Chapter 1: Business Information Systems in Your Career

Case 1: Business in the Cloud: Facebook, Google, and eBay Data Centers

1. Why does Facebook’s data center specialist argue that “The Internet is not a cloud?”

Answer: The Internet and the Cloud are better described as a series of data centers that can share data, connected by miles of fiber-optic cable.

2. What are some of the techniques Facebook uses to cool its data centers?

Answer: Facebook uses air cooling like most data centers. Cool air from outside is used to regulate the internal temperature; mist distributed by sprinklers controls the humidity in the center, keeping the temperature more stable; and excess warm air is pushed out by fans.

3. Describe the five methods recommended by Google for reducing power consumption.

Answer: Measuring the PUE is the first step. If you can’t measure efficiency, you can’t manage it. Second, manage airflow by isolating cool aisles from hot aisles, and preventing the premature mixing of hot and cold air. Third, adjust the thermostat up to operate the IT equipment at a maximum of 80 degrees. Fourth, as much as possible make use of free ambient cooling such as cooler air, or cooler incoming water. Fifth, optimize power distribution and utilization. In this case, reduce the number of conversions from AC to DC and back again. Other methods not mentioned in the film are server virtualization, decreasing power demands of processors, and optimizing the computing load on servers in order to increase their rate of utilization, and decrease the number of servers required to do the work.

4. Based on the Google video, how much of the world’s global greenhouse gases are the result of computing?

Answer: The entire ICT infrastructure including data centers accounts for about 2% of global greenhouse gas emissions. Of this, about 15% is due to data centers. Data center power consumption depends in part on the rate of economic growth both globally and in the United States.

5. What are some of the benefits to using Dell’s Triton water cooling technology?
Answer: Higher processor performance during peak loads; a PUE of 1.03, far below U.S. average of 1.8; lower operating cost of the data center because of lower power consumption; lower electrical consumption, and reduced pollution to the atmosphere.

Case 2: UPS Global Operations with the DIAD and Worldport

1. How does the DIAD help drivers deliver packages?

DIAD creates a dispatch plan for drivers, an optimal route they should follow, with the number of packages, and locations on the truck shelves. Customized instructions for customers. Dispatchers can change route instructions in real time to account for congestion.

2. What improvements were made in the DIAD V?

Improvements that employees mentioned in the video are:

- Quick response times
- Strap to hold DIAD while holding other packages
- Reduced size and weight (1.5lb (compared to about 5 lb.)
- Easier to handle, one-hand operation
- Illuminated screen to use at nighttime
- Better signature writing feature
- Easier interface for typing
- Improved scanner beam performance for scanning barcodes

3. How many times are packages handled by humans once they reach Worldport? Why is this important?

Packages are only handled twice to prevent errors from being made, or from being damaged. The rest of the process is largely automated.
4. What are “end of runway” facilities?

When customers need packages delivered the same day they are placed in an “end of runway” facility where they can be loaded quickly onto plans for delivery the same day.

5. What kinds of information technologies do you see being used by UPS in this video?

Computer controlled conveyors; bar code and laser scanners; displays of real time data for employees who need to make decisions, or customers to track packages; weather forecasting systems

6. Why doesn’t UPS use much more powerful and smaller smartphones like the iPhone or Android?

The DIAD units are much more robust than consumer smartphones and can withstand larger drops, rain and intermittent submersion, and other abuse. While many features of the DIAD are also available on smartphones, the DIAD is optimized for these features (like scanning barcodes, using multiple cellular carriers) whereas ordinary smartphones are not.

7. How does UPS’s investment in IT help it achieve the strategic business objectives described in Chapter 1?

The most important contributions of information technology to UPS strategic objectives is the greatly enhanced operational efficiency; the compression of time to deliver; the development of new services like tracking, and overnight or 2-day service; the closeness to the customer; improvements in the quality and speed of decisions related to packages.

Firms that made these investments in IT benefit by achieving significant competitive advantage over others in the package delivery business. FedEx remains a much smaller but competitive service especially in the overnight market. Other competitors have largely disappeared.

8. Why does UPS serve as an example of a “Digital firm” as described in Chapter 1?

UPS has digitally enabled a significant number of its business relationships with customers, and used IT to automate many of its significant business processes.
Chapter 2 Global E-Business and Collaboration

Case 1: Walmart’s Retail Link Supply Chain

1. Where does Walmart’s supply chain start? What triggers Walmart’s Retail Link system to ship goods to local Walmart Stores?

Walmart’s Retail Link is triggered by consumer purchases in local stores by point-of-purchase cash register data. This is in contrast to more traditional supply chains which often start with a manufacturer or distributor shipping goods to local stores based on forecast sales or the hope of making more sales by flooding isles with products (“push” driven supply chains). In the case of Walmart, the supply chain is driven by consumer behavior which “pulls” replacement stock from inventory.

2. Why is a detailed knowledge of consumer purchases at each store important to Walmart’s success?

There are regional and local differences among all of Walmart’s stores in the United States. These differences may involve weather patterns, ethnic composition of customers, local economic conditions, and regional cultures as well. Therefore, each store is in reality a unique entity with its own patterns of consumption. By adjusting inventory to each store, Walmart is able to meet different customer needs, and optimize sales revenue.

3. Why can’t other large retailers easily duplicate Walmart’s Retail Link?

Retail Link has been built over several decades, and the experience and knowledge that Walmart has developed cannot be easily transferred to other firms. Moreover, the financial investment is substantial. Nevertheless, other large retailers like Target and Costco have developed powerful and competitive systems to compete with Walmart. Because the technology has fallen in cost over the last decades, new comers have an advantage over legacy systems like Retail Link.

4. Why does Walmart encourage its vendors to learn how to use Retail Link?

Walmart is able to off load some of the cost of keeping its shelves full to vendors. Vendors monitor the stock of their goods in all Walmart stores and are incentivized to keep goods in stock (avoid stock-outs). Is there a danger of vendors overstocking Walmart shelves? Probably. But Walmart’s own managers oversee the inventory system and can quickly spot those vendors who would take advantage of their access to Retail Link.
Case 2 CEMEX: Becoming a Social Business

1. Why might social business be especially useful for global companies?

Social business tools like networking and shared workspaces are especially useful for global companies because they allow far-flung coworkers to collaborate more effectively.

2. What were some of the benefits that IBM social tools can provide for businesses like the fictitious Greenwell Couture?

Benefits include faster decision making, greater productivity, and improved customer service. Different types of employees derived different benefits.

3. What made Cemex a good candidate for a company-wide social network?

Cemex is a global company with thousands of employees across 50 countries. A company-wide social network allowed employees around the world to share ideas and collaborate. This led to new product innovation.

4. What types of things can go wrong when changing the culture of an organization to be more social and collaborative?

If employees are not trained in the proper use of social media, they may harm the company or its brand. If employees do not see the value in a collaborative workplace, social initiatives may not take root.

Chapter 3 Information Systems, Organizations, and Strategy

Case 1: GE Becomes a Digital Firm: The Emerging Industrial Internet

1. What does Immelt mean by the “digitization of the industrial world” and “the industrial Internet?” What are the four central elements of the industrial Internet?
A: Sensors produce data; cloud computing collects the data; analytic software processes the data; the results are sold to business customers as a service.

Sensors capture data off of machines; the data is sent over the Internet and collected by cloud computers; the data is analyzed by software apps, and is used to monitor machine performance for the purpose of optimizing the performance of industrial machines. The results of this analysis, along with access to the data, and the GE Predix computing platform is sold to customers as a service.

2. What were the three alternatives GE had for developing the hardware and software capabilities to become a digital firm?

A: GE considered acquiring companies with the expertise, outsourcing the project to other firms, and building the capabilities in-house with its own employees.

3. Which option for developing its digital capabilities did GE choose and why?

A: GE chose the option of developing new digital capabilities in-house in order to capture the full value in a digital firm just like other Internet consumer companies had done. If GE does not build its own digital capabilities, they will lose out of future revenues.

