Chapter 2 Global E-Business and Collaboration

Welcome to Week 2 of Project Based Information Systems, Part I

How you would like it if you went to work on Monday and company leadership said, you could do anything you want. Not just you, all employees can do anything at all that they wanted to do for the day. If John from production decided he wanted to work in sales and marketing he could. If Jill, from accounting, wanted to spend the day in shipping she could do that too. If Claire in sales wanted to work in IT, no problem. No one would have to follow any rules or any set procedures. They could accomplish the work any way they choose.

Jill had a bad experience with FedEx in the past, so she decides that she doesn't want to use FedEx to ship out the products that day even though the company has a contract, which saves them lots of money. She decides to use an alternate shipping service that will cost the company more and slow down the shipment significantly. She doesn't see a need to tell accounting about the change.

John decides not to use the same old packing materials when he's preparing glass bowls for movement across the country. He determines that it is faster if he just plops the bowls into a box, closes the lid, and sends it down the line. Unfortunately, his co-worker Tim (who doesn't know anything about John's decision) is responsible for answering customer complaints.

Bill in accounting decides that he needs a pay raise to help pay for his upcoming vacation. Normally, he would be required to get his supervisor's approval to change any pay record but because there aren't any established procedures he can just go ahead and enter the new salary data in the system. While he's at it, he gives ten of his friends pay raises also. Although Bill's friends may like the idea, the rest of the employees in the company aren't so happy!

Claire loves her iMac and decides all new laptops will be Apple laptops. The desktop team doesn't have any Apple experience but how hard can it be.

You can imagine from the above scenario how quickly chaos would reign in the organization without established business processes that integrate functions throughout an organization. Processes that deliver

the best product for the lowest cost in the most efficient manner are imperative to success.

Learning Objectives

- 1. What are business processes? How are they related to information systems?
- 2. How do systems serve the different management groups in a business, and how do systems that link the enterprise improve organizational performance?
- 3. Why are systems for collaboration and social business so important, and what technologies do they use?
- 4. What is the role of the information systems function in a business?

This chapter is designed to give you a a quick overview of the kinds of systems found in a typical corporation. We talked about some of these concepts in Chapter 1. Remember we talked about the different levels of management in a business, intranets, and business processes. One thing we will talk about in this chapter is enterprise wide systems.

The opening vignette, "Enterprise Social Networking helps ABB innovate and grow," provides an outstanding example of how the company embraced social business tools to significantly reduce its expenses while it also increased the amount of learning and education available to its employees. These technologies are the very same ones every business needs to succeed.

Collaboration and sharing information are essential for ABB's continued growth and business success among its 135,000 employees in 100 countries. Even though the company already had an intranet, it was too static and outmoded to meet its current needs for empowering and energizing employees. Employees were storing information in a variety of places other than the intranet including wikis, local file servers, and other knowledge platforms.

ABB needed a central resource that would support dynamic knowledge sharing and give employees tools to help them work more closely together. A dynamic and social-media enabled platform called Inside+gave ABB employees a single entry point to all the information and tools they need including Microsoft Yammer, Office 365, and SharePoint.

Inside+ integrates all the key internal platforms that employees use while making Yammer conversations searchable through archives. Employees use the new tools to collaborate on projects, share ideas, and discover people in other department with useful expertise. Discussions are more productive and have improved employee engagement. Staff can access Inside+ from smartphones and tablets making them more productive. The company has also saved on conference costs using online tools. And thanks to the new system, many more employees feel closely involved with the business as a whole.

This vignette demonstrates IT's role in helping organizations improve performance and remain competitive. It illustrates the ability of IT systems to support collaboration and teamwork.

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Section 2.1 What are business processes? How are they related to information systems?

When we talk about the "digital firm", it means more than just plunking down new laptops and tablets that have all the latest bells and whistles on every desk. The digital firm must connect each functional area and each management level to one another. Data input to the system in manufacturing must be made available to sales, accounting, and shipping. Managers in the human resources department must have access to appropriate information regardless of its origin. Information integration is the key to the digital firm.

As we go through this chapter, we'll look at the types of information systems organizations use to bring it all together. To help distinguish between the type of function each one is designed to accomplish and to fit them all together, we're going to look at them in the context of manufacturing ice cream bars. Yep, ice cream bars. Most folks like ice cream bars and most folks have eaten one, so they will be easy to relate to. We'll call the company Frozen Treats and we'll give the ice cream bar the name of "Moose Munchies." I would have call them Patriot Pops, but I don't think everyone is from New England, and my favorite ice cream is Moose Tracks!

Business Processes

The way a business organizes its workflows, the method it uses to accomplish tasks, and the way it coordinates its activities among employees, customers, and suppliers determines its business processes.

Organizations, from the smallest one- or two-person group to the largest you can imagine, must have orderly processes that all divisions can understand. No part of the organization can work in isolation from any other part.

TABLE 2-1 EXAMPLES OF FUNCTIONAL BUSINESS PROCESSES

Functional Area	Business Process
Manufacturing and production	Assembling the product
	Checking for quality
	Producing bills of materials
Sales and marketing	Identifying customers
	Making customers aware of the product
	Selling the product
Finance and accounting	Paying creditors
	Creating financial statements
	Managing cash accounts
Human resources	Hiring employees
	Evaluating employees' job performance
	Enrolling employees in benefits plans

Table 2-1 shows typical functional areas in an organization and examples of the business processes associated with these functional areas.

Table 2.1 is an example of functional areas and the business processes in those functional areas. This can be applied to any business large or small. Most businesses have the same basic business processes. This is not all inclusive. This is simply an example. I do not show Information Technology as a functional area, which of course it is. Individual business will have many business processes that can be unique to that business. This table is meant to be an example to get you thinking about the information needs for each functional area.

Think about Frozen Treats and our Moose Munchies. You should be able to see how the functional areas and business processes in Table 2-1 relate to Moose Munchies. In the Manufacturing and production area, we make he ice cream bars, package them, cool them, check them for quality, etc. In the Human resources area we hire employees, promote employees, provide training and education, etc.

How Information Technology Improves Business Processes

Some processes that may have contributed to an organization's success have now outgrown their usefulness. Information systems can help an organization recognize processes that may need to be changed. An information system could be used to automate some of those processes or help managers determine that they are no longer needed. And a successful organization will use an information system to determine which processes are working well.

I'll give you an example. I went to work in a company and I notice an associate spending 8 hours a day folding invoices and stuffing envelopes. I talked to the controller and said, "You know they make automated machines that can fold and stuff envelopes much faster than your associate. And that can't be a very rewarding job. He told me, that he tired those machines, but our invoices were "unique" and a tri-fold would not put the billing to address in the clear window on the envelope. The associates actually adds a fourth little fold so the address appears where it needs to. I then asked for his full requirements, what did he need, where was the data coming from and which application was producing the invoice forms. I modified the program to move the bill address so that when tri-folded correctly it would fit in the clear window in the envelope. We then purchased a print/fold/stuff machine and all invoices came from the application and was printed, folded and stuffed in an envelope without any human intervention. This significantly spend up our invoice process and allowed the associate to work on more interesting and meaningful assignments. This is just one example, I am sure many of you have seen examples using information systems to improve processes in your workplace as well.

The key to using information systems to analyze, change, automate, or delete processes is that the organization must determine the appropriateness of the recommendations and must determine the right questions. Throwing a new high tech information system at the supposed problem is not the answer. And answering the wrong question with a good answer can be far more devastating to the bottom line than not doing anything at all. In other words, if the system says a process should be changed but it truly doesn't make sense to change it, then don't. The system should supply recommendations; humans still have the ultimate decision-making responsibility.

Take a look at Figure 2-1 below and compare how the order fulfillment process can be accomplished sequentially, as the figure shows, versus simultaneously as a new information system would allow.

Fulfilling a customer order involves a complex set of steps that requires the close coordination of the sales, accounting, and manufacturing functions.

In Figure 2.1 each rectangle represents one part of the larger business process of order fulfillment. Notice that this business process spans several different functional areas of the business from sales (orders), to accounting, to manufacturing. Important business processes typically span several different functional areas or divisions in a business.

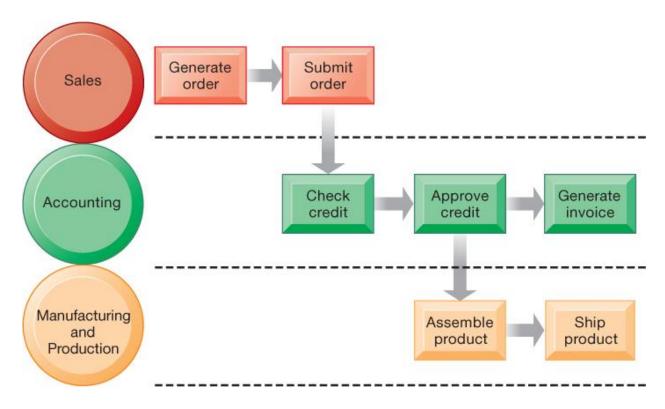


Figure 2.1: The Order Fulfillment Process

Information systems enhance business processes in two ways:

- Increasing efficiency of existing processes
 - Automating steps that were manual
- · Enabling entirely new processes
 - Changing flow of information
 - Replacing sequential steps with parallel steps
 - Eliminating delays in decision making
 - Supporting new business models

Examples of entirely new business processes made possible by information technology are downloading a song from iTunes or buying a book or e-book from Amazon. Think about the Amazon book reader Kindle which is continuously connected to the Internet and allows customers to download books and pay for them using Amazon's one-click purchase method. I'm sure you can come up with other business processes that have been transformed in the last year years.

Summary

Business processes help an organization organize, coordinate, and focus its workflow to produce products or services.

The success or failure of a business may depend on how well its business processes are designed and coordinated.

Information systems can automate many steps in business processes and even change the flow of information.

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2.2 How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance?

Information systems serve various management levels in companies. It's important to realize that one system helps serve other systems and, working together, all the systems serve the entire organization.

There is no one single information system that will satisfy all the needs of an organization. At first glance it can be difficult to comprehend all the different systems in a business, and even more difficult to understand how they relate to one another.

Systems for Different Management Groups

You'll see at the end of this discussion the integral role each type of system plays—from determining which kind of ice cream bar to make (strategic level systems); to how many people the company will need to make the ice cream bar (management level systems); to tracking customer orders (operational level systems). Within these three levels we'll discuss the four major types of systems typically used to make an organization successful.

This chart shows the type of system (TPS, MIS, DSS, ESS), the informational inputs, the informational outputs, and the typical users of the systems.

Type of System	Information Inputs	Information Outputs	Users
Transaction Processing Systems (TPS)	Transactions; daily events	Detailed reports; lists; summaries	Operations personnel; first-line supervisors
Management Information Systems (MIS)	Summary transaction data; high-volume data; simple models	Summary and exception reports	Middle managers
Decision-Support Systems (DSS)	Optimized for data analysis, analytic models, and data analysis tools	Interactive; simulations; analysis	Professionals, staff managers
Executive Support Systems (ESS)	Aggregate data; external, internal	Projections; responses to queries	Senior managers

Most likely you have all encountered TPS. If you shop at Kohls or Walmart, when you checkout, that is not just a cash register. That is a TPS that increments the inventory with every purchase.

Accurate data is the lifeblood of good a TPS because it serves as the initial source for the other systems.

Transaction Processing Systems

The operational level of an organization includes various units such as the order processing, material movement control, payroll, accounts payable, and employee record keeping. This level is responsible for daily operations. The information systems used in this level of the organization are **transaction processing systems (TPS)**, they are called this because they record the routine transactions that take place in everyday operations. TPS combine data in various ways to fulfill the hundreds of information needs a company requires to be successful. The data are very detailed at this level. For instance, a TPS will record how many pounds of cream are used in making our Moose Munchie ice cream bar. It also records the time it takes from beginning to end to make the ice cream bar. And it can record the number of people working on the assembly line when our ice cream bar is made and what functions they perform.

People using transaction processing systems usually need information to help them answer routine questions such as: "How many Moose Munchie ice cream bars did we produce yesterday?" or "How much cream do we have on hand for today's production run?"

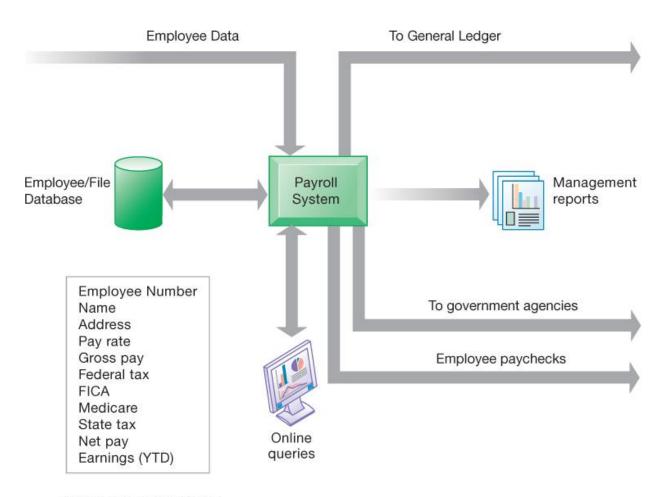
Although there's more to making the Moose Munchies than just running the assembly line, a TPS will record the sales and marketing transactions as well. The system will record not just the number of dollars used in the marketing program, but also how many stores are actually stocking the ice cream bar and where the product is located inside the stores.

