## Lesson Proper for Week 9

The power of computers in transforming society is perhaps most obvious today in the way communications have changed. Our society has evolved from one that relied on face-to-face communication, to one in which phones became the primarymedium, to today’s society that is increasingly dependent on e-mail and instant messages. In essence, the richness of older media has been sacrificed for efficiency and effectiveness. In other words, the phone took away the ability to detect emotions through an individualappearance, and e-mail took away the ability to detect emotions through voice inflection.  The Internet expanded the impact on society since it can substitute for such a wide range of personal and commercial interaction. The power of the Internet to support the sales and marketing of products efficiently has led to incredible levels of Web activity to support electronic commerce (e-commerce). E-commerce is a commonly used term that describes the business events associated with the Order-to-Cash and Purchase-to-Pay business processes, which encompass electronically ordering goods and services, and often the associated electronic payments. Although frequently used interchangeably with e-business, e-commerce is really only one part of what e-business encompasses.

The e-business is the involvement of two (or more) individuals and/or organizations in the completion of electronically based business events (i.e., the partial or complete elimination of paper documentation and human intervention during business processes in favor of more efficient electronically based communication). These electronically based business events entail the interconnection of the underlying back-office processes of both organizations. Pricewaterhouse Coopers was one of the first firms to use the term e-business to broaden the narrower view of e-commerce as support of the sales process. In 1999, the firm’s Web site included a statement in its discussion of e-business that recommended looking beyond the marketing aspects of a firm to see that e-business involves “optimizing business processes, enhancing human capital, harnessing technology, and managing risk and compliance.” We use the term “e-business” to refer to any interorganizational business activities conducted by electronic means, including e-commerce

**The Changing World of Business Processing**

For centuries, the basic manner in which commerce transpired changed very little. In the past, a merchant would meet with a customer or another merchant and form an agreement to provide goods to customers in exchange for cash or other goods and services. The merchant would then record these exchanges in books of accounts, and periodically consolidate the entries recorded in the books to determine how much various individuals owed the merchant, how much the merchant owed other people, and the excess cash and assets that the merchant owned.  Over the past three decades, the relative change in business practice has been exponential. We have seen cottage industries springing up on the Internet where there are no personal contacts and face-to-face negotiations. We also see online catalogs that can be viewed through an Internet browser and where orders can immediately be placed and paid for over the Internet. Of course, the bookkeeping functions may be done much the same as the ancient merchant did them, but more likely the system will automatically trigger collection from the credit card company, automatically record the business event in the electronic database, and automaticallyupdate all of the related accounts. Indeed, many companies are using web development tools from their enterprise system vendors to build Web sites that from day one are linked into the enterprise system’s processing and database.  While it may sometimes appear that we have switched from an old way of doing commerce to a brand new way, both methods are actually used by many organizations. The evolution of information technology has simply provided for alternative channels supporting business processes and business event data processing that enable some organizations to become more efficient and effective by altering the traditional means by which they have done business.

**Automating Manual Systems**

Ever since the earliest days of business, when fairly primitive manual approaches were the only available information systems, the cheapest and most efficient way to do data processing on large volumes of similar business event data was to aggregate (i.e., batch) several events together and then periodically complete the processing on all of the event data at once. The periodic mode is the processing mode in which there is a delay between the various data processing steps. Although technically not the same, the periodic mode is heavily dependent on the use of batch processing, and the two terms are often used interchangeably. Batch processing is the aggregation of several business events over some period of time with the subsequent processing of these data as a group by the information system.

**Online Transaction Entry (OLTE)**

Information technology improvements have provided a low-cost means for improving the efficiency of these traditional automated equivalents to manual systems. The most prevalent change has been the increasing use of online transaction entry to reduce redundancies in pure periodic mode processing. In an online transaction entry (OLTE) system, use of data entry devices allows business event data to be entered directly into the Information System at the time and place that the business event occurs. These systems merge the traditional sub-processes of business event occurs (which includes completion of the source document) and record business event data into a single operation. At the point of the business event, a computer input device is used to enter the event data into the data entry system rather than onto a source document. Generally, the system automatically generates prices as the computer retrieves data from the system data stores. Such a system is considered online because the data entry device is connected to the processing computer. The input system usually also services a printer that then prints document copies to fill the still-needed role of source documents. As business events occur, the related data are usually accumulated on disk.

If we go back to our used books and CDs store scenario, it may be that you prefer to buy your books and CDs at one of the chain stores such as those found in shopping malls. When you take your books and CDs to the clerk at the counter in these types of stores, the clerk generally keys the purchase straight into the cash register. As noted in Figure 4.2, what is occurring at this point is that the sales items are being entered into a computer that is recording a log of the sales event, retrieving price list information, and generating duplicate copies of the sales receipt. One copy of the sales receipt is given to you (the customer), and the other is placed in the cash register drawer (for filing in the audit file). Note the differences between Figures 4.1 and 4.2. The manual recording process (in Figure 4.1) by the sales clerk becomes a computer entry process (in Figure 4.2), and the record input process in Figure 4.1 becomes part of process sales in Figure 4.2. Other than these changes, the two flowcharts are the same.

The use of OLTE eliminates the need to have one person enterbusiness event data on a source document and then have a second person perform the data entry to convert the business event data to a computer-ready form. In an OLTE system, one person performs both operations. In many systems, this data entry willbe completed using bar code readers or scanners. The use of such technologies eliminates the human error that can result from entering data manually. Thus, in many OLTE systems the only human impact on the accuracy of the input data is the necessity to scan items properly into the system.

**Online Real-Time (OLRT) Processing**

Among the many clichés that one hears in today’s harried business environment is the phrase “time is money.” While a cliché by its nature is worn out, this one is quite descriptive of the current demands on Information Systems. Traditional periodic mode systems that provide information primarily through periodic reportsthat are hours, days, or weeks out of date can put an organization’s decision makers at a disadvantage if its competitors are using up-todate information to make the same decisions The pressures for timely information flows coupled with significant advances in available information technologies led to a rapid migration towards online real-time systems.

Online real-time (OLRT) systems gather business event data at the time of occurrence, update the master data almost instantaneously, and provide the results arising from the business event within a very short time—i.e., in real-time. OLRT systems complete all stages of business event data processing in immediate mode. Immediate mode is the data processing mode in which there is little or no delay between any two data processing steps (as opposed to periodic mode, in which there is a significant delay between two or more data processing steps.