4. Why does the new GE want to treat analytics as a company expertise just as it has always treated material science?

A: Because the real value in a digital firm increasingly lies in understanding digital data and selling that to industrial customers. The value is not just in data, but in understanding what it means, and how it can help their customers improve their business.

5. What example does Immelt use to illustrate the value of digital knowledge to GE customers?
A: Train companies that operate locomotives. The average speed of a locomotive in the United States is 22 miles per hour. If, through better data collection and analysis, this speed could be increased to 23 miles an hour, the train company could earn an additional $250 million in profit each year.

6. What does Immelt mean when he says GE will become a “platform” and “app” company?

A: The Predix platform is a GE cloud computing platform that is open to its customers to collect and analyze data on their industrial machines. Customers can develop their own apps to analyze their data, and some apps will be developed internally and sold to customers. Predix is a cloud-based service.

7. Why does Immelt believe GE will need to hire thousands of new people to achieve its goals of becoming a digital firm?

A: GE’s existing labor force does not have the skills needed to become a digital firm. The company needs to hire data scientists, new product development managers, and sales people. The old culture of employees trained in manufacturing and materials science will still be needed to produce the industrial products.

8. What is the “culture of simplification” that Immelt believes is needed at GE?

A: The current corporate culture is too complicated to get the work done in a digital world. It’s too complex and to slow. The culture of simplification means:

- Fewer layers, processes, and decision points
- Setting “fast works” or schedules with everything on a defined clock
- Democratizing information in the company
- Moving towards a real-time environment and “unplugging anything annual.”
Case 2: NBA: Competing on Global Delivery with Akamai OS Streaming

1. Using Porter's competitive forces model, analyze the NBA's market situation. How does the use of Akamai help the NBA compete in this market?
   First, what is the market? Broadly, it’s the entertainment market. More narrowly, it’s the professional sports market. Even more narrowly defined, it's the market for professional basketball in the United States and the world where the NBA holds a near or actual monopoly. The NBA has direct sports competitors in the form of professional basketball leagues in Asia, and Europe, although they do not have global brands. The NBA also competes again other professional sports associations like the National Football League, and Major League Baseball. These other associations are also expanding their international reach.

   Substitute products include all other forms of media which can capture their audience such as YouTube, videos, movies, and other immersive and entertainment media. There are few new market entrants at this time because of the costs of building a brand; Customers are a threat in so far as they can find alternative often illegal ways of obtaining professional basketball content on the Web. The NBA needs to control its product licensing, geographical distribution, and supply. Supplying an entertaining experience allows the NBA to capture this audience and prevent the development of extensive P2P network downloading of copyrighted content; the local franchise owners, who also own controlling interests in the NBA, are the suppliers of the entertainment content because they own the local franchises. They are not a competitive threat, but might develop their capabilities if the NBA did not. That would be a risk.

2. Using Porter's our generic strategies model, what do you think is the NBA's overall strategy or strategies?
   A differentiated, unique product—the online NBA experience. A focus on market niche: US and global basketball sports. In particular, developing a global strategy is obviously a large part of the NBA strategy, and you can think of this as changing the scope of competition from national sports to global sports, and developing a global brand. Finally, strengthening the customer relationship by providing access worldwide to US basketball competition, and enhancing the online video experience and offering everyone that experience no matter where they live.

3. Why is it important that all fans in the world have the same experience?
   For the NBA and other professional sports businesses in the United States the fastest growing markets are global, led by China, Europe, and Latin America. Offering lower quality service to your fastest growing markets would inhibit global growth.
4. Why is it important that individual franchise owners can build, manage, and distribute on the NBA platform their own content? This capability allows local franchisees to control the message they want to communicate to local audiences, and global audiences. It also puts the cost of creating, managing, and maintaining the content onto the local franchiser. The governing structure of the NBA and the other professional sports leagues is that of a confederacy of independent constituents, with a weak central leadership. Many local franchisers would not approve of the NBA centralizing content creation and management.

5. The word "partnership" appears several times in the video. Who are the NBA's partners? How does the concept of a strategic ecosystem help understand the NBA's partnership strategies? The NBA's ecosystem partners consist of technology companies that help it transform its live performances into video content that can be delivered worldwide. Also, the NBA is partnered with the global marketing giants, and global brand name firms who advertise on the NBA.com platform. Together, the technology, marketing firms, and consumer brand companies constitute the NBA strategic ecosystem.

Chapter 4 Ethical and Social Issues in Information Systems

Case 1: What Net Neutrality Means for You

1. What did the FCC’s net neutrality rules decide in 2015 about whether or not ISPs can be regulated as public utilities, and why is this important?

The FCC approved new regulations in 2015 that did indeed classify ISPs and broadband providers as public utilities, because they are so crucial to modern life that they need to be regulated in a different way, the way electricity and water are. This is important because it allows the FCC to enforce net neutrality rules with much more authority than in the past.

2. Are you in favor of network neutrality? Why or why not?

Student answers will vary. Those in favor are likely to cite the importance of the Internet to public life and the democratization of the Internet where average users can enjoy an acceptable baseline level of bandwidth; those against will cite the ISPs rights to charge its heaviest users higher fees and the importance of free market principles.

3. Do you believe broadband providers should be allowed to charge companies like Netflix and YouTube a premium for their bandwidth consumption?

Answers will vary
4. What are some of the potential regulations the FCC might impose on ISPs?

(About 1:15 into video #2) The FCC could add extra taxes to broadband bills, regulate rates, or force ISPs to open their networks to competitors.

Case 2: Facebook and Google Privacy: What Privacy?

Case 2 Facebook Privacy

1. Do people who use Facebook have a legitimate claim to privacy when they themselves are posting information about themselves?

People post personal information on Facebook in the belief that it will be shared only with their friends, or those they choose. This belief is encouraged by Facebook through its public pronouncements on holding data private, but in practice, causing the information to be widely shared. The FTC has explicitly charged Facebook with misleading its users about the privacy of their Facebook information. Given all the instances of Facebook changing its information policies without informing users, and expanding its sharing of personal information, users would be wise not to join or to remove their profiles if they want to preserve their privacy. On the other hand, users who post information and make no effort to control its use, arguably do not have a claim to privacy any more than a speaker in a public forum can make a believable claim to privacy.

2. How can using the sharing privacy controls help preserve your privacy on Facebook? In what ways is the sharing control ineffective?

The idea is that you can control with whom you share information, and how widespread sharing will be. But a single global control may not work for you. You may want to share certain things with your friends, other things with your parents. And apparently your friends’ apps and games will see everything you post, and Facebook will use that information to post ads to you.

3. Why would Google combining information from separate accounts across its services and sites have privacy implications for its users?

Google’s announcement that it would combine profiles across all of its services, including YouTube, Gmail, Google+, and more, has privacy implications for its users because it allows Google to develop even more accurate profiles of each user. Performing anonymous searches will, in turn, become more difficult, as Google will
be able to match the types of searches you make with much more robust profiles for each user.

4. Look up your address on Google Street View. Do you believe Google Street View constitutes a breach of privacy? Why or why not?

Answers will vary

Case 3: United States v. Terrorism: Data Mining for Terrorists and Innocents

1. How is PRISM, a U.S. government program, able to surveil foreign communications?

Because nearly all of Internet traffic passes through the U.S. at some point, PRISM can rightfully access foreign communications.

2. Describe an example of PRISM providing intelligence about a suspected terrorist.

The video describes how one potential terrorist was caught sending an e-mail to a known terrorist bomb expert about the correct amounts of chemicals to make a bomb. This allowed law enforcement to identify and arrest the terrorist.

3. What is Tim Cook’s argument for challenging the order to provide an iPhone back door?

Individual users should have the right to protect their data on their devices, and encryption is the only way to effectively do this. Adding a back door allows both law enforcement and criminals to access the data.

4. What is FBI director James Comey’s argument in favor of introducing the back door?

Comey argues that you wouldn’t sell a car with a trunk that couldn’t open, yet this is what Apple does with the iPhone. iPhone users are, in Comey’s words, “beyond the law” in the sense that law enforcement cannot access encrypted user data.
Case 1 Rockwell Automation Fuels the Oil and Gas Industry with IoT

1. What is Rockwell Automation’s relationship with the oil and gas industry?
Rockwell supplies automated products used in every area of the oil and gas industry and also offers service on those products.

