Instituto Cultural Minerva

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Electronic Commerce: The New Era of Commerce

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"I call upon all Internet users--both in government and in the private sector--to join me in seeking global consensus...so that we may enter the new millenium ready to reap the benefits of the emerging electronic age of commerce."

President William J. Clinton

"We are on the verge of a revolution that is just as profound as the change in the economy that came with the industrial revolution. Soon electronic networks will allow people to transcend the barriers of time and distance and take advantage of global markets and business opportunities not even imaginable today, opening up a new world of economic possibility and progress."

CONTENTS

FIGURES

LIST OF ACRONYMS AND ABBREVIATIONS

ARPANET Advanced Research Projects Agency Net

BBN Bolt Beranek and Newman

CERN Europian Laboratory for Particle Physics

CCR Command and Control Research

DARPA Defense Advanced Research Projects Agency

DNS Domain Name Server

DoD Departament of Defense

EC Electronic Commerce

ECU European Currency Unit

FNC Federal Networking Council

FTP File Transfer Protocol

GATT General Agreement on Tariffs and Trade

HTML Hyper Text Mark-up Language

http Hyper Text Transport Protocol

IBDR International Bank for Reconstruction and Development

ICCC International Computer Communication Conference

IETF Internet Engineering Task Force

IMF International Monetary Fund

IMP Interface Message Processor

IWNG International Network Working Group

MIT Massachusets Institute of Technology

NCP Network Control Protocol

NWG Network Working Group

OPEC Organization of the Petrolium Exporting Countries

PTO Public Telecommunication Operator

RFC Request for Comment

RPC Remote Procedure Protocol

SDRs Special Drawing Rights

SRI Stanford Research Institute

TCP/IP Transmission Control Protocol/Internet Protocol

UCLA University of California Los Angeles

UCSB University of California Santa Barbara

UDP User Datagram Protocol

UK United Kingdom

US United States

WTO World Trade Organizarion

INTRODUCTION

Electronic Commerce (EC), still in the early stages of its development, is already transforming our world. Over the next decade, advances of commerce on the Internet

will affect almost every aspect of daily life. Disparate populations, once separated by distance and time, will experience these changes as part of a global community.

No single force embodies our electronic transformation more than the evolving medium known as the Internet. Once a tool reserved for scientific and academic exchange, the Internet has emerged as an appliance of every day life, accessible from almost every point on the planet. Students across the world are discovering vast treasure troves of data via the World Wide Web. Doctors are utilizing tele-medicine to administer off-site diagnoses to patients in need. Citizens of many nations are finding additional outlets for personal and political expression. The Internet is being used to reinvent our lives and our communities in the process.

As the Internet empowers citizens and democratizes societies, it is also changing classic business and economic paradigms. New models of commercial interaction are developing as businesses and consumers participate in the electronic marketplace and reap the resultant benefits. Entrepreneurs are able to start new businesses more easily, with smaller investment requirements, by accessing the Internet's worldwide network of customers.

Internet technology is having a profound effect on the global trade in services. World trade involving computer software, entertainment products (motion pictures, videos, games, sound recordings), information services (databases, online newspapers), technical information, product licenses, financial services, and professional services (businesses and technical consulting, accounting, architectural design, legal advice, travel services, etc.) has grown rapidly in the past decade.

An increasing share of these transactions occurs online. The Internet has the potential to revolutionize commerce in these and other areas by dramatically lowering transaction costs and facilitating new types of commercial transactions.

The Electronic Commerce will also revolutionize retail and direct marketing. Consumers will be able to shop in their homes for a wide variety of products from manufacturers and retailers all over the world. They will be able to view these products on their computers, access information about the products, visualize the way the products may fit together (constructing a room of furniture on their screen, for example), and order and pay for their choice, all from their houses.

"Trade and commerce on the Internet are doubling and tripling every year. In just a few years, the Internet will be generating hundreds of billions of dollars in sales of goods and services. If we establish an environment in which electronic commerce can flourish, then every computer can be a window open to every business, large and small, everywhere in the world."

Vice President Albert Gore, jr.

Many businesses and consumers are still wary of conducting extensive business over the Internet because of the lack of a predictable legal environment governing transactions.

This is particularly true for international commercial activity where concerns about enforcement of contracts, liability, intellectual property protection, privacy, security and other matters have caused businesses and consumers to be cautious.

