationships extended throughout the supply chain, from the larger tier one supplier down the chain through often-smaller lower tier suppliers and eventually to, usually larger, raw material suppliers” (DaimlerChrysler Corporation, Electronic Commerce Article, 1998).

This relationship with these suppliers was the critical success path to managing information and taking the first step into electronic commerce. Managing knowledge was an integral part of a successful partnership with DaimlerChrysler and its Extended Enterprise supplier partners. “By definition, the Extended Enterprise is a ‘DaimlerChrysler-coordinated process that unifies and extends the business relationships of suppliers and supplier tiers in order to maximize the effectiveness of vehicle development, minimize total system costs, and improve vehicle quality and customer acceptance’” (DaimlerChrysler Corporation, Electronic Commerce Article, 1998).

The essential enabler in the whole Enterprise scheme is communication. Electronic commerce (EC) technologies provided this communication link. “DaimlerChrysler has committed resources and aligning strategies using Electronic Commerce (EC) as its primary method for information sharing and business transactions. Its Information Technology (IT) have been re-focused to communication information throughout the supply chain using today’s more reliant and easier-to-use technology” (Douglas, 1998). “DaimlerChrysler views Electronic Commerce as a means of improving company-to-company relationships, and providing information to inform and reduce inefficiencies within the process” (DaimlerChrysler Corporation, Electronic Commerce Article, 1998).

The Extended Enterprise is a requirement for any supplier to do business with DaimlerChrysler. In fact, DaimlerChrysler is requiring close to 6,000 non-production suppliers to establish electronic commerce communication by the end of the year. DaimlerChrysler adopted this new way of business in April of 1998 by issuing a purchase order clause to all suppliers. “All DaimlerChrysler non-production/F&M (facility and maintenance) suppliers are required to establish an electronic commerce communication connection as directed by the Electronic Commerce Communications Requirements document and Purchase Order Clause 207:

DaimlerChrysler will prescribe the methods of communication between seller and DaimlerChrysler and seller agrees to follow DaimlerChrysler’s prescriptions” (Douglas, 1998).

The DaimlerChrysler Extended Enterprise is comprised of four specific communication requirements. These four communication technologies support and manage the Extended Enterprise. They are Electronic Data Interchange (EDI), Supply Partner Information Network (SPIN), Electronic Mail (E-mail), and Electronic Funds Transfer (EFT).

EDI

One of the requirements for the DaimlerChrysler Extended Enterprise is electronic data interchange (EDI). "EDI is considered DaimlerChrysler's primary method of communication with its trading partners to support the procurement, material releasing, and financial business process" (DaimlerChrysler Corporation, EDI Roadmap, 1998). All suppliers are required to establish EDI communication within 30 days. Upon 30 days, DaimlerChrysler will eliminate access to other avenues of information that are currently being mailed or faxed.

"Purchase orders and material release documents currently mailed will be eliminated by year's end. DaimlerChrysler's Corporate Accounts Payable department will no longer process paper invoices 30 days after suppliers are notified of their requirements. Additionally, DaimlerChrysler will eliminate the paper check and require electronic funds transfer (EFT) to pay for supplier services and products. The check stub detail is available through the EDI Remittance Advice transaction set" (DaimlerChrysler Corporation, EDI Roadmap, 1998).

Currently there are three basic approaches for a supplier to establish an EDI connection with DaimlerChrysler Corporation. They are supplier purchased or developed EDI software, EDI service bureau, and EDI over the Internet. Supplier purchased or developed EDI software is the most expensive and sophisticated solution. "The supplier will call DaimlerChrysler directly using in most cases a personal computer (PC), modem (bisynchronous \$1,500), EDI software (\$1,000 - \$3,000), and yearly maintenance costs (avg. \$600)" (DaimlerChrysler Corporation, EDI Roadmap, 1998).

Second is the option to use an EDI Service Bureau. This is outsourcing the EDI process. "The EDI Service Bureau initiates a communication session with DaimlerChrysler; obtains/sends all documents to a supplier's EDI mailbox, and faxes the information to/from the supplier. Costs for this service is on a per document basis (e.g. \$5 for purchase orders, releases, remittance advice, \$6 for invoices)" (DaimlerChrysler Corporation, EDI Roadmap, 1998).