You have to remember that a lot of work is required to get the product from the manufacturing plant to the store shelves. How much did the company pay to package the product, store the product, and ship the ice cream bar to the stores? All that data can be recorded in a TPS, right down to how many truck drivers are required to deliver products to local convenience stores.

As you can visualize, the operational level of an organization also includes functions not directly associated with the actual production of the Moose Munchies, but vital in keeping the company running smoothly. The people in

accounting may not be pouring the little peanut butter cups into the cream on the assembly line, but those workers that do appreciate the fact that they get a paycheck every two weeks. Production workers also like to know that the human resource division is keeping track of training programs that may help them advance within the company. Each of these divisions requires an information system that helps it keep track of the many details that make the production worker happy and productive. The best transaction processing system will be integrated throughout the organization to supply useful information to those who need it when they need it.

Figure 2.2 below shows how a TPS for payroll processing captures employee payment transaction data (such as a time card). System outputs include online and hard-copy reports for management and employee paychecks. Note that the outputs of the payroll system are useful not only within the company to managers, but also to regulatory agencies and other entities relying on the accuracy of the reported data.



Payroll data on master file

Figure 2.2: A Payroll TPS

Summary for Transaction Processing Systems

- The transaction processing system records the data from everyday operations throughout every division or department in the organization.
- Each division/department is tied together through the TPS to provide useful information to management levels throughout the company

Systems for Business Intelligence

Think about the functions of management: directing, controlling, communicating, planning, and decision making. Each manager takes on these roles countless times in a day. Managers review endless amounts of data that make their jobs easier and more efficient.

Businesses and organizations collect billions and billions of pieces of data on everything from customers to suppliers to business partners. Collecting the data is the easy part—almost too easy. Once the data are collected it's much more difficult for managers and executives to actually use them to make smart decisions. That conundrum has given rise to **business intelligence** (**BI**) software applications that help users make sense of all that data. Decision makers can discern hidden patterns and trends in the data and use the information to the organization's benefit. BI is one of the fastest growing area's iin IT today, because we have so much data and we need to transform that data into information and knowledge to help us mae better decsions.

Management information systems (MIS) are designed to produce information on a periodic basis instead of on a daily recurring basis such as those using a transaction processing system. Managers also require information on an exception basis. That is, they need to know if production is higher or lower than the targeted rate or if they are over or under their budgets. They also need to know about trends instead of straight numbers. The questions they may ask of the system would be: "How far behind in production are we for this quarter?" or "How many more workers would we need if we increased production by 10,000 ice cream bars per quarter?" or "If we do adopt the new Moose Munchies recipe, what positions are open for the 25 excess workers and what skills do they possess that the company can use elsewhere?"

Before integrated systems, managers received periodic printed reports that gave them lots of data, but often didn't supply information that they could

utilize to make timely decisions. Planning was sometimes a wasted effort because the information the managers needed just wasn't there when they needed it.

If there was a problem getting a shipment out to the convenience store in Paducah, Kentucky, the shipping manager may not have known about it until a customer cancelled her account six months later. The human resources department manager would likely not be able to find out about new job opportunities in a different part of the company until after the workers were laid off and had found other employment. Worse yet, production might have to stop the assembly lines because accounting hadn't purchased enough supplies to cover the increase in the number of ice cream bars rolling off the line.

With the integration of information systems up and down the management levels, and throughout the corporation, managers can often get needed information in a real-time mode. The data are kept online, the system can gather the precise information managers need to make a decision, and the information can be cross integrated into all departments of the company. All divisions in the company can see what's going on throughout the corporation. Information can be passed from department to department so that they are all working "on the same page."

Look at Figure 2.3, below. In the system illustrated by this diagram, three TPS supply summarized transaction data to the MIS reporting system at the end of the time period. Managers gain access to the organizational data through the MIS, which provides them with the appropriate reports. It's important to understand the relationship between TPS and MIS here. MIS receive data from an organization's TPS systems and create outputs that management can use to make strategic decisions.

Transaction Processing Systems Management Information Systems Order Order MIS FILES processing file system Sales data Materials Production resource Unit master planning product file system cost data Managers Product change Reports Online Displays data and Dashboards General Accounting ledger files Expense system data

Figure 2.3: How Management Information Systems Obtain Their Data from the Organization's TPS

Look below at Figure 2.4. This report, showing summarized annual sales data, was produced by the MIS in Figure 2.3. This graphic represents the "reports" portion of the Figure 2-3. Remember we just said that MIS receive data from an organization's TPS systems and create outputs that management can use to make strategic decisions. Looking at the below report, the decimals in the "ACTUAL versus PLANNED" category, anything above 1.00 represents more sales than planned and anything less represents a disappointing result of fewer sales than planned.

Consolidated Consumer Products Corporation Sales by Product and Sales Region: 2017

PRODUCT CODE	PRODUCT DESCRIPTION	SALES REGION	ACTUAL SALES	PLANNED	ACTUAL versus PLANNED
4469	Carpet Cleaner	Northeast South Midwest West	4,066,700 3,778,112 4,867,001 4,003,440	4,800,000 3,750,000 4,600,000 4,400,000	0.85 1.01 1.06 0.91
	TOTAL		16,715,253	17,550,000	0.95
5674	Room Freshener	Northeast South Midwest West	3,676,700 5,608,112 4,711,001 4,563,440	3,900,000 4,700,000 4,200,000 4,900,000	0.94 1.19 1.12 0.93
	TOTAL		18,559,253	17,700,000	1.05

Figure 2.4: Sample MIS Report

Summary for Management Information Systems

- A management information system is used by managers throughout the organization to help them in directing, planning, coordinating, communicating, and decision making.
- The MIS will help answer structured questions on a periodic basis

Decision-support systems (DSS) also serve the management level of an organization, but in a somewhat different way from an MIS. An MIS uses internal data to supply useful information. A DSS uses internal data but also combines it with external data to help analyze various decisions management must make. Analyzing complex, interactive decisions is the primary reason for a company to use a DSS.

The sales and marketing management of Frozen Treats would use a DSS to answer a semistructured question such as: "What price should we charge for the Moose Munchies ice cream bar so that we can maximize our profits, minimize our costs, and still remain competitive?" Using a DSS, the manager in charge of the manufacturing division could determine the best answer to this semistructured question: "How does the change in the size and packaging of the Moose Munchies affect the other products we produce, not just in shipping, but also on the display shelf at the convenience store?"

You'll notice I describe decisions at this level as semistructured. Not all decisions required for an organization to function smoothly are cut-and-dried. There are a lot of gray areas in successfully managing an organization and the larger the company, the more diverse the decision-making process becomes.

As a company is affected not only by what goes on solely within the company, but also by external forces not under its control, decision-support systems can help upper-level management. What happens to the pricing structure and availability of the raw materials for the Moose Munchies if civil war breaks out in the sugar producing countries of Central America? The price of electricity can greatly affect the profit and loss of the Moose Munchies. Fluctuating gasoline prices affect the profit margins by increasing or decreasing the distribution costs of the product. All these external events can be put into context in a decision-support system so that Frozen Treats management can make effective decisions.

Checkout Figure 2.5 below. This DSS operates on a powerful PC. It is used daily by managers who must develop bids on shipping contracts. DSS can rely on either analytical models or large databases to provide valuable information. What types of decisions does this system help its users make? Examples include:

- What vessels to send to particular destinations to maximize profit
- The optimal loading pattern for cargo
- The optimal rate at which vessels should travel to maximize efficiency while still meeting their schedules
- Others??

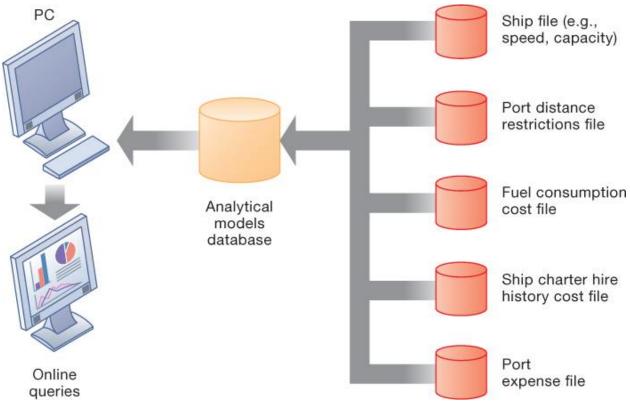


Figure 2.5: Voyage-Estimating Decision-Support System

Summary for Decision-support systems

- Decision-support systems are used for complex "what-if" questions that require internal and external data.
- Decisions at this management level are mostly semistructured so the information system must respond to the unique requirements of the executives.

Executive support systems (ESS) are used at the very upper echelons of management. At the strategic level, the typical decision is very unstructured. Often there is no specific question, but rather a series of undefined situations executives may face. There are no easy, definable answers. These executives require summarized, historical information gleaned from all other levels of the organization, coupled with large amounts of external data gathered from many sources.

Let's assume that the Moose Munchies is the most successful, most popular ice cream bar ever made. (You could say its success is due to the effective use of the previous three information systems!) The General Food Products Corporation just can't create a product that comes close to the success of Moose Munchies (their information systems aren't as good) and is very

envious of Frozen Treats. So General Food Products offers to buy the Moose Munchies product from Frozen Treats for what seems to be an astronomical amount of money. Frozen Treats executives can use their executive support system to determine if this offer is in the best interest of all. They can analyze the information gathered from all of the internal information systems and couple that with external data to help them make the decision. With an ESS, company executives can make their decision based on information, not on emotion.

Senior executives often access information through the use of a **portal.** Basically, a portal is a Web interface designed to present integrated personalized business content from a variety of sources.

As executives haven't been using computers that long or don't have time to fiddle around learning how to type, executive support systems use **digital dashboards** to make the system easy to use and provide information in a real-time mode. The ESS must be able to incorporate external information with internal data to offer concise, complete information for the imprecise and incomplete scenarios executives face.

Summary of Executive Support Systems

- An executive support system helps managers make strategic decisions affecting the entire company.
- The decisions use internal and external data to give executives the information they need to determine the proper course of action in unstructured situations.

Systems for Linking the Enterprise

It's not unusual to find an organization with three or more different information systems that act as islands. I have seen this throughout my career. The systems don't exchange information very well, if at all. Accounting and finance may have a system that serves their needs very well, but they can't collect information from the system used by manufacturing and production. Sales and marketing is doing its own thing with its system and losing valuable information from the other systems, which could help it do a better job.

Enterprise Applications

No business can afford disjointed information systems that don't work together to produce a coherent picture of the entire organization. All the

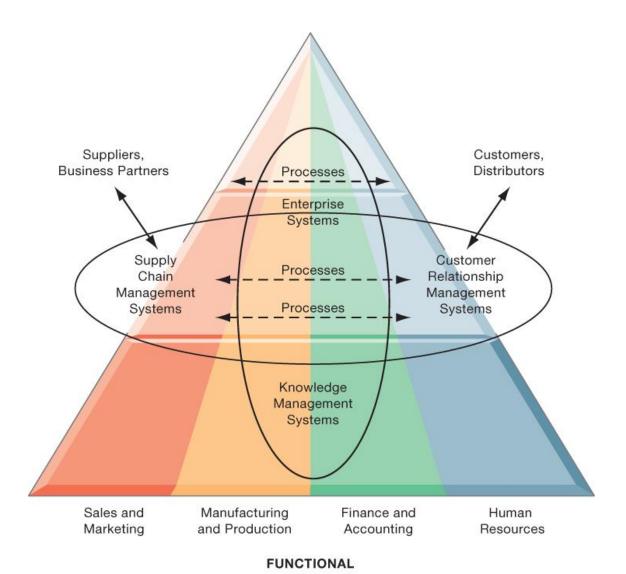
functions of a business must be integrated across traditional lines of demarcation. Islands of information can be devastating to a company if data cannot be shared throughout the company. Even worse, the islands of information can create problems if each faction of an enterprise has differing information that conflicts with other islands of information. These kinds of problems are what gave rise to **enterprise applications** that share the same data anywhere it's needed in an organization. As networks of all kinds take hold, from the Internet to intranets to extranets, Web-based enterprise applications are increasingly widespread.