As use of the Internet expands, many companies and Internet users are still concerned that some governments will impose extensive regulations on the Internet and electronic commerce. Potential areas of problematic regulation include taxes and duties, restrictions on the type of information transmitted, control over standards development, licensing requirements and rate regulation of service providers.

On the other side, participants in the electronic marketplace are not only limited on digital product companies such as those in publishing, software, entertainment and information industries. The Digital Age and the digital revolution affect all of us by virtue of their process innovations. Through WebTV and digital television, the way we watch TV news and entertainment programs will change. Changes in telecommunication are affecting also the way we receive information, product announcements, orders, etc. As phones, fax machines, copiers, PCs and printers have become essential ingredients in doing business, so are emails, Web sites, and integrated digital communications and computing.

The New Era of Commerce is just appearing in many countries, whether by EDI, Internet, Web TV or any kind of digital systems.

CHAPTER ONE

THE INTERNET PHENOMENON

1. Waves of Change

The telecommunications industry in the late 1990s is almost unrecognizable from that of a decade earlier. Tem year ago, mobile communications were restricted to a few consumers in a handful of countries; digitization programs were just beginning; and the majority of Public Telecommunication Operators (PTOs) were still stated-owned monopolies. Today, all this changed. Mobilephones are a familiar sight on the streets of the big cities of both the developed and developing world; digitization programs are on schedule for being completed in most countries by the turn of the century, and a majority of telecommunication traffic now passes over networks which are privately-owned and operated. During of 1998, when the World Trade Organization (WTO) Agreement on basic telecommunications (see Box 1.1) comes into force, more than 90 per cent of the global market for telecommunication services will be in countries that either allow competition, or have committed to allow competition in the near future.

The wave of change was initiated as long ago as 1969 when a network of computer networks – an Internet (see Box 1.2) – was first created, with four hubs to join together research centers across American. The wave gained momentum in the mid – 1970s when a common operating protocol – TCT/IP: Transmission Control Protocol/Internet Protocol – was defined to provide a common basis for communications between diverse networks.

In the late 1980s, the wave washed through academic communities around the world, as electronic mail become a standard feature and as a new concept for creating hyperlinks between information stored in different computers around the world – the World Wide Web – was developed at the European Laboratory for Particle Physics (CERN) in Geneva. In the early and mid-1990s, the wave of change flowed into the commercial sector as the World Wide Web was given a multimedia interface through browsers which were provided, initially at least free of charge by companies keen to ride the wave and to capture a dominant position before the wave broke into the mass market. The Internet has sustained annual growth rates in excess of 100 per cent over the last ten years (Figure 1.1).

Box 1.1: The WTO Negotiations

On 15 February 1997, the WTO successfully concluded nearly three years of extended negotiations on market access for basic telecommunications services. A total of 71 governments tabled offer by the close of the negotiations and the commitments of 69 of these governments are to be annexed to the Fourth Protocol of the General Agreement on Trade in Services. The world's industrialized countries all participated in the deal. Over 40 developing countries large and small from virtually every region of the world also took part as did six of the Central and Eastern European economies in transition. The markets of the participants accounted for more than 91 percent of global telecommunications revenues in 1995.

The Internet can be interpreted as just the latest in a series of changes to hit the telecommunications sector, along with the growth of mobile communications, the spread of digital technology and the trend towards market liberalization and competition. The telecommunication industry has embraced these changes with confidence. They have brought fresh growth and opportunities to a profitable and dynamic industry. But the Internet might be different. The Internet may be about to challenge the very foundations of the telecommunications industry, both economic and technical.

Box 1.2: What is the Internet?

The question "what is the Internet?" is commonly heard, and often provokes intensive discussion among those that claim ownership of some part of the Internet or wish to be associated with its success in some way. In simple terms, the Internet can be described as a network of computer network, and that is the approach followed here. But for those seeking more precision, a resolution passed by the US Federal Networking Council (FNC) in October 1995 defined the Internet as: "the global information system that:

- Is logically linked together by a globally unique address space based on the Internet Protocol (IP);
- Is able to support communications using the Transmission Control Protocol/Internet Protocol (TCP/IP) suite, and other IP-compatible protocols, and;

- Provides, uses or makes accessible, either publicly or privately, high level services layered on the communications and related infrastructure described herein."

