We have taken a broad view of business processes, considering, among other things, strategies, process architectures, the management of processes, the redesign and improvement of processes, and the automation of processes. Some groups like the Workflow Management Coalition (WFMC) have published formal glossaries. Other communities of practice, like Six Sigma, use terms in specialized ways. Several business process methodologies have been described the use terms in specific ways. Formal business process languages, like BPML, have semantic definitions that are enforced by the language. Unfortunately, many of these different sources use terms in slightly different ways. We have tried, in this glossary, to use terms in the most generic manner. In cases where different significant groups or key sources use the terms in a different way that we do, we have indicated that fact.

**Activity.** Processes can be sub-divided into smaller and smaller units or sub-processes. We define activity as the smallest sub-process that a given business process team decides to illustrate on their process diagrams. (We could reverse that and say that a process is made up of one or more activities.) Activities can consist of a single step, like approving a purchase request or placing a cap on a bottle passing on a production line. Other activities involve multiple steps, like filling out a form, or assembling a chair. There is no consistency about how the various methodologies use terms like task and step, but, increasingly, the term activity is reserved for the smallest unit of analysis. A given activity could be performed by one or more employees, by a software system, or by some combination. In the UML notation, both processes and activities are represented by rectangles with rounded corners. (See Business Process Hierarchy.) We sometimes indicate if activities are manual (normal line around rectangle), systems (bold line around rectangle) or mixed activities that involve both manual activities an systems (dashed line around activity rectangle).

**Atomic Activity.** An activity that can not be subdivided. An activity that consists of a single step or action.

**Activity Analysis Worksheet.** A grid or matrix that one can use to analyze the relationships between the steps in the activity, listed on the vertical axis and who performs the activity, who is responsible for the performance of the activity, decision rules used and opportunities for improvement.

**Activity-Based Costing (ABC).** A process-oriented approach to accounting that starts by determining how much it costs to perform each activity and then adds up activity costs to determine process costs, an so forth. The idea is that you add together all the costs in a complete value chain, subtract the costs from the income for the product or service produced by the value chain, and determine the profit on the process.

**Activity Cost Worksheet.** A grid or matrix that one can use to analyze the various costs of a set of activities. Activities are listed on the vertical axis and data about outputs, costs, times and problems are described for each activity.

**Administrative Workflow Systems.** Workflow systems that keep track of what individuals are doing and assign new tasks according to some set of rules. (Contrast with Ad Hoc and Transaction or Production Workflow Systems.)
Ad Hoc Workflow Systems. Workflow systems that wait on users to indicate what should happen next. An insurance system might pull up documents for an underwriter only on request. (Contrast with Administrative and Transaction or Production Workflow Systems.)

ARIS. A business process modeling tool and a methodology for business process redesign. Created by A.W. Scheer, sold by IDS Scheer, and used extensively to link and tailor SAP applications. (http://www.ids-scheer.com/)

Asynchronous Process. In an asynchronous process, one activity sends a message to another, but does not wait until it gets a response. A phone call to another person is a synchronous process – it can’t go forward if the person you want to talk to doesn’t answer the phone. Leaving a message on an answering machine turns it into an asynchronous process. You leave your message and go on with your business, figuring the person will respond when they get the message.

Balanced Scorecard. A movement, method and technique for aligning measures from an organization’s strategic goals to specific process measures. It stresses measuring a variety of things to obtain a good overview of what’s actually happening. A complementary approach to what we recommend. Usually associated with Robert Kaplan and David Norton.

Batch Processing. In either human or computer processes, a step where lots of items are accumulated and then processed together. In contrast to continuous processing where items are processes as soon as possible.

Benchmarks. As used in business process redesign, data about process measures obtained for specific types of processes. Many companies seek benchmark data on processes they seek to redesign in order to determine how well other companies manage the process.

BizTalk. Standards, protocols, tools and a program of Microsoft Corporation to facilitate the exchange of information between companies and their business processes. (See BPEL4WS.) (www.microsoft.com/biztalk)

BPEL or BPEL4WS (Business Process Execution Language for Web Services). In the first draft of this glossary, we described two alternative XML business process languages, WSFL from IBM and XLANG from Microsoft. As the glossary is published, IBM, Microsoft and BEA have announced that they will be combining WSFL and XLANG to create a common XML business process language that will support both public (protocol) and private (execution) language. (www.ibm.com/bpel4ws)

BPMI (Business Process Management Initiative). Consortium of business process modeling tools vendors and user companies that are working together to develop an XML-based business process language (BPMI), a notation for the language (BPMN) and a query language (BPQL). The idea is that companies would model their automated processes in BPMI and then be able to monitor and change the processes as needed. BPML would primarily be used by those who want to create collaborative Internet or Web Service systems. (www.bpmi.org)

BPSS (Business Process Specification Schema). An ebXML specification that defines public processes for exchanging documents about buying and selling products over the Internet by means of a choreographed transactions. (www.ebxml.org)

Business Intelligence (BI). Software systems and tools that seek to extract useful patterns or conclusions from masses of data.

Business Process. At its most generic, any set of activities performed by a business that is initiated by an event, transforms information, materials or business commitments, and produces an output. Value chains and large-scale business processes produce outputs that are valued by customers. Other processes generate outputs that are valued by other processes.
**Business Process Automation.** Refers to the use of computer systems and software to automate a process. Processes can be completely automated, so no human intervention is required, or semi-automated, when some human intervention is required to make decisions or handle exceptions. Techniques used for BP Automation, include workflow, BP-XML languages, ERP, and software development and EAI.

**Business Process Change Cycle.** A general description of the lifecycle of business processes. The environments in which companies operate change and companies respond by changing their strategies and goals. Those changes drive changes in processes. In the most extreme case, a process must be retired and replaced by a new process. In most cases existing processes are redesigned or gradually improved to conform with new corporate strategies and goals. Environmental changes keep occurring and this cycle keeps going leading to a continuous business process redesign and improvement effort.

**Business Process Design or Redesign.** Business Process Redesign focuses on making major changes in an existing process, or creating a new process. Depending on the size of the process, this can be a major undertaking, is done infrequently, and, once done, should be followed by continuous business process improvement. Compared with BPR, as defined in the early Nineties, Business Process Redesign usually focuses on smaller scale processes and aims for more modest improvements. Redesign focuses on major improvements in existing processes. Design focuses on creating entirely new processes.

**Business Process Hierarchy.** Everyone has a slightly different way of ordering the various levels of processes. The one we use is illustrated below.