Look at Figure 2.6, below. Enterprise applications automate processes that span multiple business functions and organizational levels and may extend outside the organization.

The purpose of this graphic (Figure 2.6) is simply to illustrate that enterprise systems are very large and diverse databases that pull information from many parts of the firm and enable processes across the firm at different organizational levels, as well as with suppliers and customers.

The triangle represents the organization, with different colors for the four main business functions. The ovals show that an enterprise application architecture incorporates systems used in sales and marketing, enabling these to communicate with each other and externally, with suppliers and customers. It also incorporates information supplied by knowledge management systems, manufacturing and finance systems, and other enterprise systems.

The purpose of incorporating data and information from all of these sources is to enable and automate cross-functional business processes and supply accurate information to aid decision making.



AREAS
Figure 2.6: Enterprise Application Architecture

The following sections are an overview of four major enterprise applications: enterprise, supply chain management, customer relationship management, and knowledge management systems. We'll also study each of these systems in depth in future chapters.

Enterprise systems (also known as *enterprise resource planning (ERP)* systems) are used to bridge the communication gap among all departments and all users of information within a company. If the Frozen Treats Company production department enters information about its processes, the data are available to accounting, sales, and human resources. If sales and marketing is planning a new advertising campaign for the Moose Munchies, anyone anywhere within the organization will have access to that information. Enterprise systems truly allow a company to use information as a vital resource and enhance the bottom line.

The greatest enticement of enterprise systems is the chance to cut costs firm-wide and enhance the ability to pass information throughout the organization. The biggest drawbacks to building enterprise information systems are time, money, and people. Because the installation of the system is so invasive, it takes a tremendous amount of time to install the hardware and software, train people to use it, and rework business processes that will then inevitably change. Many companies find it more trouble than they care to handle.

Even if you properly manage your processes, wring out excess costs from every corner of the organization, and above all, have the best products at the lowest cost, if you can't get your products to the right customers at the right time what good is all the rest? Managing your supply chain and getting products or services to customers efficiently and effectively is the real key to success.

Supply chain management systems offer new opportunities for companies to integrate data and information with their suppliers and customers and ultimately, lower costs for everyone. When Frozen Treats installed their supply chain management system, a form of **interorganizational systems**, they created a cohesive network for buying raw materials, creating the candy bars, and getting the packaged goods to retail outlets.

Do you wait for the customer to complain about your poor service before you take a critical look at your business processes? Do you spend more time and money acquiring new customers than you do in keeping your existing ones? Does each functional area of your organization have a completely different and separate viewpoint of your customers? Does your sales and marketing department make promises to your customers that manufacturing and production can't possibly keep? If you answered yes to one or more of these questions you're in serious need of a good **customer relationship management (CRM)** system.

CRM technology isn't just a nice looking Web site for customers to click through or more reports dumped on managers' desks that they don't have time to review. CRM systems involve business processes in all the functional areas and every management level of a firm. The ideal CRM system provides end-to-end customer care from receipt of order through product delivery.

Because of technological limitations in the past, many companies created islands of information in the various functional areas. Sales and marketing at Frozen Treats may tell a customer that the product order would ship by the

fifteenth. Meanwhile manufacturing and production was experiencing a delay in producing the Moose Munchies because the finance department didn't purchase enough raw goods. The islands of information prevented each functional area from knowing the situations in other areas. CRM systems help solve some of these disjointed snafus.

CRM also helps a firm cut the costs of keeping good customers by supplying the entire organization with a consolidated view of the customers' needs. Unprofitable customers are more easily identified with a CRM system and the time and energy spent can be retargeted to more profitable customers.

You may not think of a **knowledge management system** as an integral part of the overall information system of an organization. Most of the other systems have been recognized for many years, but this one may be thought of as relatively new. Knowledge management systems (KMS) enable organizations to better manage processes for capturing and applying knowledge and expertise.

Knowledge workers are those who promote the creation of new knowledge and integrate it into the organization. Research scientists may discover new methods of mixing sugar and cocoa beans and dairy products to make a better chocolate. Maybe a team of engineers will develop a new method of packaging the Moose Munchies to make it easier to open. The legal knowledge workers may spend their time determining the copyright protections that could be afforded to the Moose Munchies product name.

Intranets and Extranets

Enterprise applications are often costly to implement. Companies that don't have the resources to invest in enterprise applications can still achieve some measure of information integration by using intranets and extranets.

Intranets and extranets use Internet technology and standards to assemble information from various systems and present it to the user in a Web page format. Extranets make portions of private corporate intranets available to outsiders.

Both of these tools make it easy for companies to disseminate information through a standard platform that requires very little work to maintain. It's a low-cost way to connect internal employees with one another or external users to company information.

Summary of Enterprise Applications

- Integrating functions and business processes cut costs and allow systems development that involves the whole firm or industry.
- Customer resource management and supply chain management give a company the added advantages of end-to-end customer care.
- Enterprise systems have many challenges but the benefits, when executed properly, are enormous.
- Knowledge management systems allow an organization to fully integrate their newly acquired knowledge into the current systems

E-Business, E-Commerce, and E-Government

The Internet, extranets, and intranets offer new opportunities to do business in cyberspace. The amount of electronic commerce and electronic business conducted online continues to grow exponentially year after year without any signs of slowing down. The two terms, *e-commerce* and *e-business*, are often confused with each other.

E-commerce is limited to the buying and selling of goods and services on networks.

E-business encompasses not only e-commerce but a broader range of tasks like coordinating training seminars for customers.

Even with the rising popularity of these new ways of doing business, you should take caution. It's easy to put up a snazzy, colorful Web site that looks very pretty and may even be easy to use. It may be a site on the Internet, an intranet, or an extranet. You must consider though, how you're going to incorporate that part of your business with your other, more established methods of doing business. What internal processes must you change or adapt? What new processes must you establish? What training must you do with the people who will run the e-business, both technical and nontechnical? You can't keep doing your job the same old way. Lots of businesses have tried and lots of businesses have lost big bucks.

The electronic delivery of government services via the Internet has been fairly successful. Citizens have easy access to forms necessary in many egovernment programs such as tax payments. Rather than waste time standing in line for vehicle registration and licenses, people can complete these kinds of tasks on the Internet. Perhaps most importantly, egovernment has opened the lines of communications between citizens and elected officials and made information access easier and timelier.

Chapter 2 Global E-Business and Collaboration

2.3 Why are systems for collaboration and social business so important and what technologies do they use?

Globalization now allows companies to work around the clock, around the world. It's not unusual for major corporations to shift work from one time zone to another, one country to another. Somehow, the people in all the geographically-separated locations have to be able to easily communicate and share information with one another. Working in teams is now becoming the de facto practice in the business world.

What Is Collaboration?

Let's first determine exactly what the term **collaboration** means to businesses and to you:

- Working with others to achieve shared and explicit goals
- Focuses on a particular task or mission
- Takes place in a business and/or between businesses
- Can be short or long term
- Can be one-to-one or many-to-many
- Can be informal or structured, formal teams

Collaboration and teamwork has grown in popularity over the last few years because new technology has made it much easier for people to communicate and share information, files, and documents. Imagine how difficult it would be to collaborate with a colleague across the country if you had to pass documents back and forth using snail-mail.

Collaboration and teamwork are central to the success of many businesses. Here are six reasons why businesses promote collaboration and teamwork:

- Changing nature of work—traditionally work was organized into silos. Now, most new jobs require interaction among employees, suppliers, and customers.
- **Growth of professional work**—most professional jobs require close coordination and sharing information and opinions with other professionals.
- **Changing organization of the firm**—traditionally organizations used a managerial hierarchy. Now, many firms have been

- "flattened" and expertise and decision-making powers are pushed down to groups and teams.
- Changing scope of the firm—globalization has created organizations that are disbursed to many geographically separated locations that require close coordination.
- **Emphasis on innovation**—innovation comes more from teams and groups than from a single individual. Collaborative practices and technologies increase the likely success of innovation.
- **Changing culture of work and business—**diverse teams tend to produce better outputs and do it faster than individuals.

A number of factors are leading to a growing emphasis on collaboration in the firm. Work is changing, requiring more cooperation and coordination. Professions play a larger role in firms than before, and this often requires more consultation among experts. Organizations are flatter, with many more decisions made far down in the hierarchy. Organizations are more far flung around the globe, in multiple locations. There's an emphasis on finding and sharing ideas, which requires collaboration. Finally, what it means to be a "good" employee these days is in part an ability to work with others, and collaborate effectively. The culture of work has changed.

What Is Social Business?

Collaboration among employees, suppliers, and customers is becoming an important tool in increasing a company's competitive advantage. Social networking platforms such as Facebook, Twitter, and Pinterest help improve a company's **social business** to establish and improve interactions with groups inside and outside the organization. Information sharing, innovation, and decision making are enhanced through these technologies.

Communications among managers, executives, and employees can be improved and streamlined through the use of social business. Table 2.2 below, provides a list of social business applications and their descriptions.

TABLE 2.2 APPLICATIONS OF SOCIAL BUSINESS

SOCIAL BUSINESS APPLICATION	DESCRIPTION
Social Networks	Connect through personal and business profiles
Crowdsourcing	Harness collective knowledge to generate new ideas and solutions
Shared workspaces	Coordinate projects and tasks, co-create content
Blogs and Wikis	Publish and rapidly access knowledge; discuss opinions and experiences
Social commerce	Share opinions about purchasing or purchase on social platforms
File sharing	Upload, share, and comment on photos, videos, audio, text documents
Social marketing	Use social media to interact with customers, derive customer insights
Communities	Discuss topics in open forums, share expertise

Table 2.2 is a list of social business applications and the a brief description of each of these tools.

Business Benefits of Collaboration and Social Business

Many major corporations are embracing collaboration and teamwork not just within their own company, but with people outside the organizations.

"IBM is prowling the world to set up what it calls 'collaboratories' which match up its researchers with experts from governments, universities, and companies. IBM is trying to convince countries and companies that it can help them improve their ability to innovate at an important moment for the global economy. In recent years, companies such as Hewlett-Packard and Intel have begun tapping talent from outside for essential bits of science and technology—a concept called open innovation. Now IBM is moving a giant step further by making collaboration with outsiders an essential piece of its research strategy. The depth of that collaboration, the number of partners, the staff involved, and its global reach set IBM apart. 'To move in this direction you have to be willing to not just take risks but be open to accepting ideas from around the world,' says Soumitra Dutta, professor of business and technology at Europe's INSEAD." (BusinessWeek, Big Blue's Global Lab, Steve Hamm, Sep 7, 2009.)

Table 2.3 below emphasizes the benefits of collaboration and social business: increased productivity, increased quality of work, more and better

innovation, improved customer service, and increased profitability, sales, and sales growth.

TABLE 2.3 BUSINESS BENEFITS OF COLLABORATION AND SOCIAL RUSINESS

BOSINESS	
BENEFIT	RATIONALE
Productivity	People interacting and working together can capture expert knowledge and solve problems more rapidly than the same number of people working in isolation from one another. There will be fewer errors.
Quality	People work collaboratively can communicate errors, and corrective actions faster than if they work in isolation. Collaborative and social technologies help reduce time delays in design and production.
Innovation	People working collaboratively can come up with more innovative ideas for products, services, and administration than the same number working in isolation from one another. Advantages to diversity and the "wisdom of crowds."
Customer service	People working together using collaboration and social tools can solve customer complaints and issues faster and more effectively than if they were working in isolation from one another.
Financial performance (profitability, sales, and sales growth)	As a result of all of the above, collaborative firms have superior sales, sales growth, and financial performance.

Table 2.3 describes the business benefits of collaboration and social business and the rationale for attaining that benefit.

Figure 2.7 below, highlights the necessity of having the appropriate organizations structure and culture, along with the right technology. Successful collaboration requires an appropriate organizational structure and culture along with appropriate collaboration technology.

Figure 2.7 graphically describes how collaboration is believed to impact business performance. Two primary ingredients are needed: collaboration capability (including how much collaboration is possible) and collaboration technology or means. The quality of these two factors directly affects firm performance—the higher quality of collaboration means better firm performance. How do you think collaboration can be high or low quality? An example of low-quality collaboration could be a team put together to solve a business problem but is unable to effectively work together because of internal politics. I've had lots of experience with poor collaboration!!

Open culture Decentralized structure Breadth of collaboration Collaboration Technology Use of collaboration and social technology for implementation and operations Use of collaborative and social technology for strategic planning

Figure 2.7 Requirements for Collaboration – shows the relationship to an organizations culture and structure to make effective use of collaboration.

Building a Collaborative Culture and Business Processes

Trying to mesh a typical hierarchical management structure with a true collaborative environment simply won't hack it for one major reason. In a hierarchical organization structure, communications are passed up the management ladder from employees, across to another management ladder and back down to employees. That's extremely slow, cumbersome, and has an awful lot of "filters" as messages are passed from one person to another.

