Extranet: The "Third Wave" in the Internet Electronic Commerce

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By Nahum Goldmann
ARRAY Development
Email: Nahum.Goldmann (at) ARRAYdev.com
URL: http://www.arraydev.com

Nahum Goldmann has been employed as a manager, scientist and lecturer in leading industrial high-tech firms and academia. Mr. Goldmann has published several critically acclaimed books that deal with knowledge transfer issues. Presently he leads the development of Extranet-based solutions for use in online procurement and electronic banking and commerce.

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It is often heard that an Internet-year contains only three calendar months. Even in the fast-paced world of the Internet, it is difficult to accept that the fundamental concept of "intranet", the so called "second wave", was introduced just a year ago. During 1996, intranets have been embraced by corporate users of information services and made substantial inroads in strategic vision documents and procurement practices of many an IT shop.

The new era of the Extranet, the "third wave" of the universal Internet concept has just begun. As a powerful enabler of worldwide electronic commerce, the Extranet is poised to trigger a revolution in the structure and operations of commercial enterprises and government organizations.

1. The Third Wave

An Extranet, or extended Internet, is a private business network of several cooperating organizations located outside the corporate firewall. An Extranet service uses existing Internet interactive infrastructure, including standard servers, email clients and Web browsers. This makes Extranet far more economical than the creation and maintenance of a proprietary network. It enables trading partners, suppliers and customers with common interests to form a tight business relationship and a strong communication bond.

Technical and cost advantages are, of course, very important. But the real significance of Extranet is that it is the first non-proprietary technical tool that can support rapid evolution of electronic commerce. There is a lot of talk about the impact of the Internet on retail sales, the use of credit cards and various digital cash and payment settlement schemes. However, the real revolution over the next three to five years will be in systems for global procurement of goods and services at the wholesale level. And this is where Extranet will play a critical role.

On a perhaps more fundamental level, the Extranet is also likely to redefine the business evolution of a conventional corporation into "the knowledge factory". It will radically change the way private and public sector organizations would conduct their business in the new Internet-driven global economy.

In relation to its content and marketing potential, the term "third wave" also refers to the maturity process in the development of Web technology. Extranet is conceptualized as the key technology enabler for the development of the third wave large-scale electronic commerce sites. Moreover, this new concept is also at the heart of the reengineering
2. The Knowledge Factory: To Sell and Protect

The concept of the "knowledge factory" is critical to the evolution of the Extranet. To survive and prosper in the new information economy, an organization must position itself as a high-tech enterprise, an aggressively evolving "knowledge factory" that is internationally competitive. For such an enterprise -- whether a widget manufacturer, a government agency, a bank, or a catalog store -- knowledge engineering has to be its core competence, the principal strength that keeps it in business.

Knowledge engineering is understood here as the business of:
1) Gathering relevant data from suppliers, customers and other key sources (such as academia, business community or the government);
2) Adding value by creating information (that is, new knowledge), often jointly with strategic partners; and
3) Disseminating (selling) the added-value product to the customers.

Indeed to a knowledge factory, money becomes yet another online commodity, a valuable stream of bits to be processed in the same fashion as all the others.

As the mission-critical corporate tool, Extranet has to support every one of these core functions. It must do this more effectively and economically than is possible using other concepts and tools.

Every traditional factory in the old economy is a well defined and distinct entity. Its information infrastructure normally includes Input, Processing, and Output as the three principal elements.

In the new economy, global competitive pressures induce very short product/service development cycles. As well, the risk associated with misjudging clients needs and partners abilities to deliver is high. Hence, the Extranet-supported global information infrastructure of the knowledge factory must also include its clients, suppliers and partners. It must support efficient feedback mechanisms to maintain services quality and automatically track changes in the environment and in the customer preferences and priorities.

In the knowledge economy, no organizational framework could be created once and forever. The knowledge factory's output must be uniquely positioned on the international market, thus satisfying individual needs of its clients. Its sales cycle has to be short but productive. The introduction of the feedback system is essential for the long term evolution and prosperity of the service. Moreover, every corporation has to vigorously protect its competitive information and is often obliged not to divulge private data on its clients and partners.