2. How has the Internet of Things changed the oil and gas industry?
The Internet of Things allows components from across the oil and gas supply chain to communicate information to the cloud, allowing for more effective upkeep and maintenance of those components.

3. Why was Microsoft Azure a good choice for Rockwell?
As a Fortune 500 company with significant needs for data storage, only a large IaaS provider like Microsoft represented a good fit for their cloud solutions.

4. What business problems did Rockwell’s partnership with Microsoft and implementation of IoT technologies solve or alleviate?
Major business problems that Rockwell has improved were its reliance on paper-based processes, reduction in maintenance to remote areas of the supply chain, and reduced instances of costly products breaking down.

5. What are some other common applications for the Internet of Things?
Smart appliances, national and local infrastructure like roads and bridges, energy management, medical and healthcare systems, and transportation are all areas where the Internet of Things can deliver new levels of insight. The Internet of Things allows users of these devices and services to discover early warning signs for errors and malfunctions, identify hidden patterns in usage, and remotely troubleshoot many issues.
**Case 2: ESPN.com: The Future of Sports Coverage in the Cloud**

1. How many requests from users does ESPN receive each second? Do you think this is a consistent pattern or does it have peaks and valleys? When does it peak?

   A: ESPN can receive up to 10,000 requests for service per second. Demand for service is highly variable, peaking when games are being played, or when championship matches are playing. At night, demand falls off.

2. Why does ESPN store personal information and preferences on its databases and how does this personal information complicate the ability of ESPN to respond to requests from users? Why can’t ESPN just use Web page caching to handle the loads?

   A: Customers enter their personal preferences to determine what scores they routinely see, and what features they are interested in. A cached Web page is static whereas the pages served by ESPN are highly dynamic as sports scores are updated every few minutes.

3. How much information on users does ESPN store? Why does this pose a challenge for ESPN? Can’t it just use a standard 1 terabyte hard drive from a PC? Why can’t it use a single PC?

   A: 10 million users, on average 5k per user of personal information, and this equals 100 gigabytes. To build redundancy ESPN mirrors the data and so they need an additional 100 gigs for a total of 200 gigs to store the personal information. Because ESPN is looking for an overall <10 millisecond response time to a user’s request, a standard hard drive could not respond for 10 million requests per second in less than 10 million seconds. Moreover a single JVM (Java Virtual Machine device) or tens of them could not handle 10 million requests per second.

4. Why is scalability so important to ESPN?

   A: Given the peak-loading of consumer requests during championship periods like the Super Bowl, ESPN needs to add capacity quickly without having to change its programming or systems to cope. Given the way ESPN’s system is built, adding capacity is just a matter of adding additional standard servers.

5. How has ESPN handled the rise of Twitter? How has it incorporated Twitter into SportsCenter?

   A: ESPN has developed the capability to post to social sites like Twitter and Facebook in a few moments after the action takes place on its cable TV feeds. ESPN recognizes it has
to provide sports center coverage to whatever devices and services their customers use. ESPN has posted about 70 million items to various Over the Top (non-cable) outlets for video like Netflix, Snapchat, Twitter and Facebook.

6. What has ESPN, originally a cable-only service, done to adjust to the rise in users canceling their cable subscriptions in favor of unbundling services?

A: ESPN knows that cable cutting is growing, and viewers of its content are using alternative sources for sports news. It is trying to build an infrastructure that can deliver live sports content to wherever its customers are located (mobile apps) and whatever device or channel they are using. Delivering sports news anytime, anywhere, any platform.

Case 3: Netflix: Building a Business in the Cloud

1. What event convinced Netflix to switch to a cloud-based service?

A: In 2008, Netflix had a database corruption outage that damaged its DVD mailing business, preventing them from sending discs to customers. That convinced the company to switch to a cloud solution with a lower incidence of downtime and greater scalability, and the only cloud big enough to handle the enormous bandwidth load of Netflix was Amazon Web Services.

2. What is Chaos Monkey and why is it importance for Netflix and its use of AWS?

A: Chaos Monkey is a tool that intentionally causes problems in production to ensure that Netflix can handle spikes in usage or other problems such as individual regions experiencing downtime. It was a custom application built by Netflix for use with their AWS computing resources.

3. Why is it important for Netflix that AWS has multiple availability regions?

A: Because AWS is a global service with multiple availability regions or zones, an outage in one spot means that another availability zone will be available to pick up the slack. As Netflix continues its global growth, it’s important that users in all areas of the world can get content from multiple places in the event of outages or high traffic. AWS is the perfect service for this purpose.

4. Do you watch TV or movies on Netflix? Have you encountered varying quality of service at different times of day?

Answers will vary, but cable Internet subscribers often report an inability to use Netflix and other streaming video services on week end evenings, just when millions of people hope to use the service. This is also a local problem: cable systems are quickly
overloaded in neighborhoods where utilization of Internet video is high on the week ends. Under Net Neutrality rules adopted by the FCC, Netflix is prevented from purchasing preferential treatment for its subscribers from telecommunication providers like AT&T and others.

Chapter 6 Foundations of Business Intelligence: Databases and Information Management

Case 1: Dubuque Uses Cloud Computing and Sensors to Build a Smarter City

1. Why is the cloud important to cities like Dubuque as they pursue their visions of a smart city?
   Cloud computing means that cities will experience much lower IT costs than with traditional hardware and software installations owned and operated by the city, or from proprietary data centers. Cloud computing supports Software as a Service (SaaS) and eliminates the need for cities to purchase or operate data centers.

2. What do Dubuque officials mean when they talk about a “smarter city”?
   “Smarter city” means a city where thousands of sensors are distributed across the city, including in homes, which send data on water, energy, and travel facility use to a cloud computing facility. Software then analyses this data and returns useful information to city officials, and participating “pilot” home owners. The objective is to make cities “sustainable” which means efficient in their use of natural and human resources.

3. List the major “smarter city” projects in Dubuque. What has been the impact of the smarter domestic water program?
   Smarter water; smarter natural gas; smarter electric; smarter travel;

25% of all the domestic water in the country is lost through leakages in the supply lines. Smarter water helped the city achieve a 6.6% reduction in usage, and an 8 fold increase in leak detection.
4. What is Dubuque’s next move now that they have developed some successful pilot projects like the water program and electricity program? Officials hope to integrate these ‘silos’ (water, electricity, travel, and gas use) into a unified whole smart system to analyze relationships among each of these silos. For instance, instances of very poor utilization of resources may occur in certain neighborhood, but not others, suggesting a community planning program.

5. How is the approach taken in Portland similar or different to the approach taken in Dubuque?
Dubuque’s effort is aimed more at building a large data gathering network from various city and property owner systems, and then analyzing the data, looking for areas of waste, and for patterns and interrelationships among the various sub-systems like gas, water, and electricity. The Portland effort reflects a more planning orientation for decision makers to understand the implications for many city systems of the decisions they make. Portland has a more decision making, and planning, approach.

credit card numbers on file for its customers, so it’s critical that they keep their data warehouse safe.

Case 2 Brooks Brothers Closes in One Omni Channel Retailing

1. What were some of the information system problems Brooks Brothers needed to resolve?
As a company with a long and rich history, Brooks Brothers had many processes and systems that needed a revamp to match the worldwide shift towards “omni-channel” retailing, emphasizing mobile e-commerce and an emphasis on data collection.

2. What critical aspect of Brooks Brothers service did the company hope to preserve with its SAP implementations?
Brooks Brothers hoped to preserve the personalized service tailored individually to each customer with its new CRM and database implementations.

3. Why did Brooks Brothers select the SAP HANA database management system?
Brooks Brothers selected SAP HANA over other alternatives for its ease of use and overall speed. Other options allow for more complex queries, but did not suit Brooks Brothers’ needs as well.

4. How will Brooks Brothers use its new database?
Brooks Brothers will use customer data to continue to offer personalized service, create customized marketing campaigns, and analyze purchase histories, all in real time. In the past, the company did not have a unified system across all of its many stores throughout the world.

