

## HISTORY AND EVOLUTION

The commercial-oriented sharing of electronic data among computers became possible in the 1950s with the advent of geographically dispersed computers. However, in the early years of computers, data formats used to be highly specialized (closed). Subsequently the systems too were closed; in other words, the software applications of a certain producer were not able to communicate with the applications of another producer, which hindered the data exchange between the computers that were not running the same software application. None of these many systems ended up by being adopted as a standard for commercial applications.

The first extended use of a form of electronic commerce appeared in the early 1970s when a system called *Electronic Fund Transfer* (EFT) was introduced. This enabled banks and financial institutions to transfer over secure networks large amounts of money either among themselves or with associated businesses. The EFT forms were used by employers to pay their employees by transferring the money directly to either their personal bank accounts or to their debit cards. To date, most payments made by the federal Government of USA are carried out via the EFT.<sup>1</sup>

In the late 1970s a new model in business computerization was devised, namely the *Electronic Data Exchange* (EDI).<sup>2</sup> EDI enables inter-company exchanges of documents, such as order forms for suppliers, invoices, customs forms, reimbursement receipts, stock inventories etc. EDI ran on a privately maintained network exclusively dedicated to this system. In parallel, many companies used to run their own private networks that were open to their business partners and acted as information exchange highway. These networks are commonly called VAN (Value-Added Networks). The VANs used to be utilized to aid communication among the companies in the same industrial branch. Since the 1980s they have become a widely used solution. A present day example is ENX — European Network eXchange — connecting car manufacture companies.<sup>3</sup>

EDI technology has reduced costs both on the producers' side and on the distributors' (whether retail and wholesale). Likewise it brought about a substantial enhancement of purchase processes, by optimising stocks and their correlation with the demand. Yet, several problematic issues — the high costs of its implementation and the difficulty of making the various versions of EDI fully compatible — caused EDI to fall short of attaining the ample market penetration one had expected.

In the late 1980s two new types of applications were widely adopted in the business world: *electronic mail (e-mail)* and *groupware*. When they were first introduced, these two systems were considered a major breakthrough. Despite this initial perception, both applications caused only insignificant growth of internal productivity.

A significant change for e-commerce occurred in 1991, when the United States government allowed public access to the internet. As a potential commercial system, the internet turned out to have several advantages over its competitors.

First, it was a truly global network. This opened the possibility of accessing vast new markets for every business conceivable.

Secondly, the Internet did not have compatibility problems. Even if there are virtually no information standards for the internet, *the transfer control protocol / internet*

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<sup>1</sup> For further information see: <http://www.fms.treas.gov/eft/>

<sup>2</sup> See also <http://www.1edisource.com/information/beginner>

<sup>3</sup> See also <http://www.enxo.com/index.html>

*protocol* (TCP/IP) is the generally accepted standard protocol. TCP/IP is a language protocol that enables heterogeneous devices and systems to communicate with one another, the internet itself being actually independent from the operation platform it is accessed from.

Once opened for commercial utilization, the internet was quickly accepted in business. Internet-related business thrived, the market itself expanded, followed soon by a boom of the operation infrastructure.

At the present moment the greatest challenge for the companies that run commercial activities via the internet is how to conduct sensible financial transactions on an open access network.

The World Wide Web, that emerged in the years when the internet was liberalized, rendered e-commerce both more accessible and more affordable. It enabled small business to sense for the first time the benefits that can be reaped from the technology of e-commerce.

The Web provides the internet its user-friendly interface. This is why the Web has profoundly altered the way the information on the internet is organized, presented and accessed.



Figure 3.1. The navigation interface of Microsoft Internet Explorer displaying the home page of European e-Business Support Network

The Web has a non-linear structure. There are not hierarchical routes to lead you to the sources of information. Instead, the information of the Web consists of a series of documents called web pages. These web pages are developed by using the Hypertext Markup language (hence HTML) whose main characteristic is that it allows

the creation of *hypertextual links* within a web page. A *hypertextual link* lets you “jump” directly to another web page or some other information source.

In the early times of the Web, these pages were static documents that consisted solely of text and images. As e-commerce gained momentum, more and more information had to be accommodated on a single web page, and this content had to become more and more attractive to the potential customer. The HTML language lets you embed in the web page different types of so-called “objects”, such as multimedia files, which could be video clips, animation, sound and music.

The advent of the user-friendly browser (that is, the software that let you “navigate” across web pages), that was devised by prestigious software companies, was a turning point for e-commerce and led to the development of a huge community of Web users. This community has augmented exponentially ever since the early 1990s and has now exceeded the threshold of half a billion.

The Web is a more affordable means of conducting electronic commerce than the EDI had ever been. In addition, it enables a wide range of commercial activities. Taking advantages of the low costs involved and of the ample penetration of the internet worldwide, many small businesses are now able to compete with big corporations from virtually equally advanced technological positions.

Intuitive and trouble-free, online navigation makes the Web an comfortable means of accessing information. This is why many companies use the web to post promotional content. The popularity of the web has a major impact on other technologies of electronic commerce.

Meanwhile, the EDI standard groups are trying to simplify the transactions between business partners and to introduce real-time EDI. Both these tendencies represent attempts to keep the pace with the new business possibilities offered by the web. A common way of integrating EDI with the Web is the posting of a product catalogue on the Web, while the actual transaction is run by a back-end EDI system.<sup>4</sup>

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<sup>4</sup> "Back-end" refers to a software application that finalizes a process and is invisible from the user's point of view.