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BUSINESS USES OF THE GLOBAL INFORMATION NETWORK

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This tutorial is designed to introduce participants to the business uses of the Global Information Infrastructure (GII). We assume that participants have access to the current Internet and are familiar with today's capabilities. We will also assume that they are interested in both domestic and international uses of the information network and that their view is long term.

The Global Information Infrastructure may be defined as:

An environment using high performance hardware, software, and communications to deliver voice, data, video, graphics and other information regardless of where the information or user are located.

At present, the highway is the Internet. It provides a number of business resources including specialized discussion groups such as Usenet, information files from government, nonprofit, and private organizations, updates on products as modifications are made in them and dissemination of information about problems and faults encountered such as in computer programs.

Electronic commerce is already being done on the Internet. For example,

- mail order for existing specialty stores such as the Future Fantasy Bookstore in Palo Alto.
- Some publishing of manuscripts
- Electronic storefronts

However, there are some major Internet shortcomings that deter commerce:

1. The Internet is not secure. It is threatened by hackers and it does not provide secure cash settlement.
2. Because of the load factors, instant response is not guaranteed and the system can be unreliable.
3. The high cost of bandwidth.
4. The technology is sufficiently fragile that the system is not sufficiently reliable.

Conceptual Base. The tutorial provides a conceptual base for thinking about the future needs of the GII. This base is built on 7 essential building blocks:

1. People at each end (users)
2. The multimedia end-user devices
3. The communication network and its providers
4. The database
- 5 Agents (Dow-Jones, A/I)
6. Information providers to the network
7. Bridges to other VAN's

The criteria for each building block include:

1. Open to users, providers, and to change
2. Technology independent
3. Scalability
4. Decentralized operations
5. Appropriate architecture
6. Standards
7. Flexibility
8. Heterogeneity

In discussing the building blocks it is convenient to focus on a series of questions for each block. To make these considerations concrete, we present an example for the information providers to the network building block.

1. What is the building block? Providers are firms who supply access, data, and other services to the user.
2. What policies and strategies should be implemented for each block? Providers must decide between being open to all who pay for access or catering to specific interest groups. Will providers give access to the entire network?
3. Legal implications. Are the providers responsible for what is said on the network they provide?
4. Economic. Should providers charge a flat fee per month, a fee based on connect time, the bandwidth used, or a mix of these?
5. Social. How do providers give access to a variety of groups including those who are economically disadvantaged.
6. Cultural. Providers with international access must take language and culture into account.
7. Infrastructure. How much bandwidth does the provider offer.
8. Human. What education and professional skills will be required of users.
9. Market. Which customers will the provider seek.

These questions and the building blocks form a matrix for decision making about the infrastructure. .

Business Issues. It is possible at this point to define a number of business issues that must be resolved as we move from the current Internet to the GII. These issues are:

1. **Technology.** The GII differs from previous new technologies in that at the time of introduction it is completely decentralized and relies on the individual to choose the equipment they will use for access. To see the difference consider, for example, the telephone. There was only one phone company and it provided the phone that the individual uses. In the case of movies, the user had to go to their facility to use the product. In the case of television, broadcasts came from a centralized source. In the present case, we need to start thinking about how to grow the user population's technology so that it matches what the providers would like the consumer to use, be it text, graphics, or video. The net implication is a need for increasing communications bandwidths and upgraded computer equipment. From a systemic point of view, there is a need for making the Internet sufficiently robust that service is instantaneous and uninterrupted.
2. **Regulation.** The Internet is relatively unregulated by government. However, there are some disturbing trends. For example, a lawsuit held Prodigy liable for a supposed libel committed by an individual using the service. There are congressional efforts to regulate off-color material. The SEC has decided not to enforce regulations against fraudulent stock offerings over the Internet. Thus, the extent of content regulation is still an open question. There are also questions of international technical regulation including standards of bandwidths and formats. For reliable commercial use, these regulatory issues will have to be resolved.
3. **Verification.** For a business deal to be consummated, the parties at each end must be able to verify that they are dealing with a reputable person or organization at the other end. That is, they must be able to determine that the person is who they claim to be. The implication is the need for very fast verification services and perhaps encryption devices. However, even with these technological fixes in place, the problem still reduces to one of mutual trust.
4. **Security.** Verification is one aspect of security. Others include protection from hackers, secure funds transfers, protection from disinformation, and privacy.
5. **Privacy.** There is great concern by people for maintaining their privacy. For example, with the network it is possible to tell who is buying which goods and to create highly targeted mailing lists.
6. **Language.** In international trade (and even within the multicultural US) business deals require considerations of language. There is some work going on in using automated translation. Such translation is easier for business transactions than for general conversation because the vocabulary is limited.

7. Culture. In advertising offerings on the GII, you must be aware of different cultural values. Simple things, like gambling, dietary laws, and the meaning of 'yes', have to be taken into account.

Future Directions.. A series of steps are being taken to make certain that the GII is truly global. In the United States, the effort toward a National Information Infrastructure (NII) is being spearheaded by Vice President Gore. A number of national committees of government, university, and commercial leaders are meeting and issuing position papers. Studies are being done by the GAO and the Office of Technology Assessment in the Congress. However, it is not clear whether the current Congress will back the NII the way the previous one did.

As a result of a meeting in Belgium in late 1994, a Global Information Infrastructure Commission has been established. This Commission of 30 very senior people includes the President of EDS, the Chairman of NEC, the chairman of TIME, Inc., and senior executives of such companies as Olivetti, and Siemens. It even includes one AIS member.

Summary of Approach. The tutorial examines corporate, government, and international initiatives. It looks at the large number of existing national and international networks. It also looks at the critical success factors and the critical bottlenecks that we can expect, such as problems of security and authentication.

The goal of the tutorial is for the user to understand:

1. National and international issues of the GII as seen from both inside and outside the US
2. Market opportunities on the GII
3. Research opportunities in the Global Information Infrastructure