Thus, every knowledge factory has somehow to resolve contradictions of:
   a) Constantly sharing data with its existing and potential customers, partners and suppliers on new product lines, thus uncovering and addressing their evolving needs;
   b) Gathering information on their abilities, needs and preferences; while
   c) Protecting vital individual and corporate data from its competitors and nosy Internet bystanders.

3. What constitutes the Extranet

A typical Extranet site is divided into open and secure segments. Access security is at the foundation of the Extranet concept. Secure connections between computers create a virtual private network, using inexpensive and ubiquitous public lines.

In many cases, standard password protection provided by Internet browsers is adequate to preserve the integrity of data stored on the site. Sites that require a higher level of protection could use more complex protocol tunneling
technology. An Internet tunnel can securely transport data between its input and output points by encapsulating the packets of one protocol into another. Tunnel technology can also be used to individualize the Extranet site, providing access only to the features that a particular user is entitled to.

Extranet members could closely collaborate on exploring and prototyping a new product or could jointly conduct transactional delivery of electronic services. Normally the Extranet would include some technical means to track the usage of various elements within the services. Ongoing statistical evaluation and monitoring help to identify effective and popular modules, components and features and to drop the unsuccessful prototypes.

In a fully functional Extranet, transactional data are usually stored in a powerful database engine. Examples of transactional sites are a consolidated ordering system run by a procurement club, a component distribution company or an electronic bank. Special forms could be used by the Extranet members to directly input data into the database, to retrieve a record or to initiate an automatic transaction. Since Extranet transactions can take place without an intermediary, the processing speed can be maximized and the accuracy of data considerably improved. All Extranet members share any resulting cost savings.

A typical Extranet also offers a private Discussion Area (Industry Network) which permits the members to exchange ideas and to share information and membership lists. The Discussion Area facilitates collaboration in solving joint problems and in continuous service improvements.

A Discussion Area is but one example of members' interactivity designed into the Extranet platform. Members' feedback through email links, questionnaires, surveys and guestbooks as well as detailed statistical analysis of use patterns help to constantly improve and upgrade the Extranet materials and services. As well, they allow members to capitalize on serendipitous opportunities when they arise.

Extranet allows every participant to work online independently, at the most convenient time. Membership directories, yellow pages, product data sheets, technical specifications and business catalogs support professional and personal interaction between the individual members. Unlike their paper versions, Extranet supporting documents can be individualized based on up-to-date database query results and include hypertext links, images, video and audio clips, and other embedded multimedia objects.

Close collaboration among Extranet members typically results in a better definition of a product or service, higher degree of cooperation and improved efficiency.

4. How Much It Might Cost

Victor Junalaitis, the CEO of the Positive Support Review Inc. of Santa Monica, CA provides the following evolutionary scale of Web sites [1]:

i) Promotional: A site focused on a particular product, service or company. Cost: $300,000-$400,000 per year (17-20% on hardware and software, 5-10% on marketing, and the balance on content and servicing).

ii) Knowledge-based: A site that publishes information that is updated constantly. Cost: $1 to $1.5 million annually (20-22% on hardware and software, 20-25% on marketing, and 55-60% on content and servicing).

iii) Transaction-based: A site that lets surfers shop, receive customer services or process orders. Cost: $3 million per year (20-24% on hardware and software, 30-35% on marketing, and 45-50% on content and servicing).

A similar classification by Zona Research Inc. of Redwood City, CA (cited in [2]), divides Web sites into:

a) Static presence "Screaming and Yelling". According to Zona Research, page cost for such sites is less than $5,000. At present, the absolute majority of Web sites belong to this category.

b) Interactive "Business Processes and Data Support", with page costs ranging from $5,000 to $30,000. Perhaps 15 to 20% of all current Web sites are in this category.

c) Strategic "Large Scale Commerce", with dynamic pages that cost more than $30,000 each to produce and maintain. According to the State of Web Commerce report (https://ssl.netcraft.com/) issued by Netcraft and O'Reilley and Associates in December 1996, fewer than 0.5% of all Web sites are in this category.
In its latest market research reports http://www.zonaresearch.com/ Zona projects multibillion dollars intranet/Extranet market expansions till the end of the century.

References