![Business Process Hierarchy Diagram]

A value chain usually describes a major line of business. An organization has from one to a few value chains.

A value chain is usually decomposed into from 3 to 7 business processes.

Depending on the nature of the business process, it can include a few to dozens of processes.

Processes usually contain from 3 to 7 sub-processes.

Depending on the nature of the sub-process, it many contain sub-sub-processes and even sub-sub-sub processes to any arbitrary depth. (Sometimes called tasks to simplify things.)

Activities are the lowest level process we show on our diagrams. They are, in essence, the smallest sub-process we want to describe.

**Business Process Improvement (BPI)** Business process improvement focuses on incrementally improving existing processes. There are many approaches, including the currently popular Six Sigma approach. BPI is usually narrowly focused and repeated over and over again during the life of each process.


**Business Process Management.** In this book, we use business process management (lower case) to refer to aligning processes with the organization’s strategic goals, designing and implementing process architectures, establishing process measurement systems that align with organizational goals, and educating and organizing managers so that they will manage processes effectively. We occasionally use Business
Process Management or BPM to refer to various automation efforts, including workflow systems, XML Business Process languages and packaged ERP systems. In this case the management emphasizes the ability of workflow engines to control process flows, automatically measure processes, and to change process flows from a computer terminal. Business Process Management is a tricky term in the sense that two different groups within the business process community tend to use it in different ways.

**Business Process Modeling Tool.** A software tool that lets managers or analysts create business process diagrams. Simple tools only support diagramming. Professional Business Process Modeling Tools store each model element in a database so that they can be reused on other diagrams or updated. Many Professional tools support simulation or code generation.

**Business Process Outsourcing.** Many companies outsource business processes to other companies to manage and execute. Few companies outsource core business processes that they depend on for their unique position in the market. They fear that the outsourcer won’t be able to improve the process quickly enough to respond to market changes. Some companies are now offering to outsource such processes, arguing that they have an approach that will let the owner make changes in the process as needed.

**Business Process Reengineering (BPR).** A term coined by Hammer and Davenport in the early Nineties. As originally defined in their books it emphasized starting from a blank sheet and completely reconceptualizing major business processes and using information technology in order to obtain breakthrough improvements in performance. The term became unpopular in the late Nineties and many business people associate BPR with failures. Those who still use the term have redefined it to mean what we mean by Business Process Redesign.

**Business Process Tools.** Used generically this can refer to worksheets, rules-of-thumb and software tools used to help in business process change. With reference to software, it includes a wide range of software tools that help with every aspect of process change discussed in this book.

**Business Rules.** A statement describing a business policy or decision procedure. Some programming languages run business rules together into very complex algorithms. In business process analysis, each rule is usually stated independently, in the general format: If A and B, Then C. Workflow tools and detailed process diagrams both depend on business rules to specify how decisions are made. We generally associate business rules with activities. A decision diamond is adequate to show what happens if a loan is accepted or rejected, but dozens or even hundreds of business rules may need to be defined to clarify what a loan should be accepted or rejected. Training programs, job aids, software systems and knowledge management systems aim to document business rules either to automate the decision process or to and make the rules available to other decision makers.

**Capability Maturity Model (CMM).** A model developed by the Software Engineering Institute (SEI) of Carnegie Mellon University that describes how organizations develop software. The model identifies five levels or steps organizations go through as they become more sophisticated in their use of process. Level 1 organizations aren’t effective in using processes. Level 5 organizations are mature in their use of process and routinely manage and improve processes. Most organizations fall between Level 2 and 3. We argue that the same general concepts that apply to software organizations apply to any organization that attempts to organize around business processes. (www.sei.cmu.edu/cmm)

**CASE (Computer Aided Software Engineering).** Software methods and tools designed to generate code from models. Those involved in the CASE movement have always sought to make software generation more systematic and predictable. Software developers often use CASE tools to model business processes.

**Cause-Effect Diagram.** A popular diagram used to analyze the causes of problems which provides an overview of all the possible causes. One starts at the right and lists the problem, and then extends a straight line to the left. From the line, one draws tangential lines and lists causes of the problems at the end of those lines. Lines can be drawn to the subsidiary lines as more discrete causes are considered, and so forth.
CIM (Computer Integrated Manufacturing). Movement, techniques and tools for integrating manufacturing processes with computers and software.

Class Diagram. A UML diagram used for the design of object-oriented software systems, and, more generally, to describe any set of logical classes and their relations. The organization diagram that we use in this book could be said to be a loosely structured class diagram. Software developers sometimes speak of a high-level class diagram as a business model. (See Object-Oriented.)

Competitive Advantage. Occurs when one company can make more profits selling its products or services than its competitors. It occurs because a company can charge a premium because their product or service is more valuable, or because they can sell their product for less than their competitors because they are a more efficient producer. Rational strategists always seek to establish a long term competitive advantage for their company. Many managers associate competitive advantage with the description provided in Michael Porter’s *Competitive Advantage* (1985).

Component. Used generically, this can refer to any entity or part. In software, today, is usually refers to a software module, organized via object-oriented techniques. (See object-oriented.)

Core Business Process. Core processes are the processes that rely on the unique knowledge and skills of the owner and that contribute to the owner’s competitive advantage. Contrast with subsidiary business processes.

Cost Leadership. A competitive strategy that emphasizes offering the product or service at the cheapest price. This can be done by creating the most efficient manufacturing price, by economies of scale, or by control of suppliers and channels.

COULD Process. Also sometimes Can-Be Process. Description of one of two or more alternative redesigns that are being considered.

CRM (Customer Resource Management). A vague term describing any of a number of packaged or tailored applications or tools designed to help with sales, tracking customers, or managing information gained from customer interactions.

CTO Tree (Critical-To-Quality). A tree that lists the most important outcome, goal or measure for a process improvement effort on the left and then sub-divides it to identify more specific considerations that contribute to the outcome.

Customer-Oriented e-Business Applications. A generic way of talking about business processes and Internet applications that use Web sites or portal to allow customers to access the company over the Internet for information or commerce. (Compare with Supplier-Oriented and Internal-Oriented Applications.)

Decision Point or Diamond. A diamond or hexagonal figure used on process diagrams to show when a decision leads to a branching in the flow of information, control or materials. Technically, all decisions take place within activities and arrows only show the flow between activities. As a convenience, however, if the decisions lead to branching, we often represent them on the process diagram and label them to indicate why a flow would go to one subsequent activity rather than another.