5. Do you think systems like SAP CRM and SAP HANA are necessary for all businesses with a global presence? Why or why not?

Answers will vary – businesses with global presence need solutions that are fast and interconnected via the Web, and which unify processes throughout the firm no matter how far flung individual stores may be.

Case 3 Maruti Suzuki Business Intelligence and Enterprise Databases

1. What were the business challenges facing Maruti Suzuki management prior to adopting the Oracle suite?
Rapid growth: 15% growth in India car market. Challenges to its competitive position as a leader in India. Multiple divisions, subsidiaries, and joint ventures made it difficult to coordinate company. Difficulties of reporting information in a timely fashion to parent company in Japan. Lack of real-time operations and financial data.

2. What advantages does Maruti Suzuki derive from working with a single vendor, Oracle? What are the possible risks of working with a single vendor?
A single vendor can provide an integrated suite of tools that usually work with one another well. Reduces transaction costs of dealing with vendors and consultants: one firm. The risk is that some tools in the suite may not be “best of breed.” And a single vendor makes the firm dependent on one firm’s financial and management position.

3. What were the important business factors which management used to evaluate Oracle’s database offerings?
Management wanted systems that were simple to use; require little training; could be scaled up as the company grew; and could integrate existing legacy systems.

4. Why was it important that a vendor’s products be able to integrate with legacy systems?
Legacy systems are the older databases and computerized files which all large companies developed in the past. Legacy systems are difficult to abandon because a great deal has been invested in building them over the years; they “work” after a fashion; and use outmoded technologies requiring skills that are difficult to find on the market. Replacing legacy systems is usually too expensive. Therefore, it is
important that new systems be able to work with the existing legacy systems. “Middleware” is software that makes this possible (it’s in the “middle” between legacy and new systems).

5. What are the business benefits reported by management to using the Oracle suite of products?
The benefits are standardization of data and information across the enterprise; standardization of business practices; immediate real time online data; no batch processing; strengthening of financial and management controls over a very diverse and geographically distributed company.
Case 1 Telepresence Moves Out of the Boardroom and Into the Field

1. List and discuss briefly the benefits claimed by Cisco for its IX5000 telepresence technology.

The IX5000 is a significant improvement over earlier telepresence technology for eight reasons described in the video: no changes to rooms are required, as in the past, when equipment was bulky and required high amperage circuits and special cabling; installation in half the time and half the cost; high definition video and audio display; interactive easy-to-use graphical interface; multi-platform enabled for touch devices and mobile devices; a single universal connector (Ethernet ports and plugs), auto-focus and aim cameras capture movement around the room; a single 110 volt, 10 amp power requirement.

2. Why did Jerry Bruckheimer’s production firm adopt telepresence technology?

The primary motivation was to establish high quality communication links between the on-set production team, which could be located anywhere in the world, with the home-based production studio in Hollywood. Armed with life-like, instantaneous video collaboration, Bruckheimer was able to review film dailies with editors and post-production staff in Los Angeles while he was on-set in New Mexico.

3. What are the business benefits to Bruckheimer’s production company of using telepresence technology?

Cost savings, better management decision making, and enhanced speed and quality of communication are the primary business benefits. Telepresence technology meant that film editors and corporate executives could closely monitor film production, and coordinate with on-set producers, directors, cinematographers, sound engineers, and other specialists who contribute to film production.
4. In the past, work was organized into central buildings located in central locations (like cities) in order to facilitate face-to-face interactions. What impacts might telepresence have on the organization of work? How could you use these tools to organize work on a global scale even when employees are in different physical locations?

Telepresence opens up the possibility that global corporations could be managed much more efficiently, with much less business and management travel, and with greater precision and speed, than is currently the case. Within a country, there would be much less need for large centralized headquarters. Telecommuting, which already describes the work lives of millions of Americans, becomes a more realistic option for employees.

Case 2: Virtual Collaboration for IBM Sametime

1. Based on the video and text of the case, list and briefly describe five areas where Sametime may increase employee productivity. What do you think will produce the greatest increase in employee productivity? Here are seven possible choices, and there may be more in the video: collaboration with remote and/or mobile teams; planning meetings; brainstorming; voting and polling (consensus building and deciding); presentations (slides); note taking; process design. The efficiency with which meetings can be initiated, managed, and controlled seems to be the biggest contribution to productivity when compared to having a face-to-face meeting. This is especially true for meetings in different buildings, or having to travel to attend a meeting.

There is no correct answer here, and it depends on the firm and the kinds of products and services being produced. An argument could be made that the most powerful application is simply “collaboration” across geographical boundaries.

2. How does IBM Sametime support collaboration? What are the additional benefits of the virtual environment?
Sametime creates an integrated data-rich, high definition audio and video environment where employees can see and talk with one another, share documents, and opinions. These activities are the essence of what we mean by “collaboration,” namely, working together towards a shared goal.

The “integrated” quality refers in part to the ability to send standard documents, e.g. Word documents, spreadsheets, and PowerPoint slides without opening another application such as email. It also refers to the fact that Sametime works on standard desktops, as well as mobile devices.

3. What types of communication are integrated within Sametime’s digital environment? What type of communication is missing? Does it make a difference?

Sametime includes nearly the entire gamut of human communication including speech, and writing. What’s missing potentially is the “face to face” element of human interaction, and the emotional communication that is possible in real human interaction. Often this is referred to as “non-verbal” communication. Anecdotal evidence suggests that non-verbal communication plays a significant role in group or collaborative decision making. At this point our experience with these collaborative environments is too limited to make a judgment about whether the absence of non-verbal communication is a negative or a positive. In the real-world, airline travel of business managers and sales persons in order to have face-to-face, in-person meetings, continues to play an important role in business life.

What’s missing is face-to-face interaction, personal presence. Students can debate whether this is good, bad, or not relevant to the success of a meeting. In some cases it may be very important to read the emotional signals of participants that may not come across very well in a digital environment.

4. Why is it important that Sametime works on both desktop and mobile devices?

Today’s employees and managers use both desktop PCs and mobile devices, depending on their travel, locations, and environment. It is important that the user interfaces and functionality of meeting systems like Sametime have the same user interface regardless of the device.

5. The first video mentions “presence awareness.” What is presence awareness, and of what use is it?
Presence awareness is an industry term that refers to a very rich visual and aural experience made possible by new technologies including high speed processors, and very large broadband telecommunications links needed to process and share the visual environment. The objective is to make the participants feel as if they were in a face-to-face environment. The primary value of presence awareness is to re-create the emotional content of real, face-to-face meetings which are much more expensive to arrange with remote work teams. Presence awareness also refers to the ability of these enterprise level collaboration environments to keep track of the whereabouts of managers, and make communication with them more likely and easier.
Case 1: Stuxnet and Cyberwarfare

1. What are the three classes of cyberattacks and their effects, according to the Zertag video?
The three classes of attacks are intellectual property theft, which degrades our economic competitiveness; attacks that disrupt our way of life, such as attacks to our infrastructure; and attacks that threaten the military’s ability to defend itself, which could leave us vulnerable to other types of attacks.

2. What are the five differences between cyberwarfare and traditional warfare?
The five differences between cyberware and traditional warfare are: First, the most powerful nations in cyberwarfare are also the most vulnerable. For example, the U.S. has unmatched offensive capability to carry out cyberwarfare, but because our society is one of the most highly networked and technologically advanced, we are the most prominent attack target. Second, the government is no longer capable of carrying out warfare on its own. Telecommunications networks, Web sites, and private companies must all work together to battle cyberattacks. Third, there is what Zertag calls a “huge attack surface” – a dizzying array of devices and applications for criminals to target. Fourth, in cyberwarfare, victims may not even know they’ve been attacked until months after the initial attacks. Home Depot discovered its attack five months after the fact, for example. And fifth, cyberwarfare is unlike traditional warfare in that there is often no warning before an attack and a lengthy response time before retaliation. In traditional warfare, attacks took months or years to prepare for, and response time could be very quick.