Collaboration and teamwork require much faster communications and information sharing. In essence it requires managers to set specific goals and then "get out of the way." Teams develop products, design new ideas or processes, and create new systems and technologies. Individuals are rewarded based on the success of the team rather than their own individual merits. Managers build the teams, coordinate the work, and monitor performance.

But in order for all this to work well, an organization must have the right tools and technologies in place.

Tools and Technologies for Collaboration and Social Business

Many new systems for interacting with other employees, managers, vendors, and customers have been developed. You probably use some of them without realizing how essential they've become in creating an environment that supports a collaborative culture.

- **E-mail and instant messaging:** billions of messages flow everyday among employees, managers, suppliers, and customers.
- **Wikis:** gaining in popularity as a way to share knowledge and ideas among collaborators. They are much easier to use and manage than more sophisticated knowledge management systems.
- Virtual worlds: able to house online meetings, training sessions, and lounges, this type of tool is gaining popularity as a way to meet, interact, and exchange ideas.

Collaboration and Social Business Platforms: Let's assume you are part of a team working on a new ice cream product for Frozen Treats Corporation. You work in Atlanta, Georgia, while your teammates work in New York City, Seattle, and Dallas. Sure, you could all fly to a central meeting place once a month to collaborate on the new ice cream bar. But imagine how cumbersome and slow that would be. Not to mention expensive and time-consuming.

Virtual Meeting Systems: With a virtual meeting system you can hold strategy sessions once or twice a week instead. You would feel like all of your teammates are physically located in the same place if you use **telepresence** technology. You can share ideas and documents in real-time. Best of all, you don't have all the travel hassles and you can sleep in your own bed.

Cloud Collaboration Services: Google Apps and Google Sites: While your Frozen Treats Ice Cream team is collaborating on the new ice cream bar, you'll find it necessary to share word documents, spreadsheets, calendars, and perhaps audio and video files. Rather than create the online structure for all this, not to mention spending big dollars, your team can use Google Tools that include Google Drive, Google Docs, Google Apps, Google Sites and Google + to easily set up the necessary technology infrastructure you need. You'll have the benefit of e-mail, instant messaging, and threaded discussion, so all of you can communicate in real-time. You're also able to save and archive all your communications for future reference. You can't necessarily do that in a face-to-face meeting.

Online file-sharing services that allow you to upload files to secure online storage sites are called **cyberlockers**. Your files are available from a multitude of other computing devices including tablet computers, smartphones, or any networked computer.

Microsoft SharePoint: Frozen Treats already uses Microsoft servers and networking products, along with the Microsoft Office suite of Word, Excel, Outlook, and PowerPoint. Your team can use all of these as a base for collaboration by developing a Web site that organizes and stores information in one location. The host Web site provides the following benefits:

- Coordinate work activities
- Collaborate on and publish documents
- Maintain task lists
- Implement workflows
- Share information via wikis and blogs

Enterprise Social Networking Tools: These tools, such as Jive and Yammer, help connect an organization's members through profiles, updates, and notifications but are restricted to internal corporate uses. Some include user profiles, communities, e-mail, instant messaging, Web meetings, calendars, personal dashboards, and file-sharing.

Checklist for Managers: Evaluating and Selecting Collaboration and Social Software Tools

Sometimes the decision about which of these tools to use may be up to you. How do you decide which one is best? Figure 2.8 below gives you a matrix that will help you sort through all the hype and decide based on your needs. The matrix uses two dimensions, time and space, to compare the tasks you want to accomplish with the best way to do so. For instance, will your team use synchronous (same time) or asynchronous (different time) to meet? Mostly, you need to analyze the collaboration tools from a cost-benefit point of view.

Collaboration and social technologies can be classified in terms of whether they support interactions at the same or different time or place and whether these interactions are remote or colocated.

You can use the matrix below to identify solutions to the time/location issues that face a firm, and to choose specific collaboration technologies.

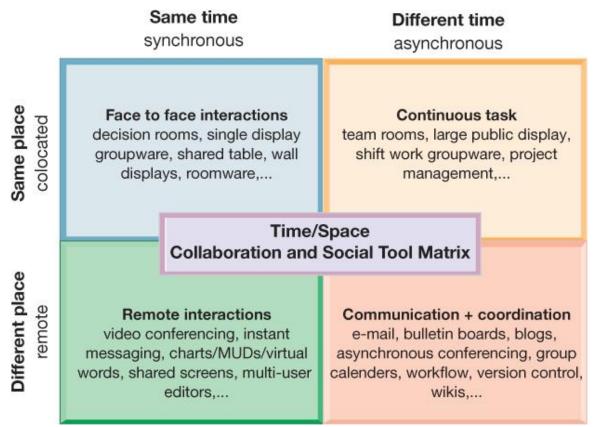


Figure 2.8 The Time/Space Collaboration and Social Tool Matrix – This matrix helps managers chose the right tool based on time and space.

You can also use these six steps to help you select the best product for the task at hand:

- What are my challenges in terms of time and space?
- What solutions are available for each of the challenges?
- What are the costs and benefits of each solution?
- What security risks and vulnerabilities are associated with each solution?
- What are the implementation and training issues associated with each solution?
- Choose the collaboration tools and seek presentations from the vendors

Summary

- Collaboration and teamwork is the name of the game in today's corporate world.
- There are many different tools and technologies that help enable collaboration.
- The firm must have a collaborative culture that encourages employees to work together as a team to ensure success.

Chapter 2 Global E-Business and Collaboration

2.4 What is the role of the information systems function in a business?

I've worked in many IT departments and sometimes it's very difficult to explain to business people what the IT staff and doesn't do. At the core, the IT staff keep the trains on the tracks! The IT staff is responsible for the well-being of all users in an organization. Users and the IT staff are teammates not polarizing opposites.

In small organizations, the IT staff can be a jack of all trades (network, telecom, servers, desktops, printers, virtualization, data centers, storage, backups, disaster recovery, etc.) In larger organizations, the IT staff can easily exceed several hundred associates and contractors. In those cases, many times the folks are not fungible. The Linux Engineer doesn't work on windows. The Palo Alto Network Security engineers don't work on F5 load balancers. The Oracle DBA's don't do SQL! So, while there may be many folks in an IT organization, you will frequently see some parts of the organization short on various skills.

The other thing we lot of, is that many people focus on the job losses caused by technological advances and changes. On the other hand, many new jobs have been created because of technology. Like the example I gave of the associate folding invoices. We could have cut her job, but we retrained her. Information systems departments, previously a tiny group of people usually assigned to the financial group, have moved into the mainstream of most companies.

The Information Systems Department

Programmers have taken on more important positions within organizations. They must understand not only the technical side of computing, but they must also know business processes so they can adapt the technology to the needs of their company. Systems analysts serve as the bridge between the techies and the nontechies. Heading this group of people are the information systems managers. Their importance to businesses has grown as the emphasis on technology's role within organizations has grown.

Just as most organizations have a chief financial officer, the position of chief information officer has been created to handle the myriad of problems and opportunities businesses face in today's technologically driven environment.

Very large corporations appoint a chief security officer who's responsible for enforcing the firm's information security policy and training users and information systems technologists about security. The CSO keeps other executives and managers aware of security threats and maintains security tools and policies.

The chief privacy officer protects an organization's data from misuse and abuse and makes sure the company complies with data privacy laws. Another new position, that of chief knowledge officer, has been created in larger corporations to deal with effectively using knowledge management systems.

Some major corporations are establishing a position for a chief data officer who is responsible for enterprise-wide governance and utilization of information that is gleaned from all the data an organization collects and stores. Making sure the company is collecting appropriate data, analyzing the data properly and using the results to support good business decisions is the CDO's main responsibility.

Some organizations have a chief technology officer (CTO) who is responsible for enterprise-wide architecture and technical direction.

Perhaps the most important role of all, though, is the end user. The responsibility for successful integration of information systems has extended past the "techies" and become part of everyone's job. As we've seen so far, no functional area or level of organizational hierarchy is exempt from understanding information systems and how they can help businesses meet their objectives.

Organizing the Information Systems Function

Deciding how to organize the information systems function within a business is not as easy as deciding how to organize other functional areas. After all, sales and marketing has a much different mission than production and manufacturing. An information system on the other hand has similar tasks regardless of the functional area it is supporting. Sales and marketing needs access to data the same as production and manufacturing.

Larger companies and organizations develop an IT governance that helps decide the best way to organize the IT department for the benefit of all. Some of the issues to be decided upon are:

- Strategy and policies for using IT
- Accountability toward the organization's strategies and objectives
- How much centralization will take place within the IT function

• Does the organization receive a positive return on its IT investments?

Summary

The IS department is an integral part of any successful business.

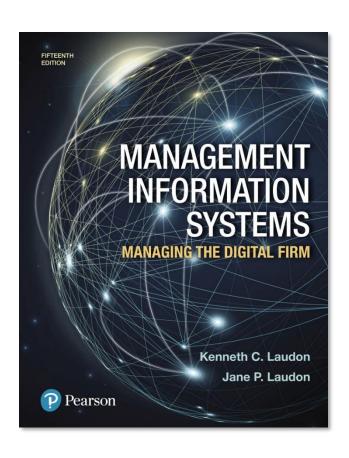
Programmers, analysts, IS managers, and the CIO are major players in the IS function.

Large corporations use a chief security officer, chief privacy officer, and a chief knowledge officer to ensure investments in information technology pay big dividends to the firm.

The most important role in effectively using technology belongs to the users

Management Information Systems: Managing the Digital Firm

Fifteenth edition



Chapter 2
Global E-business and
Collaboration

Learning Objectives

- **2-1** What are business processes? How are they related to information systems?
- **2-2** How do systems serve the different management groups in a business, and how do systems that link the enterprise improve organizational performance?
- **2-3** Why are systems for collaboration and social business so important, and what technologies do they use?
- **2-4** What is the role of the information systems function in a business?

Video Cases

- Case 1: Walmart's Retail Link Supply Chain
- Case 2: CEMEX: Becoming a Social Business
- Instructional Video: US Foodservice Grows Market with Oracle CRM on Demand

Enterprise Social Networking Helps ABB Innovate and Grow (1 of 2)

Problem

- Outdated static technology
- Geographically dispersed

Solutions

- Develop knowledge sharing strategy and goals
- Change knowledge and collaboration processes
- Change organizational culture
- Deploy Inside+, with Yammer, Office 365, and Sharepoint

Enterprise Social Networking Helps ABB Innovate and Grow (2 of 2)

- ABB uses Inside+ to provide new channels for knowledge acquisition, innovation, and collaboration
- Demonstrates IT's role in helping organizations improve performance and remain competitive
- Illustrates the ability of IT systems to support collaboration and teamwork

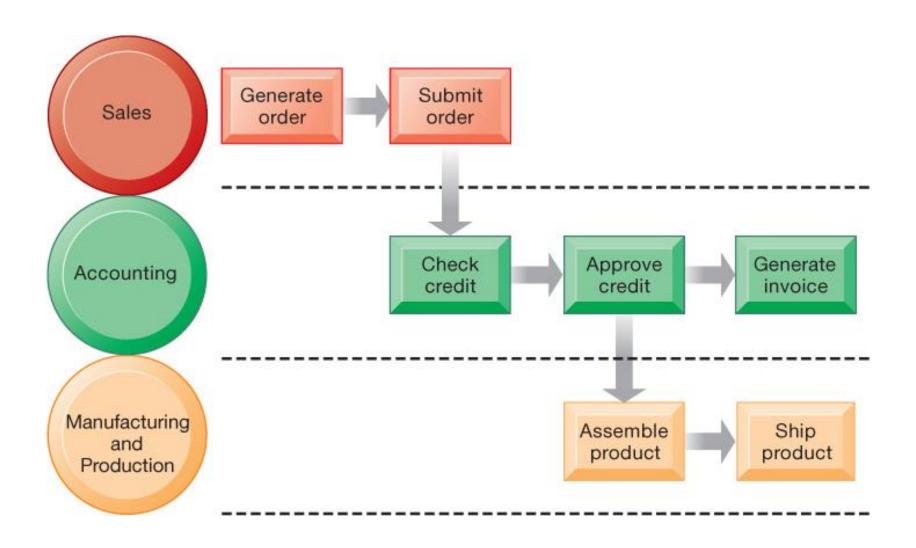
Business Processes (1 of 2)

- Business processes
 - Flows of material, information, knowledge
 - Sets of activities, steps
 - May be tied to functional area or be crossfunctional
- Businesses: Can be seen as collection of business processes
- Business processes may be assets or liabilities

Business Processes (2 of 2)