Decision Support Systems. Software systems designed to pull together information for managers to facilitate decisions. Increasingly, applications are not simply designed to automate a process, but to provide managers with ongoing information about the process so they can make more timely and accurate decisions.

Diagram. An informal, graphical picture of some set of entities and some relations between them. Contrast with model.
Differentiation. A competitive strategy that allows a company to sell its products for a premium price. This emphasizes creating superior products, products with unique or more desirable features or design.

DMAIC (Define, Measure, Analyze, Improve, Control). An acronym used by Six Sigma practitioners to remind them of the steps in a Six Sigma improvement project.

Dot.com Company. A generic, and increasingly derisive term, for any company that was created to take advantage of the Internet and its technologies. Most dot.com companies were founded in the late Nineties and most failed when the Federal Reserve restricted money in 2000. Most dot.com companies were based on inadequate business models. Some dot.com companies, like www.amazon.com and www.ebay.com, have proved successful. While the recession of 2000-2002 eliminated most of the “pure play” dot.com companies, it didn’t dampen the interest of conventional companies that are currently seeking to integrate Internet techniques with their existing business models to gain new customers or increased efficiencies.

Downsizing. Reducing the number of employees at a company. Occasionally necessary. In the mid-Nineties, it was too often done in conjunction with BPR projects and many employees now associate BPR with downsizing.

E-Business. A vague term that embraces all of the changes undertaken at companies that seek to take advantage of the Internet, the Web, email and a host of associated Internet technologies and protocols. At the moment companies are transitioning to e-business. By the end of this decade all companies will be more or less e-businesses.

ebXML (electronic business XML). A consortium set up by two other organizations, a United Nations (UN/CEFACT) committee and OASIS, an Internet consortium. ebXML is charged with creating an XML architecture that standardizes all of the services companies will need to build Web Services. One sub-committee of ebXML is focused on business process communication, and has proposed BPSS. For more information, check www.ebxml.org.

eTOM (electronic TeleManagement framework). The TeleManagement Forum, a consortium of telecommunications companies, has worked to create a standard framework, called eTOM, that describes the process architecture of an ideal telecom company. In the nature of the Telecom industry, companies must work very closely together. This framework would allow them to share common process names and interfaces.

EAI (Enterprise Application Integration). As companies seek to link their existing software applications with each other and with portals, the ability to get their applications to exchange data has become critical. EAI is usually close to the top of any CIO’s list of concerns. There are different approaches to EAI. Some rely on linking specific applications with tailored code, but most rely on generic solutions, typically called middleware. XML, combined with SOAP and UDDI is a kind of middleware.

EDI (Electronic Data Interchange). A pre-Internet system for exchanging data between organizations. EDI requires that organizations standardize terms and invest heavily in computers and the maintenance of the EDI software. Although some companies use EDI systems and will only phase them out slowly, EDI is being replaced by less expensive Internet systems and protocols like XML.

Email. The use of Internet protocols to pass text messages from one email address (URL) to another. Facilitates communication between employees and between employees and customers or suppliers. Not always considered in redesigning processes, but email is gradually integrating companies in useful ways not previously achieved or fully understood.

eMarketplace. An Internet system maintained by a company or a consortium that allows individuals or companies to offer products and services or make bids to buy products or services. NASDAQ is an eMarketplace for stock. Covisint is the consortium and the name of the automotive eMarketplace.
**Enterprise Alignment (Enterprise Alignment Cycle).** Enterprise Alignment refers to the ongoing process every company goes through to keep the elements of the organization aligned with the organization’s strategy and goals. Vertical alignment is used to assure that process and activity measures and the measures used to evaluate managerial performance are all aligned with corporate goals. Horizontal alignment, or process improvement, focuses in assuring that all of the activities that take place in a process are aligned with the goals of the process. In most organizations, change is constant and thus, the organization is always working to realign, vertically and horizontally, to keep everything in sync with the changing strategy and aims of the organization.

**Enterprise Application.** As used by software designers, an enterprise system is a major software application that is designed to be used or accessed by many different departments and is usually maintained at the corporate level. Payroll is a good example of an enterprise system.

**ERP (Enterprise Resource Planning).** See Packaged Applications.

**ERP-Driven Design.** When a company elects to use an ERP application, it is getting an application that already makes assumptions about the inputs and outputs it will receive. To insert such an application into an existing business process, the company must first determine where it will fit and what it will replace and redo the existing process so that it interfaces with the new ERP application. In effect, this is the reverse of what happens when a company redesigns a process and then asks an IT group to create an application that will take inputs generated by the process and make designated outputs.

**Feedback.** Refers to passing information from one person to another person that performed some task earlier, or from one process or system or another process or system that has already occurred. When sales reports customer complaints about manufacturing defects to the manufacturing department, it is providing feedback to manufacturing. When a sales manager accompanies a new salesperson on a call and then critiques the new salesperson’s performance after the call, he or she is providing feedback. A lack of adequate or timely feedback is a major cause of process problems.

**Fishbone Diagram.** See Cause-Effect Diagram.

**Fit.** See Process Fit

**Function-Process Matrix.** A diagram that lists functions or departments on the horizontal axis and value chains or business processes on the horizontal axis and shows which functions are involved in which processes.

**Functional Measures.** Measures assigned to departments or functional groups that focus on goals related to departmental efficiency rather than process efficiency. A sales department might measure cost of sales or the number of calls a salesperson made in a given period of time. (Compare to Process Measures.)

**Gaps and Disconnects Pattern.** A process redesign pattern that focuses on checking the handoffs between departments and functional groups in order to assure that flows across departmental lines are smooth and effective.

**Goals, Processes and Projects Worksheet.** A grid or matrix that one can use to analyze the relationships between goals, listed on the vertical axis and processes, described on the horizontal axis.

**Goal Hierarchy.** A hierarchical tree that shows how organizational goals, pictured at the top or on the left are subdivided into more specific goals for value chains, processes, sub-processes and ultimately to activity goals. For every goal there are measures – specific tests of whether the goal is achieved or not. Thus, there is also a measures hierarchy that shadows the goal hierarchy.

**Horizontal Alignment.** Focuses on business processes. The alignment of activities and flows of information and materials into processes that encompass everything that happens from when an order arrives until after the customer receives the product or service. (Contrast to Vertical Alignment)
**Human Performance Analysis Worksheet.** A grid or matrix that one can use to analyze the human performance requirements of a process or activity. Tasks, activities or steps are listed on the vertical axis of the worksheet and measures and the elements of the human performance model are listed on the horizontal axis, making it possible to identify measures and potential performance problems for each activity.