1. A Short Internet History

1.2.1 Origins of the Internet

The first recorded description of the social interactions that could be enabled through networking was a series of memos written by J.C.R. Licklider of MIT in August 1962 discussing his "Galactic Network" concept. He envisioned a globally interconnected set of through which everyone could quickly access data and programs from any site. In spirit, the concept was very much like the Internet of today. Licklider was the first head of the computer research program at DARPA, starting in October 1962 (see Box 1.3). While at DARPA he convinced his successors at DARPA, Ivan Sutherland, Bob Taylor, and MIT researcher Lawrence G. Roberts, of the importance of this networking concept.

Leonard Kleinrock at MIT published the first paper on packet switching theory in July 1961 and the first book on the subject in 1964. Kleinrock convinced the MIT researcher of the theoretical feasibility of communications using packets rather than circuits, which was a major step along the path towards computer networking. The other key step was to make the computers talk together. To explore this, in 1965 was connected one computer in Massachusetts to another one in California with a low speed dial-up telephone line creating the first wide-area computer network ever built. The result of this experiment was the realization that the time-shared computers could work well together, running programs and retrieving data as necessary on the remote machine, but that the circuit switched telephone system was totally inadequate for the job. Kleinrock's conviction of the need for packet switching was confirmed.

Box 1.3: The ARPANET

A climate of pure research surrounded the entire history of the ARPANET. The Advanced Research Projects Agency was formed with an emphasis towards research, and thus was not oriented only to a military product. The formation of this agency was part of the U.S. reaction to the then Soviet Union's launch of Sputnik in 1957. ARPA was assigned to research how to utilize their investment in computers via Command and Control Research (CCR).

In late 1966 Roberts went to DARPA to develop the computer network concept and quickly put together his plan for the "ARPANET", publishing it in 1967. At the conference where he presented the paper, there was also a paper on a packet network concept from the UK by Donald Davies and Roger Scantlebury of NPL. Scantlebury told Roberts about the NPL work as well as that of Paul Baran and others at RAND. The RAND group had written a paper on packet switching networks for secure voice in the military in 1964. It happened that the work at MIT (1961-1967), at RAND (1962-1965), and at NPL (1964-1967) had all proceeded in parallel without any of the researchers

knowing about the other work. The word "packet" was adopted from the work at NPL and the proposed line speed to be used in the ARPANET design was upgraded from 2,4 kbps to 50 kbps.

In August 1968, after Roberts and the DARPA funded community had refined the overall structure and specifications for the ARPANET, an RFQ was released by DARPA for the development of one of the key components, the packet switches called Interface Message Processors (IMP's). The RFQ was won in December 1968 by a group headed by Frank Heart at Bolt Beranek and Newman (BBN). As the BBN team worked on the IMP's with Bob Kahn playing a major role in the overall ARPANET architectural design, the network topology and economics were designed and optimized by Roberts working with Howard Frank and his team at Network Analysis Corporation, and the network measurement system was prepared by Kleinrock's team at UCLA.

Due to Kleinrock's early development of packet switching theory and his focus on analysis, design and measurement, his Network Measurement Center at UCLA was selected to be the first node on the ARPANET.

All this came together in September 1969 when BBN installed the first IMP at UCLA and the first host computer was connected. Doug Engelbart's project on "Augmentation of Human Intellect" (which included NLS, an early hypertext system) at Stanford Research Institute (SRI) provided a second node. SRI supported the Network Information Center, led by Elizabeth Feinler and including functions such as maintaining tables of host name to address mapping as well as a directory of the RFC's. One month later, when SRI was connected to the ARPANET, the first host-to-host message was sent from Kleinrock's laboratory to SRI. Two more nodes were added at UC Santa Barbara and University of Utah. These last two nodes incorporated application visualization projects, with Glen Culler and Burton Fried at UCSB investigating methods for display of mathematical functions using storage displays to deal with the problem of refresh over the net, and Robert Taylor and Ivan Sutherland at Utah investigating methods of 3-D representations over the net. Thus, by the end of 1969, four host computers were connected together into the initial ARPANET, and the budding Internet was off the ground. Even at this early stage, it should be noted that the networking research incorporated both work on the underlying network and work on how to utilize the network. This tradition continues to this day.

Computers were added quickly to the ARPANET during the following years, and work proceeded on completing a functionally complete Host-to-Host protocol and other network software. In December 1970 the Network Working Group (NWG) finished the initial ARPANET Host-to-Host protocol, called the Network Control Protocol (NCP). As the ARPANET sites completed implementing NCP during the period 1971-1972, the network users finally could begin to develop applications.