- Examples of functional business processes
 - Manufacturing and production
 - Assembling the product
 - Sales and marketing
 - Identifying customers
 - Finance and accounting
 - Creating financial statements
 - Human resources
 - Hiring employees

Figure 2.1: The Order Fulfillment Process



How Information Technology Improves Business Processes

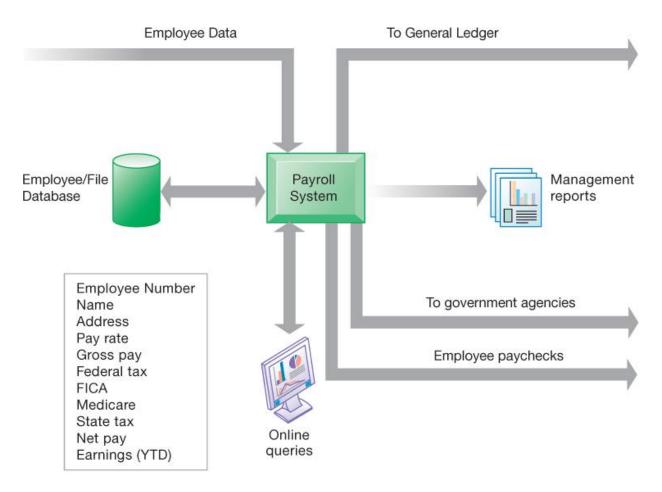
- Increasing efficiency of existing processes
 - Automating steps that were manual
- Enabling entirely new processes
 - Changing flow of information
 - Replacing sequential steps with parallel steps
 - Eliminating delays in decision making
 - Supporting new business models

Systems for Different Management Groups (1 of 2)

Transaction processing systems

- Serve operational managers and staff
- Perform and record daily routine transactions necessary to conduct business
 - Examples: sales order entry, payroll, shipping
- Allow managers to monitor status of operations and relations with external environment
- Serve predefined, structured goals and decision making

Figure 2.2: A Payroll TPS



Payroll data on master file

Systems for Different Management Groups (2 of 2)

- Systems for business intelligence
 - Data and software tools for organizing and analyzing data
 - Used to help managers and users make improved decisions
- Management information systems
- Decision support systems
- Executive support systems

Management Information Systems

- Serve middle management
- Provide reports on firm's current performance, based on data from TPS
- Provide answers to routine questions with predefined procedure for answering them
- Typically have little analytic capability

Figure 2.3: How Management Information Systems Obtain Their Data from the Organization's TPS

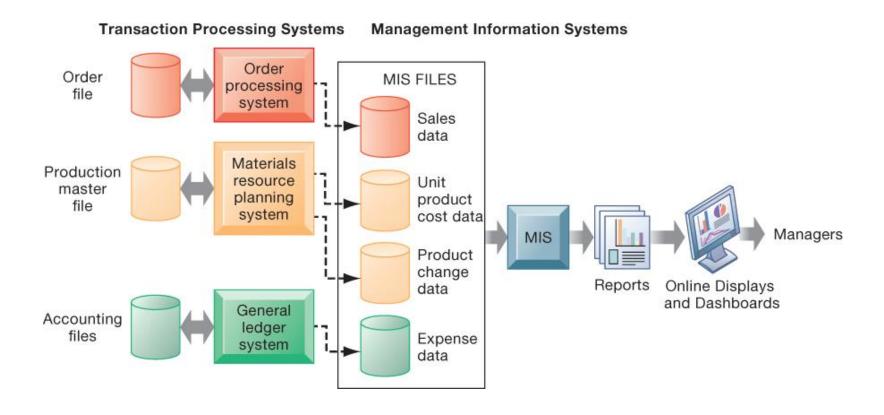


Figure 2.4: Sample MIS Report

Consolidated Consumer Products Corporation Sales by Product and Sales Region: 2017

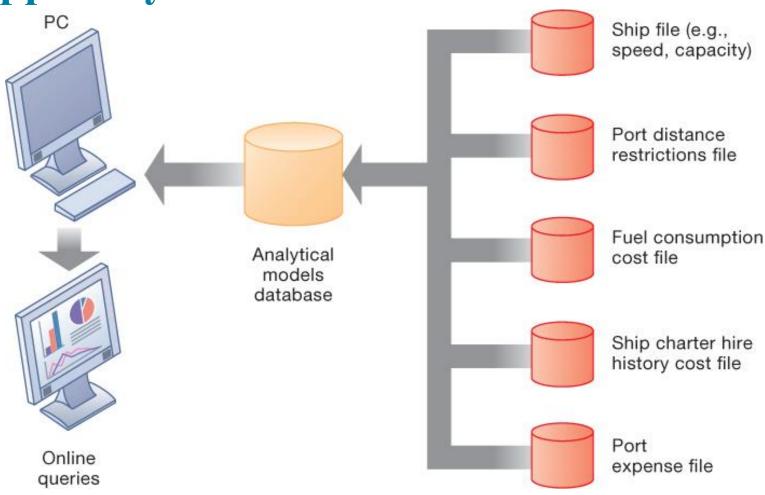
PRODUCT CODE	PRODUCT DESCRIPTION	SALES REGION	ACTUAL SALES	PLANNED	ACTUAL versus PLANNED
4469	Carpet Cleaner	Northeast South Midwest West	4,066,700 3,778,112 4,867,001 4,003,440	4,800,000 3,750,000 4,600,000 4,400,000	0.85 1.01 1.06 0.91
	TOTAL		16,715,253	17,550,000	0.95
5674	Room Freshener	Northeast South Midwest West	3,676,700 5,608,112 4,711,001 4,563,440	3,900,000 4,700,000 4,200,000 4,900,000	0.94 1.19 1.12 0.93
	TOTAL		18,559,253	17,700,000	1.05

Decision support systems

- Serve middle management
- Support nonroutine decision making
 - Example: What is the impact on production schedule if December sales doubled?
- May use external information as well TPS / MIS data
- Model driven DSS
 - Voyage-estimating systems
- Data driven DSS
 - Intrawest's marketing analysis systems

Figure 2.5: Voyage-Estimating Decision-

Support System



Executive Support Systems

- Support senior management
- Address nonroutine decisions
 - Requiring judgment, evaluation, and insight
- Incorporate data about external events (e.g., new tax laws or competitors) as well as summarized information from internal MIS and DSS
- Example: Digital dashboard with real-time view of firm's financial performance

Interactive Session: Organizations: New Systems Help Plan International Manage Its Human Resources (1 of 2)

Class discussion

- Describe the problem faced by Plan International. What management, organization, and technology factors contributed to this problem?
- Describe the system solution to this problem. Describe the types of systems used for the solution.
- Why is human resources so important at Plan International?

Interactive Session: Organizations: New Systems Help Plan International Manage Its Human Resources (2 of 2)

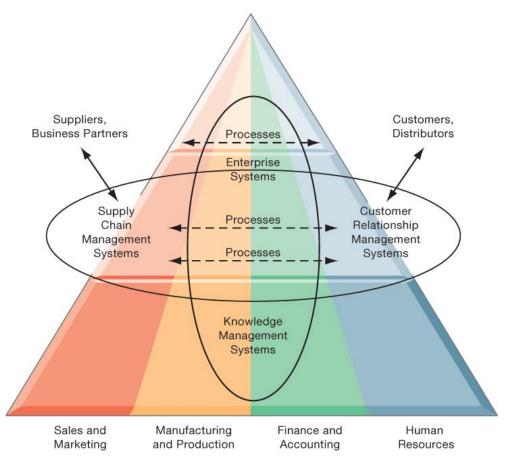
Class discussion

- How did these systems improve operational efficiency?
- How did these systems improve decision making? Give examples of two decisions improved by Plan's new systems.

Enterprise Applications

- Systems for linking the enterprise
- Span functional areas
- Execute business processes across the firm
- Include all levels of management
- Four major applications
 - Enterprise systems
 - Supply chain management systems
 - Customer relationship management systems
 - Knowledge management systems

Figure 2.6: Enterprise Application Architecture



FUNCTIONAL AREAS

Enterprise Systems

- Collect data from different firm functions and store data in single central data repository
- Resolve problems of fragmented data
- Enable:
 - Coordination of daily activities
 - Efficient response to customer orders (production, inventory)
 - Decision making by managers about daily operations and longerterm planning

Supply Chain Management (SCM) Systems

- Manage firm's relationships with suppliers
- Share information about:
 - Orders, production, inventory levels, delivery of products and services

Goal:

 Right amount of products to destination with least amount of time and lowest cost

Customer Relationship Management (CRM) Systems

- Provide information to coordinate all of the business processes that deal with customers
 - Sales
 - Marketing
 - Customer service
- Helps firms identify, attract, and retain most profitable customers

Knowledge Management Systems (KMS)

- Support processes for capturing and applying knowledge and expertise
 - How to create, produce, and deliver products and services
- Collect internal knowledge and experience within firm and make it available to employees
- Link to external sources of knowledge

Intranets and Extranets

 Also used to increase integration and expedite the flow of information

Intranets

Internal company websites accessible only by employees

Extranets

- Company websites accessible externally only to vendors and suppliers
- Often used to coordinate supply chain

E-business, E-commerce, and E-government

E-business

Use of digital technology and Internet to drive major business processes

E-commerce

- Subset of e-business
- Buying and selling goods and services through Internet

E-government

 Using Internet technology to deliver information and services to citizens, employees, and businesses

What Is Collaboration?

Collaboration

- Short lived or long term
- Informal or formal (teams)

Growing importance of collaboration

- Changing nature of work
- Growth of professional work—"interaction jobs"
- Changing organization of the firm
- Changing scope of the firm
- Emphasis on innovation
- Changing culture of work

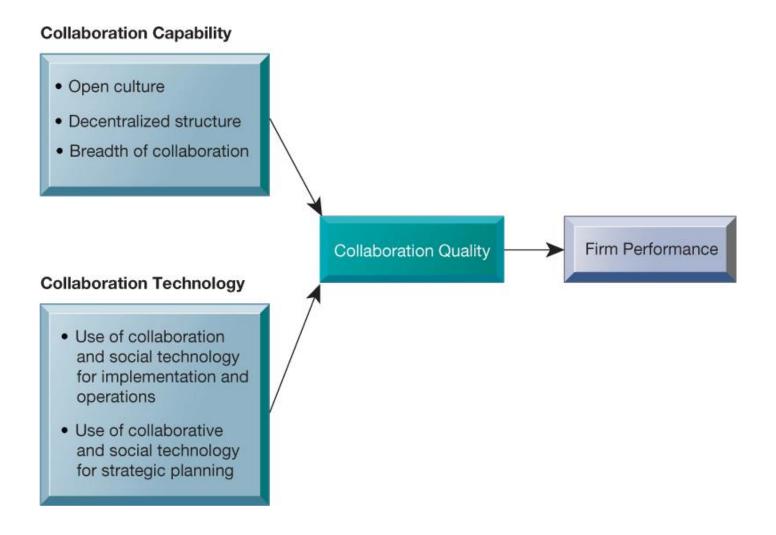
What Is Social Business?

- Social business
 - Use of social networking platforms (internal and external) to engage employees, customers, and suppliers
- Aims to deepen interactions and expedite information sharing
- "Conversations"
- Requires information transparency
 - Driving the exchange of information without intervention from executives or others

Business Benefits of Collaboration and Teamwork

- Investments in collaboration technology can bring organization improvements, returning high ROI
- Benefits
 - Productivity
 - Quality
 - Innovation
 - Customer service
 - Financial performance
 - Profitability, sales, sales growth

Figure 2.7: Requirements for Collaboration



Building a Collaborative Culture and Business Processes

- "Command and control" organizations
 - No value placed on teamwork or lower-level participation in decisions
- Collaborative business culture
 - Senior managers rely on teams of employees
 - Policies, products, designs, processes, and systems rely on teams
 - The managers purpose is to build teams

Tools and Technologies for Collaboration and Social Business

- E-mail and instant messaging (IM)
- Wikis
- Virtual worlds
- Collaboration and social business platforms
 - Virtual meeting systems (telepresence)
 - Cloud collaboration services (Google Drive, Google Docs, etc.)
 - Microsoft SharePoint and IBM Notes
 - Enterprise social networking tools

Interactive Session: Technology: Cisco IX5000: What State-of-the-Art Telepresence Can Do for Collaboration

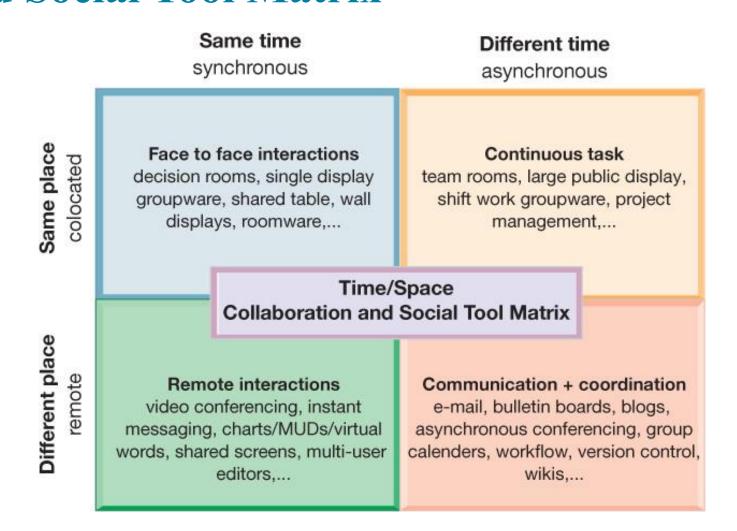
Class discussion

- Describe the capabilities of Cisco's IX5000 telepresence system.
 How do they promote collaboration and innovation?
- Why would a company like Produban want to invest in a telepresence system such as Cisco's IX5000? How are videoconferencing technology and telepresence related to Produban's business model and business strategy?
- What kinds of other companies might benefit from a telepresence service such as IX5000? Why?