**Human Performance Model.** An analysis of what is involved in human performance. There are different versions of this model, but all emphasize: inputs, outputs, the consequences of performance, feedback and the skills and knowledge employed by the performer. Sometimes referred to as HPT or Human Performance Technology. These models and an analysis of the variables is associated with the International Society for Performance Improvement (ISPI) and with Thomas Gilbert and Geary Rummler. For more information, check [www.ispi.org](http://www.ispi.org)

**Human Performance Analyst.** Someone who uses Human Performance Technology to help with job analysis and design or to advise on how job performance can be improved.

**Hypercompetition.** Occurs when all companies focus on being the low cost producer. Each company tries to improve their processes by adopting the best practices of their competitors. In effect each company works harder and faster to be more efficient and their profit margins keep dropping. The alternative is for some companies to adopt other strategies. Associated with Michael Porter.

**IDEF.** A software methodology and diagramming system developed by the US Department of Defense and widely used by CASE vendors in the late Eighties. Some IDEF diagrams are still used for DOD projects today.

**Instance.** See Process Instance.

**Internal-Oriented e-Business Applications.** A generic way of talking about business processes and Internet applications that use the Internet to allow companies to link with their employees or to link their internal applications to share information or data. (Compare with Customer-Oriented and Internal-Oriented Applications.)

**Internet.** A set of public communication and network protocols that can pass computer data over telephone lines without interfering with normal phone calls.

**Information Technology (IT).** Sometimes called Information Systems (IS) or Data Processing. Generic name for department or function that analyzes, creates, maintains and supports applications and databases used by an organization.

**IS process diagram.** Also commonly AS-IS process diagram. A description or diagram of an existing process before changes are made.

**ISO 9000 (International Standards Organization).** An international standard for how organizations should document their processes. In effect, an early effort to encourage organizations to create a well-defined process architecture. In practice, its too often simply an exercise in creating documentation to satisfy a requirement for getting on a bidding list.

**ISPI (International Society for Performance Improvement).** A professional society made up of individuals who are interested in the systematic analysis of human performance problems and techniques for training, changing or managing human performance. For more information, check [www.ispi.org](http://www.ispi.org)

**Job Description.** A document defining the job title and responsibilities of a specific job. It may include information on the specific tasks or activities to be performed and measures by which successful performance will be judged. May include salary and bonus information. Well organized companies create job descriptions and then hire people to do what is described by the job description. In effect it’s a contract
to which both the company and employee agree. More than one specific employee can be hired to undertake the same job. You might have a description of a sales position and hire dozens or hundred of people to function in that position. A job is not equal to a task or activity. In some cases a job and an activity are equivalent. You describe the activity and hire one or more people to do just that. In most cases, a person will be hired to perform multiple tasks or activities and may only perform specific steps within any given activity. Sometimes called a Job Model.

**Junction, Junction Bar.** On a process diagram a way of showing that one flow (output) is divided and sent into multiple activities, or to show that multiple flows must all be complete before the activity immediately after the bar can occur.

**Kano Analysis.** An approach to defining customer satisfaction that divides outputs, service or product features of outputs into (1) basic requirements (the minimum a customer expects), (2) satisfiers (additional outputs or features that please customers) and (3) delighters (outputs or features that the customer didn’t expect that really please customers. Associated with Noriaki Kano, a Japanese quality control expert.

**Knowledge.** Information defines facts (A is B). Knowledge defines what one should do if certain facts apply. Thus, if A is B, then do C. There are many different ways knowledge can be encoded, but policies and business rules are popular formats.

**Knowledge Management.** Focuses on defining the knowledge employees or systems use to perform activities and saving it in some format so that others can access it. Knowledge management systems can be organized along different lines. We recommend organizing it with processes and activities.

**Lean Manufacturing.** An approach to designing and managing production processes that emphasizes minimal inventory and just-in-time delivery, among other things, to improve the efficiency of a manufacturing process.

**Levels of Analysis.** For purposes of analysis, we divide a company into three levels. (1) the Organization and its environment, (2) the Value chains, processes and sub-processes, and (3) Activities, including the people and systems that actually perform the activities and the costs and times associated with the performance of each activity.

**Measure.** A specific test to determine if a goal is being met or not. High level measures tend to focus on profits, revenues, product output figures and growth. As measures are subdivided they tend to focus on whether specific sub-processes are achieving their output goals. Very specific measures may check to determine if the steps within an activity are being performed correctly or if decisions are being made according to rules and policies.

**Measures Hierarchy.** A hierarchical tree that shows how organizational measures, pictured at the top or on the left are subdivided into more specific measures for value chains, processes, sub-processes and ultimately to activity goals. For every goal there are measures – specific tests of whether the goal is achieved or not. Thus, there is also a goal hierarchy that mirrors the goal hierarchy.

**Measurement Scheduling Worksheet.** A worksheet that looks like a process diagram. Functional units or managers are listed on the vertical axis. Years, Quarters, Months, Weeks and Days are listed along the horizontal axis. Rectangles are drawn to show which managers take part in which meetings at what points in time. Sometimes a bit of a process map is pictured on the right side of the worksheet to emphasize the process being measured by those involved in this plan. We don’t expect most companies to use a worksheet like this, but it’s important that measures be evaluated frequently and that managers responsible for different functions meet to assure that the handoffs between processes are satisfactory.

**Middleware.** Software that allows two modules or applications to exchange data. See EAI.

**Model.** A formal set of relationships that can be manipulated to test assumptions. A simulation that tests the number of units that can be processed each hour under a set of conditions is an example of a model.
Models do not need to be graphical; although that is the way we have used the term throughout this book. Contrast with diagram.

**Modeling.** In a loose sense, modeling simply refers to creating a simplified representation of something else. A model can be a picture, a diagram or a mathematical formula. In this book, we have used modeling in the sense of business process modeling – to create a diagrammatic representation of how work is done. In a rigorous sense, a model must specify formal relationships and assumptions that can be tested.

**Model Driven Architecture (MDA).** A new approach to application development being promoted by the Object Management Group. In essence, the idea is that organizations out to create abstract class models of their applications and then use those models to generate specific models and software code. The idea behind MDA is that the same abstract model could be used to generate different types of code. Thus, rather than creating new applications when new technologies come along, a company could have a high-level architecture and reusable components that it could use over and over again for many years. This approach is in the early stages of development but it has attracted quite a bit of attention. (Compare with CASE.)