3. Why is the Stuxnet event considered to be historic?
Because it was the first documented effort to use computer malware to disrupt and harm another nation. In that sense, it was like the use of poison gas in World War I, or the use of nuclear weapons in 1945.

4. What is a danger that the creators of Stuxnet have created for other industrial counties, including the United States? What is the greatest fear created by Stuxnet?
The problem is that the code itself can be copied, changed, or replicated, and launched against the PLCs of the very nations who used it in the first place. It could also fall into the hands of mischievous hackers, private individuals.
5. Why are people (agents) needed “on the ground” in order for the Stuxnet virus to work?
People on the ground are useful, if not always necessary, to describe the configuration of the PLCs in a factory, and the local network they are connected to. If the network is encrypted or private, local agents are often needed to tap into the closed network to download the target software and upload the virus.

6. Why did Iran, and American commentators, not consider Stuxnet an act of war?
As the General noted in the video, there is a continuum between peace and all-out war. Stuxnet, he believed, could be seen as in between these two poles, and therefore a “hostile” event, but not all out war. All-out war again Iran might involve, for instance, strategic air strikes against that countries power stations that power the nuclear facilities. Stuxnet is a good deal less than a strategic conventional warfare strike.

Case 2 Cyberespionage: The Chinese Threat

1. What are cyberespionage groups stealing from the United States?
All kinds of intellectual property such as research and development results, business plans, designs of software and machinery, software, and other products of the mind (intellectual property).

2. What does the video claim is the evidence these attacks are coming from China? Is this believable?
The ISPs and the URLs of the attackers are located in Asia. However, it is possible that Asian computers are compromised and are being used by others actually located in Europe, or other nations. Nevertheless, it is difficult to dismiss the opinions of so many experts that the attacks are coming from China.

3. What does Adam Siegel in the video claim is the motivation of the Chinese government for conducting cyberespionage against the United States?
Siegel claims the Chinese do not want to be dependent on the West for technologies, and they fear falling behind the West, which in turn might slow their economic growth. China wants to move from “made in China” to “Created in China.”
4. Why didn’t Nortel management take the Chinese threat seriously? Why do various contributors in the video claim that American management does not take the problem seriously? The video is unclear about this question. Senior Nortel management may have been more focused on near term business difficulties rather than cyber threats that did not seem immediately related to their business performance.

5. The video claims the attacks on American corporate and military computer systems are increasingly sophisticated. Do you believe this is true? The attacks are overwhelmingly simple rather than complex. The most common vector of attack is through phony emails or Web sites that employees are lured into clicking on. Once clicked, the malware finds places to hide in ordinary software like Microsoft Internet Explorer or Excel spreadsheets. The malware will have access to the same information as the legitimate user of the machine. The tools available for creating and using this malware is readily available on the Internet.

6. Industrial espionage is a kind of technology transfer. The video claims the very DNA of Google is being drained by China, and that the U.S. will lose its competitive advantages with respect to China. Do you agree or disagree? Why? How else is technology transferred? Is it possible to stop technology transfer of any kind? On the surface, the video is insistent that Chinese cyberespionage is a significant threat to the United States. Yet the video is vague about exactly what has been stolen, and how important it really is to the market success of American firms. Moreover, it’s one thing to steal an industrial process, or computer code, it’s quite another to understand it, modify it, maintain it, and actually use it in a realistic organizational and business environment. Technologies don’t stand still, and stealing a technology does not help you create a technology.

Stealing the plans for an F-35 strike fighter may shorten the development time for a country, but actually making an F-35 involves a great many complimentary assets and skilled people that cannot be stolen. Last, American and European firms voluntarily transfer significant technologies to China every time they decide to establish factories in China. The competitive and business advantage of China lies not in its treasure trove of stolen intellectual property, but rather an inexpensive, disciplined urban labor force.

Case 3 UBS Access Key: IBM Zone Trusted Information Channel

1. What are some common types of malicious software, or malware? What best describes the “man-in-the-middle” type of attack? Common types of malicious software include viruses, worms, Trojan horses, and spyware. A keylogger is a type of spyware that records the keystrokes of the user.
Many of these types of malicious software are used in bank fraud-related activities. The ‘man-in-the-middle’ attack is most often executed by a Trojan installed on the user’s system.

2. Provide some examples of each type of authentication factor. What are your experiences with each? Examples might include a person question you need to answer to change your password for a site (a personal factor), a retinal scanner (a human factor), and the ZTIC (a technical factor).

3. Can you think of any drawbacks of the ZTIC device? One drawback of the device is that while the Internet is ubiquitous, you would need to bring the ZTIC everywhere you go to safely perform banking transactions anywhere, anytime.

4. How might malicious attackers try to get around devices like the ZTIC? Though the ZTIC might prevent attackers from performing any transactions themselves, more emphasis might be placed on acquiring other information from the user’s hard drive, like account numbers, balances, and other transaction details.

5. Do you foresee a future where malware is completely eliminated, or protections are so good that malware is no longer a threat? Explain your answer. While students may be inclined to say that malware is only a temporary phenomenon and is likely to be outpaced by preventive technologies, it’s not likely this will happen. Too many people do not take efficient care of their computers for malware to die out completely.
Chapter 9 Achieving Operational Excellence and Customer Intimacy: Enterprise Systems

1. What platforms does Salesforce Marketing Cloud connect together to form a unified view of a customer?

A: E-mail, phone, social networks, native apps, and Web sites are some of the platforms described by Salesforce VP of Marketing Bryan Wade.

2. How does Salesforce Marketing Cloud change the culture of marketing departments?

A: Salesforce Marketing Cloud allows companies to change their approach from “batch-and-blast” approaches of one message to all customers, to a one-to-one approach that is highly customized depending on a variety of factors.

3. What percentage of Life Time Fitness customers open e-mails on smartphones? How much has this figure grown?

A: Seventy percent of customers open e-mail on their phones, up from forty percent.

4. What are some of the personalized messages from Life Time to its members shown in the video?

A: Individuals’ workout performances are used to generate individualized marketing messages. Notifications appear on members’ phones as they pull into the facility – the content of these messages varies depending on whether the member is a mom with two kids or a runner training for a triathlon, or anything in between.

Case 2: Evolution Homecare Manages Patients with Microsoft Dynamics CRM

1. Visit the Web site for Microsoft Dynamics CRM to learn more about this software’s features and capabilities. What features of this software would be especially attractive to a company like Evolution Homecare? Evolution wanted CRM to help it manage its patient relationships and keep track of patient services—therapy, prescriptions, and delivery. The software provides the
capability to track and manage all activities and interactions for each patient and account from a single platform; to develop and revise customized customer contracts; to schedule services and resources; and to communicate with patients and pharmacies using email and messaging. Users can plan and track activities, tasks, budgets, and details for each patient, automate patient tracking and follow-ups, set up and manage recurring appointments; automatically track contract renewal dates and details; and stay connected across teams with a centralized view of service schedules and resources. The system will also automatically create or assign tasks and activities when rules are triggered; access customer data from any web-enabled device anywhere, anytime; identify trends and allocate resources with powerful predictive analytics.

2. Why do you think Evolution chose Microsoft as its CRM vendor? In addition to traditional CRM functions, Microsoft Dynamics CRM offers customization capabilities so that organizations can manage other types of relationships besides those with customers. Evolution would have found this capability helpful for addressing the unique requirements of managing patients in the home healthcare industry.

3. What benefits did Evolution realize by using the CRM software? How did the system improve decision making and operations? Benefits have included productivity improvements (doubling the number of deliveries for a specific time period), enhanced inventory management, automation of picklists, better resource planning, and more effective reporting to key stakeholders. Evolution’s CRM system can determine deliveries planned for any future month and the amount of product in stock, helping Evolution reduce stock holding by 40%. When a new patient is keyed onto system, tasks can be generated for Evolution’s team to organize delivery ahead of time. The system automatically generates a pick list for that patient from Evolution’s pharmacy. Managers can see tasks 2 weeks ahead and can allocate resources accordingly. The system can show exactly what a patient is using to determine if patients are taking their medicine properly.