The least costly EDI implementation is over the Internet. "DaimlerChrysler has established a low cost solution utilizing the GE TradeWeb <<http://www.getradeweb.com>> service from General Electric. This option is optimal for small suppliers that receives/sends one to 350 purchase orders/releases and/or invoices per year. The supplier will communicate to GE TradeWeb through the public Internet

(avg. \$20 month) using a PC, asynchronous modem (\$50 - \$100), and web browser (free). All documents sent from DaimlerChrysler to Supplier is at no cost, the GE TradeWeb user is charged for invoices submitted to DaimlerChrysler at a per document basis (\$2-\$6), dependant upon subscription fee and volume” (DaimlerChrysler Corporation, EDI Roadmap, 1998).

DaimlerChrysler has the capability to administer over 35 unique EDI transaction sets with 127 business applications. DaimlerChrysler’s mainframe EDI translator, Gentrans from Sterling Software, processes each data file. EDI files are then sent to two sources, CTX and General Electric. “DaimlerChrysler’s CTX network manages up to 6,000 EDI mailboxes supporting over 30 gigabytes of supplier and carrier data monthly” (DaimlerChrysler Corporation, EDI Roadmap, 1998).

For DaimlerChrysler, EDI has saved substantial time and money. For instance, “the current paper process (purchase order, release, invoice, and check) burdens the supply chain with a 21 to 27 day cycle-time, and \$28 in systems costs. By implementing an electronic process, cycle-time is reduced to six (6) days and system costs to \$7. The EDI process improves the procurement to payment tie-line and reduces complexity within the business process” (DaimlerChrysler Corporation, EDI Roadmap, 1998).

Lastly, the benefits of using EDI can save suppliers waste. “A supplier may reduce premium freight costs by 20 percent and increase inventory turns by 10 percent. The less automated a supplier is in their order-entry process, the greater the cost-savings opportunity. A supplier that converts from a complete manual process to an EDI automated process could realize a total-cost reduction of 85 percent” (DaimlerChrysler Corporation, EDI Roadmap, 1998).

DaimlerChrysler realizes implementing EDI can take time. However, DaimlerChrysler feels that if the supplier does not wish to participate, they will eventually fall outside the information loop. Thus, those who do participate will become effective Information Technology (IT) partners and may prosper with DaimlerChrysler in the global automotive economy. Additional information for suppliers is available via the Internet on the Supply Partner Information Network (SPIN) web page.

SPIN

Supply Partner Information Network (SPIN)
<<http://www.spin.DaimlerChrysler.com>> is DaimlerChrysler’s primary information sharing communication site. SPIN is available through low-cost technologies. Suppliers are able to access the SPIN system, in most cases with a local telephone call. “The SPIN infrastructure is organized by functional business areas with an intuitive look-and-feel to facilitate the flow of information. SPIN will not replace the current EDI business transaction set process. SPIN should be viewed as a complement to existing business

processes” (DaimlerChrysler Corporation, SPIN Roadmap, 1998). Suppliers are required to establish a link to SPIN within 30 days upon notification.

There are two methods of obtaining this connection. Suppliers may go through either the Automotive Network eXchange (ANX) or Internet Service Providers (ISPs). ANX <<http://www.anxo.com>> is “a TCP/IP network comprised of trading partner subscribers, certified service providers, and network exchange points allowing for efficient and secure electronic communications among subscribers, with only a single connection.” Trading partners use the ANX to communicate with other trading partner(s). “A trading partner may elect to have a single desktop device or their entire network connected to the ANX. A trading partner can also use the ANX to create a virtual private network (VPN) interconnecting its own individual corporate sites” (Automotive Industry Action Group, 1996). Trading partners consist of suppliers and dealerships who conduct business with any of the Big Three or with other trading suppliers such as OEMs.

Many ISPs can provide SPIN access via the Internet. DaimlerChrysler recommends that the selection of the provider should not be based on cost alone. They suggest the following: ask for business class connection, ask for a service level assurance of 97 percent or better, and ask if an upgrade path to ANX will be available (DaimlerChrysler Corporation, SPIN Roadmap, 1998).

“SPIN currently supports over 35 mainframes and web-based applications with over 2,000 supplier access hits daily. Beginning January 1, 1998, DaimlerChrysler expects to launch one new application per week in business process redesign efforts to improve cycle-time and human resource efficiencies. DaimlerChrysler will use web technology to support the process implementation change to achieve ‘Year 2000 and Beyond’ defined business objectives. To date, over 3,500 suppliers and 13,000 SPIN users are already participating” (DaimlerChrysler Corporation, SPIN Roadmap, 1998).