**Niche Specialization.** A competitive strategy that focuses on offering products to specific groups of buyers or to buyers in particular geographical locations.

**Non-Value Adding Activities.** Processes or activities that neither add value to a final product or service, or enable activities that add value. In most cases these activities are left over from older processes and somehow continue even though they are no longer necessary, or they are done because some departmental managers wants them done, “because that’s the way things are done in this department,” even though they add noting to a specific process.

**Object-Oriented.** An approach to structuring software applications. Instead of thinking of an application as a process with steps, we think of it as a set of objects that exchange messages. Now the dominant approach to software development. Java and Visual Basic are object-oriented software development languages.

**OMG (Object Management Group).** An international consortium of companies that work together to create standards for advanced software engineering technologies. The OMG has developed middleware standards, like CORBA, the Unified Modeling Language (UML) for diagramming software and business systems, and the Model Driven Architecture (MDA) a systematic way of maintaining reusable software components and using them to generate code for specific applications. (See UML and MDA.) For more information, check www.omg.org

**Operational Effectiveness.** A strategy, or lack of strategy that commits a company to constantly trying to improve the effectiveness of its processes. Taken to the extreme it results in hypercompetition. (Compare with Positioning.)

**Organization Chart.** Traditional way of showing the relationships between departmental and functional units or the reporting relationships between managers within an organization. Organization charts tend to emphasize that each department is independent and to ignore the many relationships that exist when activities in one department interact with activities in other departments.

**Organization Diagram.** One of the two basic diagrams used in this book. A system diagram that shows either functional units or processes inside the company box and shows how they link to each other and to entities outside the company. See below.
Organization Diagrams. Generic use of term. Diagrams that depict the organizational structure of a company or agency. An organization chart is one kind of organization diagram, but in this book we emphasize systems diagrams that show flow between entities rather than organizational charts, that simply focus hierarchical relationships.

Outsourcing. Occurs when one company hires another company to manage, maintain and run some portion of its business. A catalog company, for example, might outsource the warehousing and delivery of the products it sells to another company. Many companies outsource standard software applications. See Business Process Outsourcing.

Packaged Applications. Generically, any pre-packaged software application. Normally it is used as a way of referring to vendors who sell ERP or CRM application suites that are organized to be used to integrate all of a company’s main software applications. By installing a number of packaged applications a company can assure that major business process applications in finance, accounting, human resources, and manufacturing all communicate smoothly and store data in a common database. The dominant packaged application vendor is SAP. Other well-known ERP vendors are Baan, J.D. Edwards, Oracle and PeopleSoft.

Parallel Process. A process in which two or more sequences of activities are going on simultaneously. If a physical document is being passed from one person to another, the process is necessarily a single sequence. An electronic document in a workflow system, on the other hand, can be sent to several people, simultaneously.

People-CMM. An adaptation of Carnegie Mellon’s CMM model to the analysis of the best practices employed in the management of a workforce, as organizations move from an immature to a mature use of processes.

Performance. Generically, the work involved in and the results or products that accrue from conducting a process or activity. Human performance describes how people do a task and what results. System performance describes how systems do a task and what results. Organizational performance describes what an organization does and what results.
Performance Framework. See Three Levels of Performance.

**PIP (Potential for Improving Performance).** Measure used by Human Performance Technologists. One measures the performance of the best person performing a task and also determines the average performance of the average worker. Large differences suggest that performance can be improved by bringing average performance up closer to the best performance. Small differences suggest little potential for improvement. Term is usually associated with Thomas Gilbert. (Some other business process people use the term PIP as an acronym for Performance Improvement Project.)

**Private Processes.** A process that goes on inside a company. Most companies would rather not tell other companies how their applications accomplish things. On the other hand, certain kinds of coordination require that two or more companies know about each others processes so that they can integrate them more effectively. Some XML business process languages are written to communicate between a company and a public process and others are written to describe, and share, the private processes of multiple companies. Private business processes are sometimes called executable business processes. (Contrast with Public Processes.)

**Positioning.** A synonym for choosing a strategy. A marketing concept. One should always say that one’s product is the best. If not best, overall, then best for the price, or best for some specific application. One positions a company by creating a strategy that allows the company to make such a claim.

**Portal.** A Web site that allows the user to find other Web pages or Web sites. As a generalization, a portal is a train station. You go there in order to find out where else you can go and then to go there. Most companies will maintain one portal for their employees, where they can go to get information and to access company services, and another public portal for customers to provide customers with information and the opportunity to buy products or services from the company.

**Porter’s Model of Competition.** A general model of the environment in which companies operate that suggests what factors strategists should monitor. They key factors are buyers, suppliers, competitors, new companies that might enter the market, and new products or technologies that might replace those on which your organization depends. The model is defined in Michael Porter’s book *Competitive Strategy*.

**Problem Analysis.** Six Sigma practitioners often describe problem analysis in terms of three phases: Open, Narrow and Close. During Open, one brainstorms and considers every possible cause of the problem. During Narrow, one reduces the number of potential causes. During Close, one settles on a specific cause to focus on.

**Process-IT Matrix.** A matrix created by listing processes on the horizontal axis and IT platforms or other architectural elements on the vertical axis. This matrix shows what IT applications, databases and other resources are required to support each process. If one has a clear idea of the value of one’s various processes, then this is an excellent tool for prioritizing IT projects.

**Process-Strategy Matrix.** A matrix formed by as estimate of the strategic importance of a process on the horizontal axis and an estimate of the process complexity and dynamics on the vertical axis. Assuming that “low” is positioned at the lower right corner of both continua, then processes that fall in the lower-left are of little complexity, don’t change very often and don’t have much strategic importance. They should be automated if possible and given the minimum resources necessary for efficient functioning. Conversely, processes that lie at the upper-right are complex, dynamic and of high strategic importance. These are usually the processes that provide your company with its competitive advantage and should be nurtured accordingly.

**Process Architecture.** (Business Process Architecture) A process architecture is a written or diagrammatic summary of the value chains and business processes supported by a given organization. A good process architecture shows how value chains and business processes are related to each other and to the strategic goals of the organization. Some companies use the term process architecture to refer to the process architecture.
diagram for a single process. We refer to that as a process model or process diagram. We often add business or enterprise to process architecture to suggest that it’s a high-level architecture of all of the processes in the organization.