Checklist for Managers: Evaluating and Selecting Collaboration and Social Software Tools

- Time/space matrix
- Six steps in evaluating software tools
 - Identify your firm's collaboration challenges
 - Identify what kinds of solutions are available
 - Analyze available products' cost and benefits
 - Evaluate security risks
 - Consult users for implementation and training issues
 - Evaluate product vendors

Figure 2.8: The Time/Space Collaboration and Social Tool Matrix



The Information Systems Department

- Often headed by chief information officer (CIO)
 - Other senior positions include chief security officer (CSO), chief knowledge officer (CKO), chief privacy officer (CPO), chief data officer (CDO)
- Programmers
- Systems analysts
- Information systems managers
- End users

Organizing the Information Systems Function

IT governance

- Strategies and policies for using IT in the organization
- Decision rights
- Accountability
- Organization of information systems function
 - Centralized, decentralized, and so on

IT Enables Collaboration and Teamwork

Outline

Introduction: It's a Collaborative World

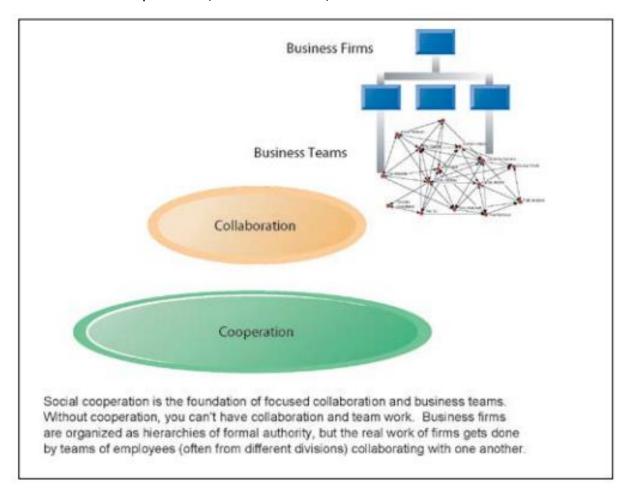
- 1.0 Why Are Collaboration and Teamwork So Important Today?
- 2.0 What Are the Business Benefits of Collaboration?
- 3.0 What Makes a Good Team Member And Collaborator?
- 4.0 What Makes a Good Team Leader?
- 5.0 Building and Managing Teams
- 6.0 Building a Collaborative Organizational Culture
- 7.0 IT Systems Enable Collaboration and Teamwork
- 8.0 Choosing Collaboration Tools: Management To-Do List

Introduction: It's a Collaborative World

It's a collaborative world that depends on teams of people working together across time zones and continents. It's a world of high bandwidth and "rich" communications, and "interaction" jobs where the value added by the employee is the ability to talk, write, present, persuade, sell and empathize with others. Over 40% of the labor force now has these kinds of jobs.

So what is collaboration, and what's the difference between cooperation, collaboration, and team work (project teams)? Figure 1-1 illustrates the differences and their relationship.

FIGURE 1-1 Cooperation, Collaboration, and Team work



Cooperation (also referred to as "coordination") is working with others to achieve some shared (but not necessarily stated) goals. Cooperation comes from the fact that we are dependent on others, and we need to manage those dependencies somehow. For instance, you cooperate with your neighbors in keeping the neighborhood sidewalks clean; keeping an eye out for strangers; or deciding how to paint a fence that divides your property or a shared entrance. You cooperate with your spouse by putting dirty laundry in the washing machine. You help with the cooking and dishes. You cooperate with complete strangers on the street by passing on the right, and you always go through revolving doors in the "right" way. Cooperation is general, broad, and the foundation of any organized social life. It occurs most often without anyone saying anything to one another. Without it, we would not have villages, towns, cities or countries. Or business firms. Now let's take it up a step.

Collaboration is cooperation that's more focused on task or mission accomplishment and usually takes place in a business, or other organization,

and between businesses. It is explicit: we generally do talk about, plan and manage collaboration with one another.

You collaborate with a colleague in Tokyo looking for expertise on a topic you know nothing about. You collaborate with many colleagues in publishing a company blog. If you're in a law firm, you collaborate with accountants working in an accounting firm in servicing the needs of a client with tax problems. Collaboration can be short-lived, lasting a few minutes, or longer term if the dependency among participants remains constant. You can collaborate informally with colleagues many times over a period of years through e-mail, voice mail, instant messaging, wikis (collections of documents), and bulletin boards. Collaboration can be one-to-one (among individuals), and many-to-many (collaboration among a number of people). Such collaborative groups are generally not a formal part of the business firm's organizational structure, but are rather informal groups. Now let's step it up one more time to talk about teams.

Teams take all this one step further. Teams are part of the organization's business structure for getting things done. Teams and project groups are interchangeable terms. Teams have a specific mission that someone in the business assigned to them. They have a job to complete. The members of the team need to collaborate on the accomplishment of specific tasks and collectively achieve the team mission. The team mission might be to "win the game," or "increase online sales by 10%," or "prevent insulating foam from falling off a space shuttle." Teams are often short-lived, depending on the problems they tackle and the length of time needed to find a solution and accomplish the mission. Teams often involve people in very different parts of a business firm, often in other time zones.

1.0 Why Are Collaboration and Teamwork So Important Today?

Collaboration and team work are more important today than ever for a variety of reasons.

• Changing nature of work. The nature of work has changed from factory manufacturing and pre-computer office work where each stage in the production process occurred independently of one another, and was coordinated by supervisors. Worked was organized into silos. Within a silo, work passed from one machine tool station to another, from one desktop to another, until the finished product was completed. Today the kinds of jobs we have require much closer coordination among the parties involved in producing the service or product. These so-called

"interaction" jobs tend to be professional jobs in the service sector that require close coordination, and collaboration. But even in factories, workers today often work in production groups, or pods. Interaction jobs include most office jobs that require close coordination of many different people in order to complete the work. For instance, creating a Web site for a firm requires collaboration among senior management, marketing professionals, Web designers, and information technology specialists who can implement the site; delivering legal services requires a team of lawyers and accountants working together on a single case.

- **Growth of professional work**. In the last 50 years, the professional nature of work has greatly expanded. Professional jobs require substantial education, and the sharing of information and opinions to get work done. Each actor on the job brings specialized expertise to the problem, and all the actors need to take one another into account in order to accomplish the job.
- Changing organization of the firm. For most of the industrial age managers organized work in a hierarchical fashion. Orders came down the hierarchy, and responses moved back up the hierarchy. Today, more work is organized into groups and teams, who are expected to develop their own methods for accomplishing the task. Senior managers observe and measure results, but are much less likely to issue detailed orders or operating procedures. In part this is because expertise has been pushed down in the organization, as have decision making powers.
- Changing scope of the firm. The organization of the firm has changed from work at a single location, to work taking place in offices or factories throughout a region, a nation, or even around the globe. For instance, Henry Ford developed the first mass production automobile plant at a single Dearborn, Michigan factory. In 2012, Ford produced 6.5 million automobiles and employed about 245,000 employees at 100 plants and facilities worldwide. More than half of its sales come from outside North America, as do one third of its revenues. With this kind of global presence, the need for close coordination of design, production, marketing, distribution and service obviously takes on new importance and scale. Large global need to have teams working on a global basis.

- **Emphasis on innovation.** While we tend to think of innovations in business and science as coming from great individuals, but more common is that these great individuals are working with a team of brilliant colleagues, and all have been preceded by a long line of earlier innovators and innovations. Think of Bill Gates and Steve Jobs (founders of Microsoft and Apple) both of whom are highly regarded innovators, and both of whom built strong collaborative teams to nurture and support innovation in their firms. Their initial innovations derived from close collaboration with colleagues and partners. Innovation in other words is a group and social process, and most innovations derive from collaboration among individuals in a lab, a business, or government agencies. Strong collaborative practices and technologies are believed to increase the rate and quality of innovation.
- Changing culture of work and business. There is growing support for the proposition that collaboration and team work produce better results, faster, than a similar number of people working in isolation from one another. Most research on collaboration supports the notion that diverse teams produce better outputs, faster, than individuals working on their own. Popular notions of the crowd ("crowdsourcing," and the "wisdom of crowds") also provide cultural support for collaboration and team work.

Briefly, collaboration and social networking have become a growing theme of social, political, and business organization in the age of the Internet. Economies, organizations and firms, along with their employees are becoming more informational, more global and above all more networked. Information technologies-from smart phones, netbooks and inexpensive servers, to high capacity broadband and large data centers, are all key components and enablers of collaboration practices.

2.0 What are the Business Benefits of Collaboration?

There are many articles and books that have been written about collaboration, some of them by business executives and consultants, and a great many by academic researchers in a variety of businesses. Nearly all of this research is anecdotal and testimonial rather than empirical assessments of collaboration within or between organizations. Among both business and academic communities there is a general belief that the more a business

firm is "collaborative," the more successful it will be. Nearly all writers agree that collaboration is now more required within and between firms than was true in the past (for reasons outlined above).

Table 1-1 summarizes some of the benefits of collaboration identified by previous writers and scholars.

TABLE 1-1 Business Benefits of Collaboration and Their Rationale

Benefit	Rationale
Droductivity	People working together can complete a complex task faster than the same number of people working in isolation from one another; there will be fewer errors.
Productivity	People who work collaboratively can
Quality	communicate errors, and take corrective actions faster, when they work together than if they worked in isolation. Reduction in buffers and time delay among production units.
Innovation	People working collaboratively in groups can come up with more innovative ideas for products, services, and administration than the same number working in isolation from one another. Advantages to diversity and the "wisdom of crowds."
Customer service	People working together in teams can solve customer complaints and issues faster and more effectively than if they were working in isolation from one another.
Financial performance (profitability, sales, and sales growth)	As a result of all of the above, collaborative firms have superior financial performance

One of the difficulties of obtaining solid empirical evidence of these contributions involves the difficulties in measuring "extent of collaboration." One empirical study sponsored by Verizon Business and Microsoft created a collaboration index to measure the impact of communications culture, and deployment of collaborative technologies. That study concluded that "collaboration is a key driver of overall performance of companies around the world. Its impact is twice as significant as a company's aggressiveness in pursuing new market opportunities (strategic orientation) and five times as

significant as the external market environment (market turbulence)... The results show that collaboration can positively impact each of the gold standards of performance - profitability, profit growth and sales growth - to determine a company's overall performance in the marketplace," according to Jaclyn Kostner, Ph.D., best-selling author, and expert on high-performance virtual collaboration. "As a general rule, global companies that collaborate better, perform better. Those that collaborate less, do not perform as well. It's just that simple."

A more rigorous empirical analysis of the diffusion of information in a single corporation found that social networks--the foundation of collaboration--were exceptionally powerful in moving news information up and down the hierarchy of a firm, while discussions of topics were expedited among peers at that same level in an organization. The overall economic benefit of collaboration Chapter 2 Learning Track 2 6 continued was signficicant: for every word seen by an employee in emails from others, \$70 of additional revenue was generated (Aral, Brynjolfsson, and Van Alstyne, 2007).

Figure 1-2 depicts the model which the researchers came up with to explain their findings.