In October 1972 was organized a large, very successful demonstration of the ARPANET at the International Computer Communication Conference (ICCC). This was the first public demonstration of this new network technology to the public. It was also in 1972 that the initial "hot" application, electronic mail, was introduced. In March Ray

Tomlinson at BBN wrote the basic email message send and read software, motivated by the need of the ARPANET developers for an easy coordination mechanism. In July, Roberts expanded its utility by writing the first email utility program to list, selectively read, file, forward, and respond to messages. From there email took off as the largest network application for over a decade. This was a harbinger of the kind of activity we see on the World Wide Web today, namely, the enormous growth of all kinds of "people-to-people" traffic.

1.2.2 The Initial Internetting Concepts

The original ARPANET grew into the Internet. Internet was based on the idea that there would be multiple independent networks of rather arbitrary design, beginning with the ARPANET as the pioneering packet switching network, but soon to include packet satellite networks, ground-based packet radio networks and other networks. The Internet as we now know it embodies a key underlying technical idea, namely that of open architecture networking. In this approach, the choice of any individual network technology was not dictated by a particular network architecture but rather could be selected freely by a provider and made to interwork with the other networks through a meta-level "Internetworking Architecture". Up until that time there was only one general method for federating networks. This was the traditional circuit switching method where networks would interconnect at the circuit level, passing individual bits on a synchronous basis along a portion of an end-to-end circuit between a pair of end locations. Recall that Kleinrock had shown in 1961 that packet switching was a more efficient switching method. Along with packet switching, special purpose interconnection arrangements between networks were another possibility. While there were other limited ways to interconnect different networks, they required that one be used as a component of the other, rather than acting as a peer of the other in offering end-to-end service.

In an open-architecture network, the individual networks may be separately designed and developed and each may have its own unique interface, which it may offer to users and/or other providers, including other Internet providers. Each network can be designed in accordance with the specific environment and user requirements of that network. There are generally no constraints on the types of network that can be included or on their geographic scope, although certain pragmatic considerations will dictate what makes sense to offer.

The idea of open architecture networking was first introduced by Kahn shortly after having arrived at DARPA in1972. This work was originally part of the packet radio program, but subsequently became a separate program in its own right. At the time, the program was called "Internetting". Key to making the packet radio system work was a reliable end-end protocol that could maintain effective communication in the face of jamming and other radio interference, or withstand intermittent blackout such as caused by being in a tunnel or blocked by the local terrain. Kahn first contemplated developing a protocol local only to the packet radio network, since that would avoid having to deal with the multitude of different operating systems, and continuing to use NCP.

However, NCP did not have the ability to address networks (and machines) further downstream than a destination IMP on the ARPANET and thus some change to NCP would also be required. (The assumption was that the ARPANET was not changeable in this regard). NCP relied on ARPANET to provide end-to-end reliability. If any packets were lost, the protocol (and presumably any applications it supported) would come to a grinding halt. In this model NCP had no end-end host error control, since the ARPANET was to be the only network in existence and it would be so reliable that no error control would be required on the part of the hosts.

Thus, Kahn decided to develop a new version of the protocol which could meet the needs of an open-architecture network environment. This protocol would eventually be called the Transmission Control Protocol/Internet Protocol (TCP/IP). While NCP tended to act like a device driver, the new protocol would be more like a communications protocol.

Kahn began work on a communications-oriented set of operating system principles while at BBN and documented some of his early thoughts in an internal BBN memorandum entitled "Communications Principles for Operating Systems". At this point he realized it would be necessary to learn the implementation details of each operating system to have a chance to embed any new protocols in an efficient way. Thus, in the spring of 1973, after starting the internetting effort, he asked Vint Cerf (then at Stanford) to work with him on the detailed design of the protocol. Cerf had been intimately involved in the original NCP design and development and already had the knowledge about interfacing to existing operating systems. So armed with Kahn's architectural approach to the communications side and with Cerf's NCP experience, they teamed up to spell out the details of what became TCP/IP.

The first written version of the resulting approach was distributed at a special meeting of the International Network Working Group (INWG) which had been set up at a conference at Sussex University in September 1973. Cerf had been invited to chair this group and used the occasion to hold a meeting of INWG members who were heavily represented at the Sussex Conference.