Suppliers should see an immediate benefit using SPIN. Suppliers have access to information daily or on a-need-to-know basis. In addition, this site provides one-stop shopping. “Benefits obtained from SPIN will vary among supplier and user but consistent in the form of improved communication, better awareness, and participation among business partners” (DaimlerChrysler Corporation, SPIN Roadmap, 1998).

E-mail

E-mail is an emerging technology that has transformed the way businesses communicate. The functionality and importance of e-mail cannot be over-emphasized. This communication tool is another essential element in the Extended Enterprise network. “E-mail is emerging as a key enabling technology in business, which is having a pervasive impact on the way people communicate. E-mail eliminates many of the communication barriers that exist not only internally between departments but also externally with suppliers. It is an accepted way for businesses to exchange

correspondence, deliver documents, and distribute information easily” (DaimlerChrysler Corporation, E-mail Roadmap, 1998).

DaimlerChrysler imposes no specific e-mail technology. However, “DaimlerChrysler promotes Simple Mail Transfer Protocol (SMTP) and Multipurpose Internet Mail Extensions (MIME) standards, which all major e-mail and Internet providers support. DaimlerChrysler has established an Internet communication (DaimlerChrysler.com) connection that will allow for the transmission of simple notes and messages (text format). In addition, DaimlerChrysler has expanded its capabilities to send/receive mail attachments (e.g. word processing, spreadsheet, graphic). DaimlerChrysler has initially set a file size limit of 768k to send and receive e-mail messages including attachments. DaimlerChrysler is investigating the technology, which will provide the ability to send and receive sound (.wav, .au) and motion video (.mov, .avi, and .mpg) files” (DaimlerChrysler Corporation, E-mail Roadmap, 1998).

The cost of e-mail is relatively nothing, and in most cases free from an ISP. “Most ISPs, if not all, offer e-mail services as an incentive for Internet accounts. Large organizations such as DaimlerChrysler has its own e-mail service and domain name (@DaimlerChrysler.com). These accounts are large utilizing special e-mail software hubs and managed internally, this type of service can be expensive.”

“Most small organizations are best to use the e-mail service of an ISP. Some ISPs offer the small company an opportunity to select their own domain name (e.g. @acme.com) at a small charge. This provides the business opportunity to assign e-mail addresses internally for the CEO, sales department, quality manager, etc and utilize the company name within the e-mail address extension” (DaimlerChrysler Corporation, E-mail Roadmap, 1998).

DaimlerChrysler’s procurement and supply (P&S) department e-mail standard is Lotus Notes Mail. “It is not necessary for the supplier to have the same software products as DaimlerChrysler but should allow for the translation of one product to another (e.g. Lotus/Excel, WordPerfect/Word). DaimlerChrysler views e-mail as a means to enhance telephone and facsimile messaging. E-mail will not replace telephone and fax but will provide another valuable tool in the Extended Enterprise. Lastly, DaimlerChrysler P&S employees are requested to access their e-mail boxes at least four times daily and respond to new correspondence within eight hours” (DaimlerChrysler Corporation, E-mail Roadmap, 1998).

This communication tool has many benefits. “Additional reasons for promoting this innovative technology include improved communication of information, reduction of phone mail messages, creation of an audit trail, elimination of time zones, enhancement of decision making, and informal flow of work from one person to another. DaimlerChrysler views e-mail as a simple buy yet innovative way of building the Extended Enterprise through communication” (DaimlerChrysler Corporation, E-mail Roadmap, 1998).

EFT

Electronic funds transfer (EFT) is a new payment process offered to customers of DaimlerChrysler's Accounts Payable. DaimlerChrysler views EFT as "closing the loop" in the business procedure. Suppliers are required to establish an EFT link within 30 days. EFT is available only for North American payments (U.S.A. and Canadian). "Payments made in U.S. funds can be directed to the U.S. bank of choice. The U.S. bank must be an Automated Clearinghouse (ACH) member. Canadian funded payments can only be directed to a Canadian bank or finance institution. Notification or acknowledgement of deposit will be in accordance with the practices of each individual banking institution."

"Funds are available at the start of the third calendar day. However, if the third calendar day is not a normal banking day, then the EFT deposit will be made on the next available day. The program offered is current payment terms plus three days. By replacing the paper process with an electronic real-time model, the three-day payment float may be a concern. To fairly average the payment process, DaimlerChrysler must add three days onto the Purchase Order payment terms as corporate policy. The supplier should not view this business decision as unfair" (DaimlerChrysler Corporation, EFT Roadmap, 1998).