4. If you were a patient, what benefits might you receive from this system? Patients will experience more timely delivery, few if any stock outs (prescribed drugs will be available and delivered), and better tracking of their past orders.

Chapter 10 E-commerce Digital Markets, Digital Goods

1. What are the three key assets that Walmart can leverage (build on) to compete with Amazon and other online retailers?
A: Walmart has the largest physical store footprint in the U.S., the largest private transportation fleet, and the largest retail distribution network, including warehouses.

2. What is Walmart’s e-commerce strategy?

A: Walmart is pursuing an omnichannel strategy, attempting to marry its physical stores and distribution system with best-in-class e-commerce; to build a holistic shopping experience that uses physical stores and online ordering to provide customers what they want, when they want it, at the best possible price.

3. Why isn’t Walmart worried about the channel conflict between its online sales and its store sales?

A: Walmart see’s its operation as “One Walmart” and it makes no difference if a sale is online completely, or at a physical store.

4. Why is Walmart in-sourcing the development of its online operation, in part by acquiring technology companies rather than outsourcing development to low-cost countries and other domestic firms?

A: In-sourcing allows the company to bring in new skills and capabilities, and then scale them up to Walmart’s size. Walmart wants to rebuild the company, the skills of its labor force. It also needs to innovate and build new services. This is not possible by outsourcing.

5. Why did Walmart acquire Jet.com?

A: Jet.com had a workforce with IT and online sales expertise, and an interesting business plan of how it could compete against Amazon.

6. How does Walmart’s fulfillment operation differ from Amazon’s?
A: Amazon’s fulfillment center appears to be more advanced in the use of robotics and drone delivery. Walmart has the largest fleet of trucks in the U.S. which can be used to deliver packages to local stores, and potentially local pick up points. Walmart has hundreds of stores that can be used as pick up points for same day delivery.

Case 2 Groupon: Deals Galore

1. What are the weaknesses of Groupon’s business model described in the videos? The video suggests that Groupon’s business model is not defensible, and that many very large successful Internet firms can compete with Groupon. The video suggests that Groupon is not sustainable because its marketing costs are too high, customers have no loyalty to merchants, and that merchants themselves report troubles with the Groupon marketing they purchase, primarily that too many price-conscious consumers show up once, and then do not return ever to pay full price. In some cases, merchants lose money that they never recover.

2. What features of contemporary e-commerce does Groupon Now! utilize? Groupon Now! utilizes technologies for mobility, personalization, social networking, and location-based services.

3. What value does this service provide subscribing merchants? What value does it provide customers? Groupon helps introduce new customers to a merchant’s products or services, with the hope (not always realized) that these customers will return again. Groupon’s heavily discounted vouchers in nearby locations save customers time and money.

4. What kinds of businesses are most likely to benefit from using Groupon? Groupon works well in local commerce markets in the leisure, recreation/entertainment, food service, and retail sectors. Businesses that have high fixed costs, and low variable costs might benefit from the Groupon model. For example, health clubs, music venues, corporate jet rentals, movies, and recorded
music all have high fixed costs, but it costs almost nothing to produce one more unit. High margin businesses like jewelry where a 75% discount still results in a profit, might also be good candidates.

5. Visit Groupon’s Web site and enter your zip code. What kinds of deals are displayed? Would you use Groupon? Why or why not? What kinds of Groupon deals have you used?

There is no specific answer for this question. The displayed deals change daily, and the question calls for personal opinions of the student. You could visit a Groupon deal from your own email stream and walk through the deal, and discuss the experience, from both the merchant’s and consumer’s point of view, in class.

Case 3 The Etsy Community

1. What is Etsy’s business model and revenue model? Etsy is a market creator with a transaction fee revenue model/

2. How does Etsy’s Brooklyn headquarters depicted in the video reflect the culture and values of the company? The video shows that the offices have a very communal and “homey” atmosphere, where as much as possible is homemade and employees are encouraged to work on crafts projects. The video also shows Etsy’s openness to its local community.

3. How important is “community” at Etsy? Visit Etsy’s Web site and describe its community-building features. Community is extremely important at Etsy, both for promoting the sales process, for soliciting new ideas, and for bringing the company closer to its sellers and the public. Each item listed includes a personal profile of the shop owner. Etsy’s Web site features a blog, a “featured seller” of the day, and special “community” section where Web site visitors can share ideas, attend an event in the area, join a streaming workshop, or watch an archived workshop. They can also connect by joining a team with other members of Etsy’s marketplace and community, in order to meet people with common interests, and collaborate.

Chapter 11 Managing Knowledge and Collaboration

Case 1: How IBM’s Watson Became a Jeopardy Champion

1. According to the first video, what are the four steps that humans follow when seeking to understand a situation and make a decision? Are these the steps you
followed when deciding to take this course? Or when you chose your last vacation destination?

Humans observe visible phenomena; draw on known information to interpret what is happening, and generate hypotheses about what it means; evaluate which hypotheses are right; choose the option which seems best and then acting.

Cognitive scientists have long known that, generally, humans do not follow the four steps. Much of human thought is reflexive and unexamined, such as driving a car. Humans have interests, hopes, ambitions, fantasies, pre-conceptions, and intentions, all of which Watson does not. All of these features of real human thinking patterns are brought to bear on decisions even before the decisions are made. Students decide to take a course based on a number of factors: convenient time; something they are interested in knowing more about; required by the major; a friend loved the course; and so forth.

2. Why is Watson different from traditional computer programs?

It is designed to deal with natural language found in documents or spoken, unstructured data, and unstructured problems. Traditional programs and data bases deal with structured data and fixed decision rules for analyzing the data and arriving at a decision. The data people and firms need to analyze today is increasingly unstructured, and includes emails, Tweets, videos, and streams of consumer and industrial machine data, along with news articles, research reports, and other streams of data produced for humans to understand. This kind of data does not fit onto a spreadsheet in rows and columns.

3. What is the “corpus of knowledge” of a field or domain that Watson needs to work?

Watson needs to “understand” the language and terms of a field of human knowledge. It does this by assimilating large volumes of literature from that field. This is called curation of the knowledge base. This human knowledge is then “ingested” or classified so that humans can interact with it.

4. How do humans train Watson to make the right decision?

Humans train Watson by developing question/answer pairs that worked in the past, or that experts commonly use to understand data. Humans observe Watson as it makes the correct, or incorrect decisions, and refines it’s answers over time. It also updates its corpus of knowledge as new data is curated and ingested.
5. Was playing Jeopardy a good way to test machine intelligence? Why or why not?

Yes because developing answers required the development of new software and hardware techniques for understanding the meaning of human natural language questions, scanning very large databases of unstructured information, evaluating possible answers, and ranking answers by likelihood of being correct. In this sense it was an advance over previous machine learning efforts of the past in terms of hardware and software, scope, and scale.

6. Is Watson a good example of a computer system demonstrating intelligence similar to that of a human?

Human intelligence is a far broader concept than merely answering Jeopardy-like questions by searching databases very rapidly, and coming up with a list of answers ranked by score. These are engineering advances no doubt. Human intelligence includes intention, deceit, promise, and love, along with hate, and misperception. Human intelligence includes language, and the generation of new language terms. Watson is not capable of these aspects of human behavior. Watson has no idea of its future, and no objectives of its own. Watson is a machine. Watson does not have a language, even though it can “understand” some human language. Watson cannot speak on behalf of itself. Watson cannot create new tools, or ideas. Humans do this all the time in the course of day.

That said, Watson can perform some incredibly difficult tasks within specific domains, such as Jeopardy, chess, and the game Go. Watson and similar systems can recognize patterns in very large databases, and do so in milliseconds. It’s up to humans to verify the importance of these patterns, and their validity.

7. Suggest some other applications for Watson.

Watson would be useful in information-intensive industries where a great deal of that information is in natural language form, such as financial services, call centers, and legal research, as well as medical diagnosis and treatment. And where rapid access to this information is required for decision making.