The original paper on the Internet described one protocol, called TCP, which provided all the transport and forwarding services in the Internet. Kahn had intended that the TCP protocol support a range of transport services, from the totally reliable sequenced delivery of data (virtual circuit model) to a datagram service in which the application made direct use of the underlying network service, which might imply occasional lost, corrupted or reordered packets.

However, the initial effort to implement TCP resulted in a version that only allowed for virtual circuits. This model worked fine for file transfer and remote login applications, but some of the early work on advanced network applications, in particular packet voice in the 1970s, made clear that in some cases packet losses should not be corrected by TCP, but should be left to the application to deal with. This led to a reorganization of the original TCP into two protocols, the simple IP which provided only for addressing and forwarding of individual packets, and the separate TCP, which was concerned with service features such as flow control and recovery from lost packets. For those

applications that did not want the services of TCP, an alternative called the User Datagram Protocol (UDP) was added in order to provide direct access to the basic service of IP.

A major initial motivation for both the ARPANET and the Internet was resource sharing - for example allowing users on the packet radio networks to access the time sharing systems attached to the ARPANET. Connecting the two together was far more economical that duplicating these very expensive computers. However, while file transfer and remote login (Telnet) were very important applications, electronic mail has probably had the most significant impact of the innovations from that era. Email provided a new model of how people could communicate with each other, and changed the nature of collaboration, first in the building of the Internet itself (as is discussed below) and later for much of society.

There were other applications proposed in the early days of the Internet, including packet based voice communication, various models of file and disk sharing, and early "worm" programs that showed the concept of agents. A key concept of the Internet is that it was not designed for just one application, but as a general infrastructure on which new applications could be conceived. It is the general-purpose nature of the service provided by TCP and IP that makes this possible.

1. CERN and The World Wide Web Development

CERN is the European Laboratory for Particle Physics, based in Geneva, Switzerland. The history of distributed computing in CERN dates back to the 1970s. By 1976 there existed a system, and a corresponding set of protocols, called CERNnet. It was similar in architecture to ARPANET. But according to the official story given by CERN itself, the CERNnet protocols were developed independently. This meant that they would have little chance to compete with the TCP/IP protocols that were spreading in the US. But it also meant that CERN would be poised to make some vital contributions to the Internet.

In the latter half of 1980s the TCP/IP protocol was used increasingly in CERN, and in 1989 CERN officially connected to the Internet. Just one year later, CERN became the largest Internet site in Europe. This allowed the work of Tim Berners-Lee to have a truly global impact. Berners-Lee had been a contributor at CERN to work on Remote Procedure Call (RPC). He had also gained expertise, within this environment of distributed computing, on software portability techniques, network programming and socket programming. This proved crucial because, with all of these skills and ideas in tow, Berners-Lee went on essentially to invent the World Wide Web.

Berners-Lee gives us a dramatic way to think of the Web: "The World Wide Web is the universe of network accessible information, an embodiment of human knowledge." Its growth has been fantastic in the last years (Figure 1.2). Metaphysics aside, one can think of it as all resources that can be accessed using Hypertext Transport Protocol (http). The uniform use of this protocol has proved important for the spread of the Web. It has allowed different computers with different standards to communicate easily with each other. But it still does not make up the whole story. Without some sort of navigation tool, the web would remaining a confusing place. Two other things came together with http to provide a way out. First, the emergence of HTML (Hyper Text Mark-up Language) as a lingua franca helped the universalisation of the web. Second, the development of computer programs called browsers have provided users with a simple-to-use graphical user interface.

The first browser with a graphical user interface, Mosaic, was developed in 1993 by Marc Andreeson and a team of programmers in the National Center for Supercomputing Applications at the University of Illinois. In the next year, it gained about two million users. A major reason for its success was that it could be easily distributed through the Internet with the pioneer users contributing feedback to improve its design. Another important reason was that it was free. This novel marketing strategy was clearly potent. When Andreeson and some of his team, with two business associates, founded Netscape Corporation, they and their company continued this tactic on an even larger scale. Netscape established market dominance in this emerging field and in the process became part of the mythology of the Internet. At the time the company undertook an Initial Public Offering (IPO) on the Stock Market in August 1995 – which valued the company at over US$ 2 billion – it had hardly any sales but only the promise of what was to come.