The supplier obtains EFT access by filling out the required DaimlerChrysler EFT forms. The form includes the routing and transit number from the supplier's account officer at the banking institution. Upon submission, a letter is created containing the information and sent to the account officer for verification and signature. Once this information is received by DaimlerChrysler, \$.05 is electronically transferred. The supplier is required to acknowledge receipt of the \$.05 deposit.

"EFT improves the quality of information by eliminating check deposit errors, reduces the banking cycle-time as data flows from one computer to another without human intervention, and human resource inefficiencies are obtained as paper is replaced with technology. The impact to DaimlerChrysler is enormous as hundreds of thousands of paper transactions are replaced with electronic bytes streamlining the business process and reducing administrative overhead" (DaimlerChrysler Corporation, EFT Roadmap, 1998).

There are several supplier benefits. First, corporate funds are available the same day as the electronic deposit. "The manual check mail process and receipt of the paper check into the supplier's bank will be eliminated. The supplier is virtually guaranteed to receive expected funds on the day agreed upon. There is improved cash flow predictability, and therefore, improved cash utilization as payments will always be deposited direct into the supplier's account. An efficiency and convenience will exist as manual float time or the need to go to the bank to deposit the check is eliminated. The possibility of lost or stolen check is eliminated. Address and company name changes do

not delay the issuance of payment. Lastly, the event of a postal service interruption (strike, weather, vacation days) does not affect electronic deposit. Out of state or country postal system inefficiencies are eliminated” (DaimlerChrysler Corporation, EFT Roadmap, 1998). Above all, there is no cost to establishing an EFT relationship with DaimlerChrysler.

Overall Benefits

Using new technology has advantages. Electronic commerce communication technologies provide quite a few benefits for the Extended Enterprise. First, standard use of low-cost and easy-to-use technologies are incorporated worldwide. In having a common communication standard, suppliers can communicate from around the world.

Second, there are significant savings in mechanical versus manual document processing. The use of real-time applications and on-line documentation improves the flow of information. Third, information is available in a timely manner. Suppliers that work with DaimlerChrysler have access to information, day or night, which normally would require assistance from a DaimlerChrysler employee. In addition, since the supplier invoice is available online, there are few telephone calls, telephone tags, faxes, and miscommunication. Information is available in an efficient and timely fashion.

Lastly, consistent use of EC will improve communications, better awareness, and increase participation among business partners. It provides the ability to communicate electronically to other customers and suppliers within the automotive industry. “Ford and General Motors have established EDI, SPIN, EFT, and E-mail solutions similar to DaimlerChrysler. A supplier can maximize their investments by expanding usage of EC to other aspects of the business process” (DaimlerChrysler Corporation, Supplier Online, 1998).

Future Extended Enterprise Features

DaimlerChrysler is looking to implement an online nonconformance ticket dispute process. DaimlerChrysler hopes to have this online process as part of its Extended Enterprise by the beginning of August 1999. “The new process is part of DaimlerChrysler’s Nonconformance System – accessible through DaimlerChrysler’s Extended Enterprise Network Internet site – and will allow suppliers to dispute nonconformance tickets (NCT) they believe are not their responsibility” (Online nonconformance ticket..., 1998).

Some of the key features of this new process include a supplier being able to view a NCT two times a day. All disputes and the rationale for them will be documented electronically. “A disputed NCT will remain ‘active’ and continue to affect the supplier’s PPM (parts per million) rating until the dispute has been resolved. When a dispute is

resolved --the ticket voided or the rejected quantity changed – the supplier’s PPM rating will be adjusted. If a dispute is rejected by DaimlerChrysler and is still in question by the supplier, the supplier may elevate the dispute to the appropriate manager-level individual at the DaimlerChrysler facility initiating the dispute” (Online nonconformance tickets..., 1998).

A couple of other upcoming features are the Supplier Performance Evaluation Rating System (SUPERS) and the Supplier Material Requirements Tracking System (SMART) for Mexico. Production suppliers in Mexico will begin receiving material and training class schedules for these systems. Training will be conducted in Mexico City. These two systems are expected to be online for the 1999 model year (Materials tracking systems..., 1998).

Similar Extended Networks

DaimlerChrysler is not the only major corporation testing the waters of EC. Ford Motor Company plans on moving most of its \$16 billion-a-year maintenance, repair, and operational (MRO) purchases to the Internet by the end of 1999. Ford has chosen Intelisys Electronic Commerce, a software company specializing in procurement solutions, to help them create an Internet-based purchasing environment (Temkin and Cameron, 1998).