**Process Change.** A purposely vague term chosen to embrace the complete range of process change methods and techniques, including the alignment of processes and strategies, the creation of a process architecture, the analysis of processes, redesign, improvement, automation, and implementation.

**Process Diagram.** One of the two basic diagrams emphasized in this book. A diagram that shows departments, function or individuals on the vertical axis and uses swimlanes to show which sub-processes or activities are managed by which departments, functions or individuals. The customer of the process always appears on the top swimlane. External processes are listed below the main process. The horizontal axis usually depicts the flow of time from left to right, although informal process diagrams sometimes allow loops which violate a strict time flow. Rectangles with rounded corners represent sub-processes or activities. Arrows represent various types of flow between rectangles. See below

<table>
<thead>
<tr>
<th>Ergo Chair Value Chain: Order Fulfillment Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer</td>
</tr>
<tr>
<td>Sales</td>
</tr>
<tr>
<td>Order Entry</td>
</tr>
<tr>
<td>Inventory</td>
</tr>
<tr>
<td>Production</td>
</tr>
<tr>
<td>Delivery</td>
</tr>
<tr>
<td>Supplier</td>
</tr>
</tbody>
</table>

Some developers divide process diagrams into IS process diagrams that show a process as it IS currently performed, COULD process diagrams, that show how a process might be changed, and SHOULD process diagrams that show how a process redesign team ultimately proposes to change a process.

**Process Diagrams.** Generically, a synonym for workflow diagram or UML activity diagrams. A diagram that shows the flow of information, control or materials from one activity to another. Any sub-process on one process diagram can become a process diagram in its own right of the designers need more details.

**Process Fit.** The way in which the elements of a business process are uniquely integrated. Companies with good process fit have worked hard to integrate everything around a specific strategic focus. It’s easy for competitors to copy standard processes, but it’s very hard for competitors to duplicate business process with a high degree of fit. A concept associated with Michael Porter.

**Process Instance.** A process diagram describes a generic sequence of events. An instance describes an actual process which includes data, real actions, and specific decisions. Workflow systems and simulation systems both keep track of the data from the execution of specific process instances in order to determine things like how long the process actually takes, who handled a specific instance or how much it cost. In the case of simulation systems, someone has to supply information about a set of actual instances.
**Process Management.** Most managers or supervisors are responsible for specific processes or activities. They are responsible for organizing the process or activity and securing the resources need to execute it, and they are responsible for measuring the results of the activity and providing rewards or corrective feedback when necessary. They are also responsible for changing and improving it whenever possible.

**Job Functions of the Manager Responsible for the Process**

**PLAN PROCESS**
- Set goals and expectations
- Establish plans and budget
- Provide resource & staff
- Implement process

**CONTROL PROCESS**
- Monitor process
- Reinforce success
- Diagnose deviations
- Take necessary corrective actions

**PROCESS or ACTIVITY**
- Expectations, Plans & Resources
- Feedback

**Changes in Goals and Plans**
- Goals/Measures

**Inputs**

**Results**

**Process Measures or Process Output Measures.** Measures of whether a process or activity is achieving its goals. At every level, processes have outputs and those outputs should be measures to assure that the process is functioning as it should. In an ideal organization, company goals and measures are associated with value chains and then subdivided so that, at every level, managers are measuring process outcomes that are related to the ultimate goals and measures of the organization. If vertical alignment is ignored, it's possible that activities or processes will be measured in ways that don’t contribute to the overall success of the larger process or the success of the company.

**Process Measures Worksheet.** A grid or matrix that one can use to analyze the relationships between measures. High level measures are listed on the vertical axis and then successively sub-divided as one moves to the right, into process, sub-process, sub-sub-process and ultimately activity measures. (Compare with the Measures Hierarchy which is a different way of representing the same information.)

**Process Redesign Patterns.** A pattern is an approach or solution that has often worked in the past. There are several patterns that have proved popular in redesign efforts. For example, one can try to eliminate all non-value adding activities, or one can try to simplify the flow of the process.

**Process Sponsor or Process Manager.** Person with responsibility for the entire process. The individual who monitors the entire process and its outcome measures and provides feedback and help to departmental managers who manage specific sub-processes or activities included in the overall process.

**Process Thinking.** A subset of systems thinking. Conceptualizing groups of activities as processes and seeking to understand how all of the processes in the organization work together to take inputs and produce products, services and profits.
**ProVision Workbench.** A professional business process modeling tool sold by Proforma Corporation. We used this tool to illustrate some of the ways our Ergonomics case could have been streamlined if we used a software modeling tool.

**Public Processes.** A business process that two or more companies use to pass messages. Both companies send messages to the public process and neither know what the other does to generate the messages it sends to the public process. A public process simply defines a way for two companies to communicate and coordinate their processes. Some XML business process languages are written to communicate between a company and a public process and others are written to describe, and share, the private processes of multiple companies. Public processes are sometimes called *business protocols* or *abstract processes*. (Contrast with Private Processes.)

**RM-ODP (Reference Model of Open Distributed Processing).** An effort to create a formal, hierarchical method for defining any type of software system. The model is being created as an International Standards Organization (ISO) specification. It is too complex for most uses, but is sometimes used in very complex projects.

**Rummler-Brache Methodology.** Geary Rummler and Alan Brache defined a comprehensive approach to organizing companies around processes, managing and measuring processes and redefining processes in their 1990 book, Improving Processes. This is probably the best known, systematic approach to business process change and ideas first introduced in this book have been very influential on other, less comprehensive approaches. This book draws heavily from the basic approach laid out in *Improving Processes*.

**SAP (Systems, Applications and Products in data processing).** Leading ERP or packaged software vendor.

**SCOR (Supply Chain Operations Reference) Model.** A method, framework and techniques for analyzing and designing supply chain systems. Created by the Supply Chain Council.

**SCM (Supply Chain Management).** A vague term describing any of a number of packaged or tailored applications or tools designed to help with the development or execution of supply chain systems or with managing information gained from supply chain interactions.

**SHOULD process.** Also TO-BE process. A description or diagram of the process that the redesign team proposes to create.

**Silo Thinking.** This is a metaphor drawn from the large grain silos that one sees throughout the US Midwest. It is a term of derision that suggests that each department on an organization chart is a silo and that its stands alone, not interacting with any of the other departmental silos.