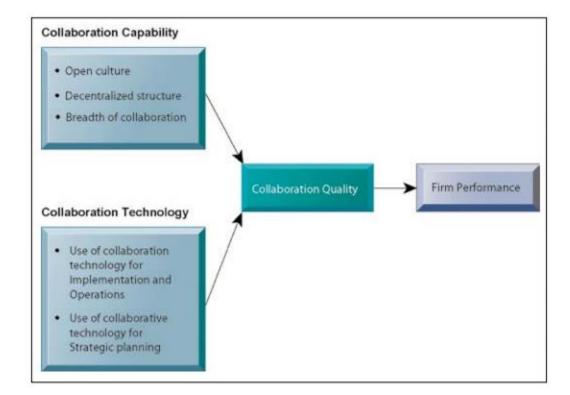


FIGURE 1-2 A Model of Collaboration

While there is scant empirical information to back up these statements, there is a wealth of anecdotal accounts which supports this general framework. While there are many presumed benefits to collaboration, as you can see in Figure 1-2, you really need the right business firm culture and the right decentralized structure before you can achieve meaningful collaboration. And you also need a health investment in collaborative technologies. We talk about these requirements below.

3.0 What Makes a Good Collaborator a Good Team Member?

So what does it take to be a good collaborator, a so-called "team player?" Think about some of the teams and groups you've been a member of, and consider the kinds of qualities of participants you respected. Table 1-2 provides a list of the eleven most important characteristics which are commonly found in the research literature on the qualities of good collaborators. This list is not exhaustive, but seeks to capture the central themes found in discussions of collaboration. These characteristics are in alphabetical order, not in order of importance.

TABLE 1-2 Eleven Important Individual Characteristics for Collaboration

Characteristic	Description
Adaptable	Ability to learn; creative; works with a variety of others; mitigates problems; finds solutions.
Believe in collaboration	See teammates as collaborators; focused on team not self; selfless
Committed	Passionately believes in the mission and success of the team; enthusiastic; persistent.
Communicative	Ability to write, present, support; candid; truthful; believable; relates to others' needs; empathic.
Competent	Ability to complete assigned tasks; detail oriented; consistent
Dependable	Responds consistently to team requirements; individual requests
Disciplined	Hitting schedules, targets; persistence; tenacious
Value adder	Enhancing the abilities of others; teaching; exemplary.
Mission conscious	Big picture orientation; putting details into perspective.
Solutions orientation	Ability to come up with alternative solutions; brainstorming; thinking afresh.
Mission conscious	Big picture orientation; putting details into perspective.
Trustworthy	Dependable; discrete; reliable; integrity.

The characteristics of a good collaborator may seem a little abstract, but think of a basketball, football, or soccer team that you might have played on. Are these the characteristics you would want of your teammates? Are these characteristics they would want of you? Teams in business are not that different from teams in sports.

But this list is an "ideal" list. It's not what really happens in the real world of business (or sports teams). In fact, it would be a rare individual indeed who ranked number 1 on all these characteristics. Most of us might be passable on some, pretty good on others, and a star on a few. However, a good team has diversity: one or more people who are excellent on a few different characteristics. On a team of ten people, you might have two or three excellent learners; two really good communicators; a couple of solutions thinkers; most are highly competent for the mission although in different specialties, and most are committed, dependable, and mission conscious. These last three qualities-committed, dependable, and mission or goal oriented-seem to be absolute minimal requirements for good team members.

The significance of this finding is that it takes a diverse group of people to make a really successful team. You need a lot of different talents to make a team work. Sometimes this is also called synergy: the strengths of each of us complementing the strengths of others on the team. There are also management consequences discussed later. With a diverse group of talented people, it's possible for the output of a team to be much larger than the output of all the individuals in a group. In this case, the whole is greater than the sum of the parts.

From a business point of view, the meaning is obvious. If you could get all your people working together effectively on teams, you would greatly increase the total output, and the productivity of the firm would grow, all without hiring new people. So teamwork becomes integral to having a successful firm.

4.0 Leadership: What Makes a Good Team Leader?

All teams require some kind of leadership, some person or persons who take charge, to get things done and accomplish the mission. When we think of sports teams, from basketball to hockey, they all have leaders, people who call the plays and issue directions. Leaders are very important for

collaboration on any team: they keep the team focused, support team work, and provide direction.

What makes for a good team leader? Thousands of books and an even larger number of articles have been written about leadership in business and elsewhere. Some "leaders" are appointed by their superiors (formal leaders like generals, and managers). Other leaders emerge spontaneously among a group of people working together (informal leaders). Quite often the formal leaders and the informal leaders are two different kinds of individuals: formal leaders are chosen by a hierarchy to serve the interests of those who appointed them, and informal leaders are chosen by the members of the team or business to represent the group or team to the larger world.

One way to think about both kinds of leaders is to consider that they generally are thought to have "more" of the key eleven characteristics that make for good team members, or more of the really important characteristics (Table 1-3).

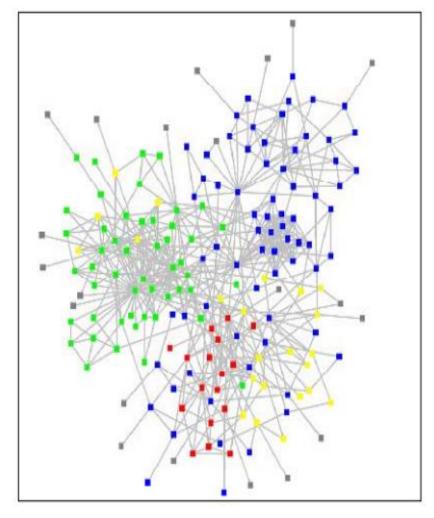
TABLE 1-3 Qualities of Leaders



For instance, if you ask real world managers how they choose leaders for the teams needed by their business, they will tend to emphasize competence (does this person have the skills to get the job done), and communications

capability (can this person talk and/or write, present, and listen). The other qualities are either assumed to be true, or as derived from superior competence and communications ability.

Studies of teams and other social networks show that leaders-both formal and informal-are at the center of communications for their team, and also highly connected to other social teams and networks. Leaders are connected people (Figure 1-3).



Following the missed deadline of an important project, a social network analysis company developed the above map of e-mail communications in the firm. One goal of the study was to identify the leaders in the company who potentially could get the project back on track, and another goal was discover how the various groups were linked together and the identity of these key people (socalled "bridges") across groups. There are five different colors of nodes (people): blue, grey, red, green, yellow) which represent members of five different groups or teams.

Examining Figure 1-3, you can see some interesting patterns. The groups blue, red, and green each have real "centers" where a small number of people receive and send a great deal of communications. These people are "leaders" of their teams because they are near the center of communication. You can also see some of these leaders are closely connected to other teams. These leaders are especially important as "bridges" across the organization: they communicate with a lot of people throughout the

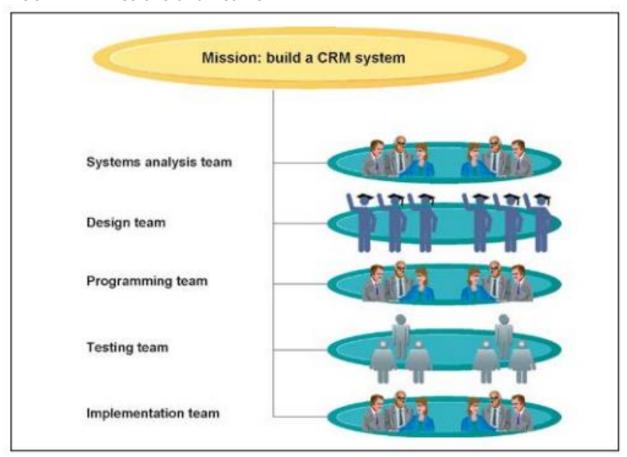
company as well as with their own members. These people tend to be the ones who can get additional resources for their teams. They are connected not just to people like themselves, but to others in different groups. Yellows, and grays, appear to talk more with other teams than they do among themselves. If you need leaders who can get the organization moving, these very highly connected individuals will be very influential.

5.0 How to Build and Manage a Collaborative Team

As a manager you will find that your success in large part will depend on the success of the teams you build and manage (Cohen and Prusak, 2001). Learning how to form successful teams in business is very important. Unfortunately, very little is written about how managers should form and manage teams. There are six steps to forming effective, collaborative, business teams.

1. Identify the mission and teams. As a manager you have some overarching objectives such as increasing sales to a new market, reducing costs in one part of the firm, or implementing a new information system. Your job is to break this larger mission down into sub-objectives that smaller teams can be responsible for. Your next job is for the life of the project to integrate (coordinate) the work of all the teams until you achieve the larger mission. For instance, if the mission is to build a new sales force customer relationship management system (CRM), then you will want at least five teams including a systems analysis team to identify the business information requirements; a design team to select from a variety of different technical solutions; a programming team that builds the system (or adapts a packaged system to your firm); a testing team that ensures the system works; and an implementation team that handles the roll out of the system (Figure 1-4). Even if the technology solution involves purchasing a license to use an online CRM system, you may still need a group of technically competent people on staff who can build customized adaptations (e.g. programmers).

FIGURE 1-4 Missions and Teams



- 2. Identify the skills required for each team. Once you have identified the sub-objectives, and the teams, you will need to identify the skills needed for each team. Not all teams have the same requirements. The systems analysis and implementation teams interface directly with users and other business units, generally at a fairly high, middle management level. For these interaction jobs, communications skills are the most important, along with competence. The design, programming, and testing teams require technical competence first, and then the ability to communicate. Some members could be foremost in competence, others will need to be foremost in communication skills. It's the mix that counts. Just because some people don't communicate well does not mean they will not be valuable members of the team, and well respected for the things they can do really well.
- 3. Choose people who have the right qualities. In all the teams you will need diversity of talent. In choosing people, you can rely on your own

- past experience with individuals, the recommendations of colleagues or other members of the team. You can choose a Team Leader and ask the Team Leader to choose people who will best help achieve their objectives. If you've been in the firm for a few years, you will know from your personal experience who to choose and why.
- 4. Oversight. Your job as a manager is to hold the team leaders and their teams accountable for meeting their objectives on schedule, and on budget. Call regular meetings with each team leader individually, and with all team leaders meeting as a group to review progress, identify blockages, and come up with solutions. Provide a support collaborative culture by rewarding team work, and providing incentives for teams to succeed. Incentives might something simple like a party celebrating a team success, or a reward ceremony. In order to build effective teams in a firm, you will need two more elements. You will need a supportive collaborative culture. And you will need a suite of information technology tools and systems to enable the teamwork and collaboration.

6.0 Building a Collaborative Organizational Culture

Collaboration won't take place spontaneously in a business firm, especially if there is no supportive culture. If people are afraid to speak up, there might not even be cooperation, let along working together collaboratively. Business firms, especially large firms, had in the past a reputation for being "command and control" organizations where the top leaders thought up all the really important matters, and then ordered lower level employees to execute senior management plans. There often was a senior management Planning Group that spent most of each year just planning what lower level people should do. The job of middle management supposedly was to pass messages back and forth, up and down the hierarchy.

To some extent this is a caricature of how firms used to behave in the 1950s to 1990s, but caricatures often have some truth. Command and control firms required lower level employees to carry out orders without asking too many questions, with no responsibility to improve processes, and with no rewards for teamwork or team performance. If your work group needed help from another work group, that was something for the bosses to figure out. You never communicated horizontally, always vertically, so management could control the process. As long employees showed up for work, and performed the job satisfactorily, that's all that was required. Together the expectations

of management and employees formed a culture, a set of assumptions about how things really are. It is surprising how many business firms still operate this way.

A collaborative business culture is very different. Senior managers are responsible for achieving results, but rely on teams of employees to achieve and implement the results. Teams have some decision making power. Policies, products, designs, processes, and systems are much more dependent on teams at all levels of the organization to devise, to create, and to build. Teams are rewarded for their performance, and individuals are rewarded for their performance in a team. You might be a brilliant star on a failed team and receive only half the rewards. The function of middle managers is to build the teams, coordinate their work, and monitor their performance. That's a far cry from the old style middle manager who was primarily a message processor.

In a collaborative culture, senior management establishes collaboration and teamwork as vital to the organization, and they actually implement collaboration for the senior ranks of the business as well.

You can tell if you work in a collaborative culture by answering six questions:

- 1. Is it easy to talk with just about anyone in your firm (ease of cooperation) regardless of their position?
- 2. Does your unit cooperate regularly with other units at work? (frequency of cooperation). You can substitute office, or department, depending on how your firm organizes itself.
- 3. Are people in other departments easy to access and communicate with?
- 4. Does your firm reward individuals only, or does it reward teams and individuals?
- 5. Does your firm extol the virtues of teamwork in public and private conversations?
- 6. Do your managers and executives work as a team?

7.0 Information Technology and Systems to Enable Collaboration and Team Work

Building a collaborative, team oriented culture will do little good if you don't have the information systems in place to enable that collaboration. This would be like having a house without the plumbing and electrical infrastructure.