Case 2: Alfresco: Open Source Document Management and Collaboration

1. How does Alfresco support a mobile business environment?

Alfresco Cloud platform makes documents available on any device connected to the Web, from laptops and desktops to smartphones.
2. Why is Alfresco superior to email for supporting collaboration?  
Alfresco does away with email attachments, and makes all documents sharable and available to all in a virtual team by storing the documents on a cloud server. Employees can work together on documents and see the changes in real time.

3. What were the factors that caused the City of Denver to go with the Alfresco platform as opposed to more typical proprietary software from other vendors?  
Three factors. The cost was far less than proprietary solutions. The open source approach meant that the City could benefit from the contributions of a very large community of developers. And the software used a Web-browser interface that was very easily understood by users.

4. What business process will Denver seek to automate in the future using Alfresco, and why use a document management system to automate this process?  
The video describes the procure-to-pay business process, which covers a wide array of organizational units, personnel, and sub-business processes from procurement decisions, to ordering, storing/warehousing, distributing, and paying for goods and services. This single business process develops a large number of documents that are not readily shared in traditional environments. Alfresco would be able to integrate all the documents in this business process in a single repository and support collaboration among all the parties involved.

5. What problems did the New York Philharmonic seek to solve with Alfresco?  
They were the largest repository of classical music documents in the world, and they had no single system in place that could be searched in an integrative way. Instead, they had an archive of sheet music, another for audio tracks, and another for personal histories and publications.

6. What benefits does Alfresco provide the Philharmonic?  
The video mentions three benefits: flexibility to add new documents as they appear, and to make connections among different document types (audio, written, and image documents). Second, the ability to communicate with other scholars around the world. And third, stability of the Alfresco document core software.
Case 1: PSEG Leverages Big Data and Business Analytics Using GE’s Predix Platform

1. What are the three key elements of Predix?

Answer:

(1) Connectivity linking machines to the service both to local computers and the cloud

(2) Services: Assets, Analytics, Data, Security, Operations Based on a Cloud Foundry and Data Infrastructure.

(3) UI (User Interface)/ Mobile applications. Links the Predix to decision makers’ mobile and desktop computers.

Predix.IO is the operating system.

2. What benefits does Predix promise to deliver to business firms and managers?

Answer:

- Real time asset optimization
- Improved analytics and diagnostics
- Predictive maintenance
- Continuous improvement of industrial processes.

3. What is “predictive maintenance.” Why is it important?
Answer: Predictive maintenance is the ability to collect machine performance data using sensors, and then processing this data to understand if parts are operating properly according to expectations, and to predict when these parts need replacement.

Predictive maintenance can help avoid public health disasters, accidents, and equipment malfunctions, as well as greatly improve overall operations.

4. How can PSEG use Predix to optimize the efficiency of its wind farms?

Answer: Using sensor data on individual wind towers it can optimize the efficiency of each individual generator by, for instance, changing the pitch of the tower’s propellers. It can then aggregate that data into an efficiency measure for the entire wind farm, and then extend this analysis to other wind farms in its service area.

5. What is the Industrial Internet? How does it differ from the Internet we are accustomed to using?

Answer: The Industrial Internet connects things (usually machines or parts in machines) to local and cloud computing services in order to track their performance, optimize their operations, and predict failure modes before they happen. The consumer Internet we are accustomed to using is focused mostly on connecting people with information, supporting online transactions, and sharing information among people.
Case 2: FreshDirect Uses Business Intelligence to Manage Its Online Grocery.

1. How is it possible, as Braddock noted, to have a great deal of data but little information? How does the SAP database and business intelligence component change this? Most small firms that grow in size (and are successful in some sense) build systems one-at-a-time, and without an enterprise-wide point of view. In part this is because small firms do not have the resources or time to build more comprehensive systems, and in part because nearly all attention is being paid to survival and growth, not back office administration. Whatever the cause, small firms end up with a hodgepodge of information systems that do not talk with each other or share information easily. The management information required is “there” in a number of systems, but not easily captured and used by managers. SAP’s enterprise system pulls together the information being produced by this hodgepodge of old systems and can display and analyze the data in a modern, integrated, fashion for managers.

2. What is meant by “visibility into the workflow” and why is it important to FreshDirect’s success? What are exception screens and how are they used? Many firms, and many managers, do not have a good understanding of how work is accomplished in their firms. They may know how many resources go into a business process, and what is produced by a business process, but they often do not have any intimate knowledge of what happens in-between input and output. Often there are no measures of how the process is working, the steps in the process, and where failures occur. “Visibility into the workflow” is an effort to map out the entire business process in some detail and track information produced at each stage of production.

3. What has been the impact on employees of the changes brought about by the SAP ERP system and associated business intelligence applications? According to the video, employees feel much more empowered to answer customer questions, trace orders, and fix mistakes than in the past. Likewise with managers who not feel they understand and control the work process.

4. How is FreshDirect’s use of its database related to its brand image? What is the most important element of their brand? The key to FreshDirect’s brand is trust by the consumer that the firm will in fact deliver the groceries on time, to the correct location, with the correct items in the order, and with a quality higher than the local markets. SAP’s database and business intelligence software make it possible for the firm to achieve these objectives, and in that sense, strengthen FreshDirect’s brand.
Case 3: Business Intelligence Helps the Cincinnati Zoo Work Smarter

1. Why was Cincinnati Zoo losing opportunities to increase revenue? Management did not have enough information about what influences customer behavior and spending to devise marketing campaigns to attract more business. Managers also lacked detailed information for analyzing operations.

2. Why was replacing legacy point-of-sale systems and implementing a data warehouse essential to an information system solution? The Zoo’s data were maintained in 4 different systems, and some of the data was only accessible manually. The data could not be combined to develop an overall picture of the company.

3. Visit the Cognos Web site and describe the business intelligence tools that would be the most useful for the Cincinnati Zoo. IBM Cognos provides a toolset for querying and reporting, analysis, scorecarding, dashboarding, and monitoring events and metrics. The software includes capabilities for planning, scenario modeling, real-time monitoring, collaboration, and predictive analytics.

4. How did the Cincinnati Zoo benefit from business intelligence? How did it enhance operational performance and decision making? The Zoo now has the detailed data and analytical tools to understand visit, usage, and spending patterns of individual customers. Managers can make better decisions about how to target marketing and promotions specifically to each customer segment. The business intelligence system also provides information and insights for improving operations, such as optimizing staffing in light of changing weather conditions or extending store hours for ice cream stands. Food sales increased 30.7 percent and retail sales increased 5.9 percent.
Chapter 13 Building Information Systems

Case 1: IBM: Business Process Management in a Service-Oriented Architecture

1. How would you define “business process management” based on this video and text reading? How would you compare it to business process re-engineering, continuous improvement, and total quality management approaches?

   Business Process Management (BPM) is an approach to business which aims to continuously improve business processes. In this sense it shares a great deal with total quality management which seeks to improve the quality of business processes by decreasing error and rejection rates, improving customer satisfaction, and reducing costs. However, business process management is a bit broader, concerned with quality, but expanding beyond that include efficiency, cost, benefits to the firm, and the ability of managers to measure and control business processes.

2. What are the major objectives of BPM?

   More complete and timely measures of process effectiveness; better measurement of a process in terms of resources used and time to make decision (or process the document). Greater management understanding and control of business processes; greater flexibility due to the ability to change the process as conditions warrant; ability to adapt to changing business conditions.

3. What is the significance of a “service oriented architecture?” What difference does this make for implementation, cost, and flexibility of the BPM tools?

   An SOA allows the IT department to use data from legacy systems and import this data into the BPM software. This reduces implementation costs and speeds up the development process. Firms do not have to completely rebuild their underlying transaction processing systems. Also, the BPM software comes with pre-coded, predefined modules that can be plugged into each firm’s implementation of the BPM as needed. All this without significant programming effort. In addition, the applications can be re-organized as the business process changes.

4. Why is it important that the BPM software produces a Business Process Execution Language (BPEL) model for the IT department?

   The BPEL model is developed by the business process designers (equivalent really to systems analysts who really understand the business requirements and the information requirements). These designers determine what are the business rules and logic. The designers need a tool that can translate these business requirements
into a set of explicit directions to the IT department who must develop the technical foundation for the system, and must convert the business rules into a set of decision tables which govern the flow of the work.