“Ford hopes to use the system with 500 vendors by June 1999. Its schedule calls for 3,000 suppliers to be on the Internet by December 1999, accounting for \$12 billion in annual purchases. In addition, Ford will require its vendors to follow a proprietary implementation of the Open Buying on the Internet (OBI) standard. Intelisys offers three options to help suppliers become compliant: 1) attach plug-in software to an existing Net catalog; 2) sign up for an-off-the-shelf, hosted catalog; or 3) engage Intelisys partners like iCat and Open Market to build new custom catalog systems” (Temkin and Cameron, 1998).

Just as the automotive arena is moving their suppliers to the Internet so is the steel industry. LTV Steel, Steel Dynamics, and Weirton Steelall have launched MetalExchange <<http://www.metalexchange.net>> this fall. MetalExchange is an industry marketplace web site for selling steel via one-to-one transactions and online transactions. “The first focus of commerce on MetalExchange will be the surplus inventory that steelmakers have difficulty selling, including flat-roll steel for construction materials and cans. It’s a common challenge across the industry, and was a big factor in Weirton Steel’s ability to persuade competitors LTV Steel and Steel Dynamics to join MetalExchange as equity partners. Weirton, the majority shareholder, has already spent more than \$3 million researching and developing the site” (Wilder, Dalton, and Sweat, 1998).

Conclusion

DaimlerChrysler's Extended Enterprise was started to provide a standards-based, industry-wide automotive business-to-business network. This was done to reduce the cost and complexity of having specialized networks for each supplier and to enable EC to occur throughout the organization with total security.

In this research, a detailed evaluation of the Extended Enterprise was done. This extended network comprises of four major parts – EDI, SPIN, E-mail, and EFT. However, additional features are constantly being tried and implemented.

In addition, there was a brief introduction to similar extended networks such as Ford's upcoming EC network with Intelisys Electronic Commerce and MetalExchange. Each of these networks is taking their first step into the world of EC. Lastly, as each company and supplier embrace EC, each will realize the enormous benefits and profits from them.

Reference List

- Automotive Industry Action Group. (1996). *Automotive Network eXchange (ANX)*. Southfield: 1996.
- Benefits of electronic information flow and communications. (1998, July 24). *DaimlerChrysler Corporation Supplier Online*. <http://supplier.DaimlerChrysler.com>. Accessed September 26, 1998.
- DaimlerChrysler Corporation. (1998, July 20) EDI roadmap. *DaimlerChrysler Corporation Intranet*.
- DaimlerChrysler Corporation. (1998, July 21). EFT roadmap. *DaimlerChrysler Corporation Intranet*.
- DaimlerChrysler Corporation. (1998, August 13). Electronic commerce roadmap. *DaimlerChrysler Corporation Intranet*.
- DaimlerChrysler Corporation. (1998, July 20). E-mail roadmap. *DaimlerChrysler Corporation Intranet*.
- DaimlerChrysler Corporation. (1998, July 20). Spin roadmap. *DaimlerChrysler Corporation Intranet*.
- Communicating within the Extended Enterprise. (1998, March 11). *DaimlerChrysler Corporation Intranet*.
- Douglas, J. R. (1998, December 9). Focusing on electronic commerce. *DaimlerChrysler Corporation Intranet*.
- E-commerce guide's ask the experts. (1998). *The Electronic Commerce Guide*.
- Materials tracking systems soon available to suppliers in Mexico. (1998, May 18). *DaimlerChrysler Corporation Supplier Online*. <http://supplier.DaimlerChrysler.com>. Accessed September 26, 1998.
- Nonproduction suppliers required to use electronic commerce systems. (1998, July 24). *DaimlerChrysler Corporation Supplier Online*. <http://supplier.DaimlerChrysler.com>. Accessed September 26, 1998.
- Online nonconformance ticket dispute process launches with 1999 model year. (1998, June 15). *DaimlerChrysler Corporation Supplier Online*. <http://supplier.DaimlerChrysler.com>. Accessed September 26, 1998.

Seminario, M. (1998, November 4). E-commerce will mean \$43 billion in net Services spending, study predicts. *ZDNet Tech News*.

Study: Business to spend \$9 billion on e-commerce sites. (1998, May 13). *Internet News.com*. <http://www.internetnews.com/ec-news/1998/05/1301-study.html>. Accessed November 8, 1998.

Temkin, B. D. and Cameron, B. (1998, October 30). Ford casts Net around suppliers. *The Forrester Brief*, 2.

Wilder, C., Dalton, G., and Sweat, J. (1998, August 24). Changing the rules. *InformationWeek*, 697, 18.