**Simplification Pattern.** A process redesign pattern that focuses on simplifying the flow of a process.

**SIPOC (Supplier, Input, Process, Output, Customer).** An acronym used by Six Sigma practitioners to remind them of how to set up a high-level overview of a process.

**SOAP (Simple Object Access Protocol).** An Internet protocol that is used to move XML files around the Internet.

**Sub-Processes.** Process analysis necessarily occurs on levels. A high-level process diagram shows major processes. Each major process is typically divided into sub-processes which are represented on separate process diagrams. Those processes, in turn, may be sub-divided into sub-processes. There is no logical limit to the number of times we may sub-divide processes into sub-processes. We repeat it until we understand the process in sufficient detail to successfully redesign or improve it. The smallest sub-processes we identify in any given analysis effort are arbitrarily called activities. See Process Hierarchy for one possible set of naming conventions.
**Subsidiary Business Processes.** Processes that support core business processes or processes that provide products or services that are not among the most important that the company produces. In most companies, IT and HR processes are classified as subsidiary processes because they exist to provide support services for the core business processes.

**Super-system Diagram.** An organization diagram that represents the company as a blank box and focuses on the elements like suppliers and customers that make inputs and outputs to the company. Normally we group outside elements into four groups: suppliers on the left, customers and shareholders on the right, governmental and environmental factors above, and competitors below.

**Supply Chain Council (SCC).** International consortium of companies that are interested in improving organizational supply chains. SCC has conferences, publications and training programs. They promote SCOR, a systematic process methodology for creating supply chain systems. (See SCOR.) For more information, check [www.supply-chain.org](http://www.supply-chain.org)

**Supplier-Oriented e-Business Applications.** A generic way of talking about business processes and Internet applications that use the Internet to allow companies to link with business partners or suppliers to coordinate their efforts. (Compare with Customer-Oriented and Internal-Oriented Applications.)

**Six Sigma.** A movement, method and set of techniques focused on improving business processes. Relies heavily on statistical techniques to measure success. There are multiple Six Sigma methods, some designed for process improvement and some for designing or redesigning business processes. Most Six Sigma books, however, emphasize incremental process improvement. Often associated with Mikel Harry and Motorola.

**Software Engineering.** This term refers to a movement, methods and techniques aimed at making software development more systematic. Software methodologies, like the OMG’s UML, and software tools (See CASE tools) that help developers model application designs and then generate code are all closely associated with software engineering.

**Software Requirements.** A more or less formal statement of what a software application should do. Sometimes business analysts create requirements and hand them to software developers. Other times software analysts interview business people in order to determine the requirements for a software application development effort. Business people invariably define requirements less formally than necessary. Business people tend to define requirements with written statements or with process diagrams. Software developers are more likely to define software requirements by means of Use Case Diagrams or Class Diagrams, which often aren’t that clear to business analysts. Software Requirements constitute an important interface between business managers and IT organizations. If the handoff isn’t clear and precise then the resulting system is likely to disappoint the business people who requested it.

**Standard or Normal Bell-Shaped Curve.** A statistical tool for describing variations from a mean. Developed by Carl Frederick Gauss. Shows that most deviation is slight and that extreme variations are few and infrequent. Six Sigma relies on concepts derived from the standard curve, but the actual curve that is used in Six Sigma tables is a different curve defined by what is referred as long-run process drift.

**Standard Deviation.** One standard deviation to the left or the right of the mean on a standard bell-shaped curve accounts for 34.13% of the variation. Two standard deviations, one to the left and one to the right, account for 68.26% of the variation. The Greek letter, Sigma, is used to represent a deviation. One determines deviations in actual situations by gathering data and determining what about of actual deviation accounts for 68.26% of the deviations, and so forth. Six Sigma people rely on tables to translate numbers into deviations or sigmas.

**Strategy.** A broad statement of how an organization is going to compete, what its goals are and what policies it will pursue to realize it’s goals. A good strategy defines how a company can position itself to maintain a long term competitive advantage.
Strategizing. The process of establishing and updating a strategy. In organizations, this is usually done by a strategy committee. In essence, the process involves determining what the organization is currently doing, checking the environment to see what competitors, customers, suppliers, and government agencies are doing, and then determining if the organization needs to change its strategy in response to changes in the environment.

System. A grouping of parts or functions that operate together for a common purpose. An automobile is a system of components that work together to provide transportation. Systems function within boundaries. They usually receive inputs from outside and, as a result of their operations, generate outputs. Systems can contain systems. There are different schools of systems analysts. Some emphasize relatively informal and descriptive approaches while others emphasize formal, mathematical and dynamic approaches. Organizations, business processes and software applications are both examples of systems.

Systems Analyst, Systems Architect, Systems Designer. Individuals who analyze, design and develop software applications, systems or infrastructure.

Systems Dynamics. This is a specific approach to modeling systems that emphasizes the feedback loops that tie sub-systems together and explain the dynamic changes that occur over the course of time. This approach is usually associated with Jay Forrester.

Simulation. A technique that uses a model to make predictions about a system or process. There are different types of simulation, some more informal and some more formal. Process simulation tools normally assign values to activities and then a number of cases to see how the business process will respond. The simulation of complex processes can often reveal outcomes that the developers don’t anticipate.

Strategy. A general statement of the goals and policies of an organization developed by the executives of an organization to guide everyone in the organization.

Strategic Positioning. Defining a position in which an organization can achieve dominance or at least success. Common strategic positions include the low-cost seller, a premium seller with products that are better than competitive products, or a niche position in which products are sold to special segments of the market.

Swimlane. A row on a business process diagram. A way of indicating who is responsible for a given process or activity. Swimlanes are named on the left side of the process diagram. In most cases swimlanes are assigned to departments, groups within departments, individuals, or to applications, systems of applications or databases. In exceptional cases, swimlanes may represent geographical regions. Processes, sub-processes or activities that fall within a given swimlane are the responsibility of the entity named on the left axis of the process diagram. (Some workflow tools represent swimlanes as vertical rows. In effect, this would rotate the process diagrams we show in this book 90 degrees. This is arbitrary, we simply prefer to have processes flow from left to right rather than from the top, down.)

Synchronous Process. In a synchronous process, one activity sends a message to another and then waits for a response before proceeding. A phone call to another person is a synchronous process – it can’t go forward if the person you want to talk to doesn’t answer the phone. Leaving a message on an answering machine turns it into an asynchronous process. You leave your message and go on with your business, figuring the person will respond when they get the message.

System. A group of elements, parts, people or organizations that operate together for a common purpose.