5. **What is the utility of “key performance indicators” (KPI)?**
KPIs are determined by the process designers as the key measures of process performance that the system must deliver to managers. The KPIs become the measures that managers use to know if they are succeeding, within budget and target, in the business operation. Generally, KPIs are displayed to middle and senior managers on portal dashboards in their client or desktop computers.

6. **Why is it important for managers to be able to “drill down” into the data and system?**
Being able to drill down allows managers to understand why changes in the KPIs are occurring. In other words, the drill down capability enhances management understanding, and improves management decision making because it will be based on a real time information, not second guesses, or received wisdom.

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**Case 2 IBM Helps the City of Madrid With Real-Time BPM Software.**

1. **List some of the factors that complicated the efforts of emergency crews (primarily fire, police, and medical personnel) in responding to the Madrid attack.**
The attacks took place simultaneously at four different locations; it is a crowded urban city with much congestion; the number of calls for emergency help could easily overwhelm a response system; the scale and power of the attack was unprecedented, and not planned for.

2. **What was the problem with the existing communication system?**
There was no single system. In the past, there were three different communication systems: one for the police, another for fire, and another for medical and ambulance services. As a result, there was no way to know the demand for police, firemen, and medical personnel. Or to coordinate with one another resulting in misallocation of responder resources, e.g. too many police, not enough medical, or vice versa.

3. **Describe the new system that was put in place after the attacks.**
The new system is a single system that evaluates in-coming calls, and assigns response teams based on the nature of the event, and continues to follow and evaluate the response until the event issues have been addressed. The system operates in real time, and uses a city map as one device to coordinate resources, plus a database that keeps track of the event and response.
4. Describe the business process of the new emergency response center. The process begins with a call for assistance. Telephone personnel at the center codify, locate, and prioritize the call within one minute. Once complete, emergency personnel decide what the best response to the problem is, and allocate emergency response teams accordingly. The same people track the response and the results in real time. The emphasis is on reducing emergency response times, and placing the correct balance of emergency personnel on site.

5. What is the response time goal and what progress has been made? Emergency service providers believe that the faster teams can get to the site, the better the result. Police, fire, and medical personnel around the world accept this notion. The Madrid City managers claim a 25% reduction in response times over several years, with 81% of event response times now below 8 minutes, compared to 47% in 2008.

CHAPTER 14 MANAGING PROJECTS

Case 1 Case 1: Blue Cross Blue Shield: Smarter Computing Project

1. How does BCBS say it wants to serve customers better? Adjudicate claims faster, provide benefits faster, and provide the service at a cheaper price. The video does not say what “cheaper” means.

2. What are the major obstacles to providing health described in the video? Balancing customer needs, government mandates, and making insurance affordable.

3. What system difficulties did BCBS face? Multiple systems, many containing the same or similar background information on members. Multiple entry points meaning that many different people could work with the records on one system.

4. What does the video mean by “multiple truths” or developing a system with a “single source of truth?” With multiple systems containing the same data, and multiple data entry points and people, it’s possible to develop different versions of a single member, e.g. a member with a different name in one system than another, or a different address.
5. What are the key benefits of using IBM’s WebSphere to build a single database? In terms of project management issues, described in the book chapter, what did using IBM provide to the BCBS group in charge of building the system?

IBM brought expertise and knowledge to the project which reduced the risk of completing the project on time and on budget. Direct business benefits were providing customers and provides a consistent user experience in dealing with the company, with reliable and efficient business processes.

Case 2: NASA Project Management Challenges

1. Why are individuals so important to the NASA project teams?
   In a team ultimately tasks are assigned to individuals. If they are not competent they can’t deliver for the team what is needed. The project stumbles and fails until incompetent people are removed.

2. What is the Lessons Learned Program and how might it relate to better project management at NASA?
   The Lessons Learned Program originally start in the U.S. Army as a post-operations frank discussion among officers and soldiers about what went right, and what went wrong in an operation. A document is produced from these meetings and operating procedures for the next operation are changed accordingly to avoid mistakes. The Lessons Learned Program at NASA has a similar mission to identify errors and mistakes, change procedures for the project and team, and move forward.

3. Why is individual accountability so important for managing risks in NASA projects? Doesn’t the team shoulder the responsibility for achieving success?
   Accountability for teams begins with accountability for individuals. The work of teams is performed by truly competent individuals. That’s why the video interviewers keep emphasizing the importance of “quality people” on your team because you “can’t do it all yourself.”

4. What are the key competencies of a good project manager according to the NASA managers?
   Basic elements would include knowledge and commitment to the overall goal of the project, as well as the goals of the unit he or she is leading. And respect from other members of the team.

   Project managers have to be good at risk management and understand how to mitigate risk down to the level of the individual. PMs need to ask themselves and their team members, “Would you fly this shuttle.” In addition, a PM needs to know how to break down very large goals (such as build a new landing module) into achievable sub-goals and projects, and then put together the teams by selecting
individuals who have the skills and competency to achieve the objectives of each team.

5. Is "leadership" the same as being a good project manager?
No. Leadership involves convincing team members they can achieve the objective, and that you are the "right" person to lead this effort because of your own special qualities of competence, know-how, and ability to communicate. Some good project managers are also good leaders. Some good project managers are technically very competent but not good leaders. Ideally, good project management and leadership skills come together in a single person.

6. What does leadership integrity have to do with the success of a project?
The position of authority occupied by the project manager/leader depends on individuals on the project team believing that the leader is making decisions on the basis of mission accomplishment, what's best for the mission objective, and not out of personal or bureaucratic considerations.

CHAPTER 15 MANAGING GLOBAL SYSTEMS

Case 1: Daum Runs Oracle Apps on Linux

1. What efforts is Daum making to expand globally? In what countries does it maintain a presence?
Daum maintains presences in Japan, China, and the U.S. Thus, it’s important for them to maintain an infrastructure that is standardized across all of its various offices and departments.

2. Why was Oracle a good fit for Daum?
Oracle was a good fit for Daum because of its comprehensive suite of e-business applications that were useful across Daum’s enterprise. Relying on a larger vendor like Oracle was important to Daum so that they could handle all of their IT system solutions through one company.

3. Describe the benefits of Linux as opposed to other operating systems.
Linux runs as smoothly as other Unix-based ERP systems at a fraction of the cost. Also, Oracle’s systems already run on Linux, making it easier for the two companies to interact.

4. What kind of broadband infrastructure does South Korea have? What does this mean for Daum?
South Korea has an advanced broadband infrastructure, often considered the best in the world. As a result, Daum is in a strong strategic position to capitalize on the
frequent Internet usage of its users. However, the company must maintain a strong infrastructure to handle the content demands of site visitors.

5. What more can Daum do to gain ground on its competitors? Daum is optimistic about its future prospects in South Korea, but expanding further into the markets of other countries will help its bottom line.

Case 2: Lean Manufacturing and Global ERP: Humanetics and Global Shop

1. What are some of the software modules used by Humanetics? Pick one of these modules and describe how this module could firm compete and meet customer requirements? The video mentions that the firm uses job tracking, inventory, estimating, bill of materials, account, and advanced planning and scheduling modules. Students should pick one of these modules and try to estimate how it would help Humanetics.

2. What does the video say is the payback that Humanetics has received from using Global Solutions? The video mentions that the ERP system has enabled its global expansion, and increased the ease of use of its manufacturing systems over time.

3. What role does the “global shop document control” capability play in the globalization of the firm? This capability allows the firm to design its products in one central location, and then share them across all of its production facilities including China. This ensures the product will meet specification regardless of where it is produced.

4. How does the firm use Global Solutions to monitor and increase productivity among its workers? The ERP system tracks the attendance, down time, and time-on-task of all employees, and can rather precisely understand how much value each employee is adding to production, and the revenue each employee generates as a result.
Case 2: NASA Project Management Challenges

http://www.youtube.com/watch?v=3yERUM9k7aE

L= 8:57 (2008)