Netscape’s strategy was based on the assumption that would earn revenues by selling tools to professional users to create the web pages to be read with its browser. Netscape’s strategy of giving away browsers eventually became standard practice. Microsoft, incorporated its browser program, Microsoft Explorer, into all of its operating systems, instead of selling it as separate package. The theory was an application of the loss-leader strategy, in which a company incurs a temporary loss in order to became a market leader.

1.3 The Internet Size

One of the most commonly asked questions, and also one of the most difficult to answer, is "how big is the Internet?" The simple answer is to use the definition of the Internet as a "network of computer network." With that definition, as of January 1997, there were some 828,000 Internet domains or networks, a number that has increase from just 21,000 in January 1993. But a Internet domain is an ambiguous term that can cover anything from a single computer to a proprietary service provider with many millions of users.

Thus, it is preferable to count the number of "Internet hosts" that populate the Internet. An Internet host is normally, a single computer. The great majority of hosts are individual Internet users.

The estimation of the number of Internet host is a process, which is reasonably automated. The Network Wizards survey is carried out twice each year through a computer program, which attempts to contact and verify all known hosts accessible via the public network. Thus, it produces an assessment of the minimum size of the public Internet on a specific day (see Figure 1.1). The figures might be distorted if the link to a particular country is out of service at the time of survey.

But what is really the answer to the question of "how big is the Internet?" This can be estimated by assuming an average number of users for each Internet host. Using numbers derived from Internet Service Providers, it is possible to estimate a range of between 2.5 and 4 Internet users for every host, which would imply a worldwide user base, at the end of 1997, of between 74 and 119 million users distributed by regions (see Figure 1.3).

CHAPTER TWO

ELECTRONIC PAYMENT TRANSACTIONS

New electronic Payment transactions together with an emerging global information economy on the Internet, are set to change the way that business is done. In the center of all these developments are the transaction mechanisms themselves, the financial infrastructure needed to open the electronic marketing. There is as such excitement about the new opportunities that these developments provided as there is concern about the impact it could have on both the economy and society as a whole.

Of the two types of electronic payments, MacroPayment Systems and MicroPayments Systems, the MacroPayment Systems transfer larger sums of money for each transaction, so usually the security requirement is more rigorous. To date, public key cryptography is normally used in macropayment for authentication (to prevent forgery) and encryption (to preserve privacy of the data). Besides public key cryptography, macropayment schemes use on-line broker activities to detect double spending prior to the acceptance of a payment by the vendor to verify the transaction amount.

This chapter will show a number of the most influential and important MacroPayment Electronic Systems that are being proposed or are already in operation.

2.1 First Virtual

First Virtual Holdings Incorporated (FVHI) original vision was to create a secure, interactive system for conducting Internet commerce and facilitating a new level of communications between merchants and their customers.

The company developed and operates the First Virtual Internet Payment System* SM (FVIPS SM), a secure and easy-to-use payment system that facilitates commercial transactions over the Internet. FVIPS works through existing e-mail technologies and Personal Identification Name (PIN) concepts, integrating seamlessly with established financial networks by using well-accepted transaction processing practices.

In June 1997, the First Virtual Holdings Company announced the Interactive Messaging PlatformSM (IMP) that integrates customer service, sales and marketing functions into a single transactional e-mail message that seamlessly links a secure payment system with highly graphical, animated, and interactive elements.

The Interactive Messaging Platform solution and its components are cross-platform, cross-protocol, and support a valuable range of commercial functions, including: electronic receipts for physical and virtual credit and debit card activity; interactive alert messages advising customers of shipments, billing or critical care notices; and customized direct mail tailored to individual profiles.

2.2 NetBill

CyberCash Inc., a leading provider of Internet payment platforms and services to financial institutions worldwide, and Carnegie Mellon University announced in April 8, 1997 an agreement which commercializes a new generation of advanced micro payment technology for electronic commerce, called NetBill. The NetBill technology enables an Internet billing system that provides the mechanisms for consumers and merchants to conduct secure transactions over the Internet.

NetBill is a dependable, secure and economical payment method for purchasing digital goods and services through the Internet. NetBill is currently in its Alpha Trial at Carnegie Mellon and uses fake money.

The NetBill payment system is made possible through a series of protocols and security measures working together to enable secure communications and transactions between merchants and consumers.

Box 2.1: Carnegie Mellon University

It is one of six major Universities that have been funded to develop technologies for online digital libraries. The NetBill technology has been designed on the basis of close consultation with these major libraries to meet the diverse needs of electronic publishers.