Systems Thinking. Conceptualizing sets of entities, activities or organizations as systems. Focusing on how elements relate to each other and depend on each other. What Peter Senge refers to as the Fifth Discipline.
Three Levels of Organization (Performance Framework). A Rummler-Brache concept. Holds that there are three primary levels of business process analysis: the organizational level, the process level, and the activity or performance level (which Improving Performance called the Job Level). Sometimes presented as a matrix, the Performance Framework, where the 3 levels are shown on the vertical axis and the perspectives or viewpoints are shown on the horizontal axis: Goals and Measures, Design and Implementation, and Management. A nice way of classifying the concerns that a comprehensive business process approach should encompass.

Total Quality Management (TQM). A movement, an industrial discipline, and a set of techniques for improving the quality of processes. TQM emphasizes constant measures and statistical techniques to help improve and then maintain the output quality of processes. Often associated with Edwards Deming.

Transaction Processing. Refers to workflow or other software systems that make changes in databases. The most rigorous transaction processing systems make copies of everything as the transaction occurs to guarantee that its completed correctly. If anything goes wrong, the state of all data involved is reset to its original state. Imagine you seek to move money from one account to another. The system checks to see that the money is removed from one account and placed in the other, and doesn’t finalize things until its sure that both actions have occurred.

Transaction or Production Workflow Systems. A type of workflow system that moves documents or information from one terminal to another following a workflow model. (Contrast with Ad Hoc and Administrative Workflow Systems.)

Transitioning to a New Process. The transition period occurs after managers and employees have been trained in the new process, when they actually start using it. A successful transition depends on having senior management support and having measurement and incentive systems in place to assure that local managers work to see that the new process is implemented correctly.

UDDI (Universal Description, Discovery and Integration). A Web protocol, based on the WSDL language, that allows one Web system to locate others and determine what format messages to that system must take.

UML (Unified Modeling Language). An international, standard notation for modeling software systems. The UML specification supports several different types of diagrams, including the Activity Diagram, which is used to model business processes and workflow diagrams. UML was created and is maintained by the OMG.

Use Case Diagram. One type of UML diagram. Often used by software developers to define the software requirements for a system. Use case diagrams focus on scenarios that describe how users use the application.

Value Added Activity. A process or activity that adds value to a product or service. Value is judged by the customer, who can be the customer of the company, or an internal customer who receives the output of the process or activity. An activity or process adds value, if it satisfies all three of these requirements: (1) the customer is willing to pay for the process or activity, (2) the process or activity physically changes or transforms the process or activity, and (3) the process or activity is performed correctly the first time its undertaken.

Value-Added Analysis. A process redesign pattern that focuses on eliminating activities that don’t add value or at least enable value-added activities.

Value Chain. A very large-scale business process that is initiated by a customer request, or by the decision of the company to enter a new line of business, and results in the delivery of a process or service to a customer. A value chain includes everything that contributes to the output. By adding up all of the costs of each activity in a value chain, and subtracting the total from the sale price, an organization can determine
the profit margin on the value chain. Most organizations support from 3 to 15 value chains. Many managers associate value chains with the description provided in Michael Porter’s *Competitive Advantage* (1985).

**Value-Enabling Activities.** Activities or processes that do not, in themselves, meet the criteria of value adding activities, but which must be performed in order to make it possible to perform value adding activities. The activities involved in the development of most software applications are value-enabling activities.

**Value Proposition.** A description of the value that a product, service or process will provide a customer. Should be defined abstractly to assure one understands who all the competitors are. Thus, rather than saying one provides customers with books, one should consider saying that one provides education or entertainment.

**Vertical Alignment.** Focuses on aligning strategic goals and measures from value chains down to activities. Sometimes includes management systems that align each manager’s goals and evaluation criteria from organizational strategies to supervisor’s goals.

**W3C (World Wide Web Consortium).** A standards consortium that develops and published Internet and Web languages and protocols. For more information, check [www.w3c.org](http://www.w3c.org).

**Web Services.** A vague term that refers to distributed or virtual applications or processes that use the Internet to link activities or software components. A travel Web site that takes a reservation from a customer, and then sends a message to a hotel application, accessed via the Web, to determine if a room is available, books it, and tells the customer he or she has a reservation is an example of a Web Services application.

**Workflow.** Generic term for a process or for the movement of information or material from one activity (worksite) to another.

**Workflow Reference Model.** Model created by the Workflow Management Coalition to define a workflow management system and to identify the most important system interfaces. Other WfMC standards make reference to this model.
Workflow Management Coalition (WFMC). A consortium of vendors and users of workflow systems that work together on standards and to share information. For more information, check www.wfmc.org

Workflow Model. Another name for a process diagram. Often includes both a diagram and rules that define the flow of information from one activity to the next. If used in conjunction with a workflow system or engine, a software-based process diagram that becomes the program for a workflow system that will move information from a database to one computer terminal after another.

Workflow System or Engine. A software tool or program that helps analysts define a process and the rules governing process decisions, and then manages the actual distribution of information related to specific instances or cases to terminals and databases. Most vendors and major users of workflow systems are members of the Workflow Management Coalition (WFMC).

Worksheets. All worksheets presented in this book are simply suggestions for how an organization might want to organize information. Different companies will want to create their own worksheets to emphasize different things.

WSFL (Web Services Flow Language). Early IBM XML business process language. See BPEL4WS.

XLANG Early Microsoft XML business process language. See BPEL4WS

XML (eXtended Markup Language). An Internet protocol defined by the W3C. A file format that includes within a file both data and rules for how the data is to be interpreted. Using XML, one can create XML languages – in effect, sets of terms that companies agree to use in a specific way in order to facilitate the exchange of data. Emerging as the most popular way to transmit data between applications and companies over the Internet.

XML Business Process Language. A computing language in which one can describe business processes and their relationships. These languages use XML to pass messages.

XPDL (XML-based Process Definition Language). The Workflow Management Coalition (WFMC) created this standard language to describe how workflow tools can communicate information about business processes with each other over the Internet.

Zachman Framework. Zachman was an IBM researcher who described a framework that describes business and software architectures. On the vertical axis he describes levels of generality and specificity. On the horizontal axis he originally described three viewpoints, Data, Function and Network. He has since set up his own company and added three more viewpoints: People, Time and Motivation. Many regard this as the most definitive overview of architectures and seek to position any specific architecture by showing where it would lie on the Zachman Framework. For more information, check www.zif.com