Today with the Internet, it is possible for nearly the entire labor force of firms to be online and to collaborate with their respective fellow employees, customers, and suppliers. Research on the various ways in which information technology supports collaboration has been going on since the late 1980s when the Internet was in its infancy, and the first software tools began to appear that supported what was call "group work." These early tools were called "groupware," and the field of study was called "computer supported cooperative work" (CSCW). Groupware included capabilities for sharing calendars, collective writing, e-mail, shared database access, and electronic meetings with each participant able to see and display information to others, and other activities. Today, groupware is one of many software tools and applications for supporting and enhancing collaboration, many of which are Internet-enabled.

Currently there are literally hundreds of tools designed to deal with the fact that, in order to succeed in our jobs, we are all much more dependent on one another, our fellow employees, customers, suppliers and managers. For instance, one company enlisted the talents of over 100 groupware experts at a conference and produced a map listing 150 free (or nearly free) online collaborative tools in fifteen categories (Table 1-4 lists the categories or types of collaboration software identified by experts in the field).

TABLE 1-4 Fifteen Categories of Collaborative Software Tools.

Collaborative writing
Collaborative reviewing
Event scheduling
Instant messaging
VoIP audio conferencing
Screen sharing
Video conferencing
White boarding
Web presenting
Work grouping
Document sharing (including
wikis)
File shairng
Mind mapping
Large audience Webinars
Co-browsing

The entire map of over 150 collaboration tools is too large to reproduce here. Some of the high-end tools like IBM's Lotus Notes are expensive, but powerful enough for global firms. Others are available online for free (often with premium versions for a modest fee) and are suitable for small businesses.

For example, one of the most widely used "free" online services is Google Apps/Google Sites. Google Sites is a tool that allows users to quickly and easily design group-editable Web sites. Google Sites is one part of the larger Google Apps suite of tools. Google Sites users can put up Web sites in minutes and can, without any advanced technical skills, post a variety of files including calendars, text, spreadsheets, and videos for private, group, or public viewing and editing.

Google Apps include the typical desktop productivity software tools (word processing, spreadsheets, presentation, contact management and mail). Table 1-5 describes some of the capabilities of Google Apps and Google Sites.

TABLE 1-5 Google Apps / Google Sites Features

Google apps/sites	Description
Google Calendar	Private and shared calendars; multiple calendars (family schedules, business schedules).
Gmail	Google's free online email service is used for e-mail messaging and IM.
Google Docs and Spreadsheets	Word/Excel replacements; simultaneous online editing, sharing, publishing
E-mail, online storage, chat, programming	Premium addition adds make this a full featured collaborative tool
Google Sites	Team collaboration sites for sharing of documents, schedules, calendars, and search documents.
Google Video	Firm wide video sharing and commenting capability

Socialtext, a widely used enterprise collaboration environmennt, takes adifferent approach from Google. Instead of shared applications, Socialtext provides a set of capabilities that support social networking. Socialtext's flagship product, Socialtext Workspace, is the first enterprise wiki and the foundation of the connected collaboration platform. Socialtext People enables enterprise social networking. Socialtext Dashboard provides personalized and customizable widget-based interface for people and teams to manage attention. Socialtext wiki provides enables employees to find expertise within the firm. SocialCalc is the social spreadsheet for distributed teams. There are many other online collaboration tools (Table 1-6), among

them is Microsoft's SharePoint, one of the most widely adopted collaboration environment for small and medium businesses.

TABLE 1-6 Other Popular Online Collaboration Tools

Tool	Description
Socialtext	A server-based collaboration environment which provides social networking, Twitter-like micro- blogging, wiki workspaces, with integrated weblogs, distributed spreadsheets, and a personal home page for every user. Connectors to Microsoft SharePoint and Lotus Connections are also available.
Microsoft SharePoint	A browser-based collaboration and a document-management platform, combined with a powerful search engine. These can be used to host web sites that access shared workspaces and documents, as well as specialized applications like wikis and blogs from a browser. Installed on corporate servers, not software as service.
Zoho Notebook and Project	Collecting and collaborating on text, line drawings, images, Web pages, video, RSS feeds. Project management (task management, work flow, reports, time tracking, forums, and file sharing). Free or \$5/project/month for premium service.
Bluetie	Online collaboration with email, scheduling, to-do lists, contact management, file sharing. Free for less than 20 users, \$4.99 user/month after that.
Basecamp	Share to-do lists, files, message boards, milestone tracking. Free for a single project, \$12/month for 3 projects with 200 megabytes of storage
OneHub	Share documents, calendars, Web bookmarks; email integration and IM. Manage hub resources; bulletin board.
WorkZone	Collaboration with file sharing; project management; customization; security.

Several of these online services have excellent video introductions to their products. These videos can give you a keen sense of what is available on the Internet for a very low cost or no cost. For a tour of OneHub, point your browser at: http://onehub.com/tour. For Google Sites go to http://www.youtube.com/watch?v=X KnC2EIS5w.

For small and medium size firms that use Microsoft server products and local area networks, Microsoft SharePoint is the most widely adopted collaboration system. Microsoft's strategy is to take advantage of the fact that it owns the desktop through its Microsoft Office and Windows products. For Microsoft, the path towards enterprise wide collaboration starts with the Office desktop and Microsoft network servers. SharePoint software makes it possible for employees to share their Office documents and collaborate on projects using Office documents as the foundation.

Microsoft SharePoint is a collection of products and technologies that provide an enterprise-level environment for Web-based collaboration. SharePoint can be used to host Web sites that organize and store information in one central location to enable teams to coordinate work activities, collaborate on and publish documents, maintain task lists, implement workflows, and share information via wikis and blogs. Sharepoint has a Web-based interface and close integration with everyday tools such as Microsoft Office desktop

software products. Site content is accessible from both a Web browser and client-supported Web services. Because SharePoint stores and organizes information in one place, users can find relevant information quickly and efficiently while working together closely on tasks, projects, and documents.

Here is a list of SharePoint's major capabilities:

- Provides a single workspace for teams to coordinate schedules, organize documents, and participate in discussions, within the organization or over an extranet.
- Facilitates creation and management of documents with the ability to control versions, view past revisions, and enforce document-specific security and maintain document libraries.
- Provides announcements, alerts, and discussion boards to inform users when actions are required or changes are made to existing documentation or information.
- Supports personalized content and both personal and public views of documents and applications
- Provides templates for blogs and wikis to help teams share information and brainstorm.
- Provides tools to manage document libraries, lists, calendars, tasks, and discussion boards offline, and to synchronize changes when reconnected to the network.
- Provides enterprise search tools for locating people, expertise, and content.

For very large firms (Fortune 1000 and Russell 2000 firms) the most widely used collaboration tool is IBM's Lotus Notes. IBM's strategy is to take advantage of the fact that it dominates the Fortune 1000 data processing and networking environment. IBM's approach to collaboration is therefore to start from the top down through implementation of an enterprise-wide Lotus server solution by the central IS Department. In large multinational corporations with tens of thousands of employees this may be the only enterprise-wide solution and is beyond the capabilities of Microsoft local area networks.

Lotus Notes does indeed work with Microsoft Office documents, but has its own proprietary software for other tasks including word processing, spreadsheets, and presentation software. Lotus Notes is a client-server, collaborative application developed and sold by IBM Software Group. IBM defines the software as an "integrated desktop client option for accessing business e-mail, calendars and applications on an IBM Lotus Domino server." The Notes client is mainly used as an email client, but also acts as an instant

messaging client (for Lotus Sametime), browser, notebook, and calendar/resource reservation client, as well as a platform for interacting with collaborative applications. Today Notes also provides blogs, wikis, RSS aggregators, CRM and Help Desk systems.

Thousands of employees at hundreds of large firms use IBM Lotus Notes as their primary collaboration and team work tools. Firmwide installations of Lotus Notes can cost millions of dollars a year for a large Fortune 1000 firm, whereas Google Apps/Google Sites comes in a limited free version or a more sophisticated premium version for \$50 per user/per year. A client-server product like Lotus Notes inherently involves the central IS department, and it is a major implementation effort. Online software services are therefore attractive because they do not require any installation on corporate servers, or even the IS Department to be involved. Nevertheless, existing online tools like the Google collaboration services are not as powerful as those found in Lotus Notes, and it is unclear they could scale to the size of a global firm (at least for now).

Very large firms adopt IBM Lotus Notes because of the promised higher level of security, and the sense that the firm retains control over sensitive information. Large firms in general do not feel secure using popular software-as-a-service (SaaS) applications for "strategic" applications because of the implicit security concerns, and the dependency on external servers controlled by, and subject to the fate of, other firms. Most experts agree, however, that these concerns perhaps will lessen as experience with online tools grows, and the sophistication of online software service suppliers increases to protect security and reduce vulnerability.

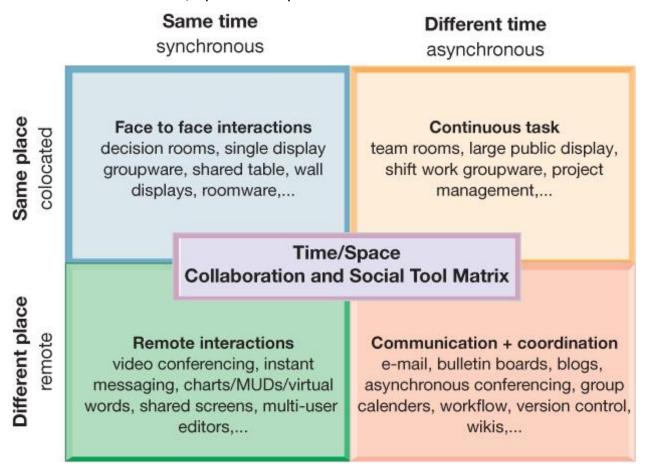
MAKING SENSE OUT OF COLLABORATION TOOLS

We have avoided trying to formally define contemporary collaboration and team work software tools. Instead we have gathered lists of many popular software tools (both online as a service and as installed client-server applications), and described their capabilities. We have pointed at examples. While these lists help you understand the broad range of tools that are available in the marketplace, how do you choose the right tool for your firm? Are these software tools just solutions looking for a problem to solve? What problems do they solve?

To answer these questions you need a framework for understanding just what problems these tools help solve. One framework that has been helpful for us to talk about collaboration tools is the time/ space groupware matrix

developed in the early 1990s by a number of collaborative work scholars (Figure 1-5).

FIGURE 1-5 The Time/Space Groupware Matrix



The Time/Space matrix focuses on two dimensions of the collaboration problem: time and space. For instance, you need to collaborate with people in different time zones and you cannot all meet at the same time. Midnight in New York is Noon in Bombay, so this makes it difficult to have a video conference (the people in New York are too tired). So time is a problem inhibiting collaboration on a global scale. Place (location) is also a problem that inhibits collaboration in large global or even national and regional firms. Getting people together for a physical meeting is made difficult by the physical dispersion of distributed firms (firms with more than one location), the cost of travel, and the time limitations of managers. One way to think about software collaboration tools is to see them as ways of overcoming the limitations of time and space. Table 1-7 above shows four kinds of time/space scenarios (the intersections of the two dimensions in Figure 1-5).

TABLE 1-7 Collaboration Challenges and Generic Solutions

Scenario	Solution Types
Same time/same place	Face to face meetings; decision rooms; whiteboards; telepresence
Same time/different place	Remote interactions; video conferencing; IM and Twitter; telepresence \$5/project/month for premium service.
Different time/same place	Continuous tasks, digital team rooms; project management; asynchronous communication
Different time/different place	Asynchronous communication and coordination; workflow; project management tools; blogs; wikis

You can use this classification scheme to categorize the different collaboration and team work software applications.

8.0 Choosing Collaboration Tools: Management To-Do List

Now let's apply these frameworks. You can use these classification tools to start thinking about how to choose collaboration and team work tools for your firm. As a manager, you will want to purchase and use the tools that solve the issues your firm is facing. Here's a To-Do list to get started:

- 1. What are the collaboration challenges facing the firm in terms of time and space? Locate your firm in the Time/Space matrix. Your firm can occupy more than one cell in the matrix. Different collaboration tools will be needed for each situation.
- 2. Within each cell of the matrix where your firm faces challenges, exactly what kinds of solutions are available? Make a list of vendor products.
- 3. Analyze each of the products in terms of their cost and benefits to your firm. Be sure to include the costs of training in your cost estimates, and the costs of involving the Information Systems Department if needed.
- 4. Identify the risks to security and vulnerability involved with each of the products. Is your firm willing to put proprietary information into the hands of external service providers over the Internet? Is your firm willing to risk its important operations to systems controlled by other firms? What are the financial risks facing your vendors? Will they be here in three to five years? What would be the cost of making a switch to another vendor in the event the vendor firm fails?
- 5. Seek out the help of potential users to identify implementation and training issues. Some of these tools are easier to use than others;

6. Make your selection of candidate tools and invite the vendors to make presentations.

If you follow these six steps, you should be led to investing in the correct software for your firm at a price you can afford, and within your risk tolerance.

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