The NetBill technology has been developed by students, faculty and staff of the Information Networking Institute (INI) at Carnegie Mellon University with research support from the U.S. National Science Foundation through its Digital Library Initiative, the Defense Advanced Research Projects Agency, and several corporate sponsors. The INI engages in multidisciplinary research and education combining computer science, networking and business applications.

2.3 Secure Electronic Transaction - SET

Developed by VISA, MasterCard and key technology Leaders, the primary goals of SET are to protect the credit card system, establish consumer confidence in the Internet as a marketplace, and build transactions volume over this new commerce channel. SET 's standard for security procedures and technology will ensure consistent implementation among vendors, card companies, and financial institutions.

SET establishes a method for interoperability of secure transactions software over multiple, popular hardware platforms and operating systems.

The SET protocol is a collection of encryption and security specifications used as an industry-wide, open standard for ensuring secure payment transactions over the Internet.

SET was designed to protect the confidentiality of personal and financial information. It uses digital certificates to authenticate the parties in a payment card transaction.

SET can provide buyers and sellers in the virtual world the ability to engage in commerce with a great level of trust and confidence.

Box 2.2: VISA announces the World's first pilot of chip cards in Secure Electronic Commerce.

The first Visa purchase using the SET standard in Japan was made in Tokyo by an executive of the Toshiba Corporation, who purchased a bottle of Japanese Sake from "Click & Shop", the Internet mall managed by The Hankyu Corporation for Visa and Toshiba's joint project, Smart Commerce Japan.

This marks the first step towards providing Japanese consumers with access to secure, global Internet shopping. In combination with other Visa SET pilots already underway in Singapore, Taiwan and across Europe, Visa is already well on the way to creating a secure global electronic commerce marketplace which will enable Japanese Visa cardholders to make secure electronic purchases from on-line merchants around the world and Visa cardholders from elsewhere to make secure electronic purchases from Japanese merchants.

2.4 DigiCash’s ecash

DigiCash developed the key strategies and technologies required by secure digital systems and has produced several background documents and published papers to stimulate and inform the discussion of these systems. The company's expertise with secure systems has also contributed to various European Union projects.

DigiCash's primary area of expertise is cryptography. Working much like other codes and ciphers, digital technologies can perform complicated mathematical processes at great speed and without error, creating the opportunities for security with privacy, efficiency and flexibility.

DigiCash builds protocols and applications based on public-key cryptography. In much of this work, the goal is to guarantee that the privacy of the participants is protected. Particularly when privacy is an issue, these protocols need to be carefully constructed.

The ecash™ payment system is probably their best known cryptographic application. Many more cryptographic applications arise in fields as diverse as access control, smart card operating systems, electronic commerce, medical privacy, road pricing, electronic voting, and so on.

DigiCash's ecash™ is a software-based payments system which allows users to send electronic payments from any personal computer (PC) to any other PC or workstation, using any computer network including the Internet.

2.5 NetBank

The NetBank is an electronic payment system that allows to buy and sell "information products" via electronic mail. The system uses electronic payment coupons (NetCash) that are exchanged for goods and services using e-mail. Information Providers and other on-line merchants may operate their businesses completely via e-mail. Merchants may receive payments and deliver information services electronically. The payment coupons are called NetCash(tm) coupons, or NetCash for short.

NetCash is the on-line currency used by the NetBank. It is a new form of online money that may be passed from one person to another in e-mail messages.

NetCash is "in circulation" on the Internet, and anyone may spend or accept it. NetCash is ideally suited to be used as "online pocket change." It may be used to buy a newspaper for 25 cents, or to settle a $2 debt with a friend across the country. Internet users can use NetCash to buy online products and services, such as newspapers delivered via e-mail, and access to computer bulletin board systems.

2.6 MONDEX

Mondex is an innovative payment system that combines the best features of traditional cash with the convenience of electronic payment. Mondex, an "electronic cash card," gives banks, retailers and consumers a revolutionary alternative to the dollars and cents of hard currency. The heart of Mondex is a microprocessor - a computer chip - embedded in a plastic card, which digitally stores the electronic equivalent of cash. Cardholders can easily get Mondex cash at home using telephones and personal computers. And they can quickly transfer Mondex cash to one another using a Mondex wallet, the telephone or the Internet.

As of December 1996, AT&T Universal Card Services, Chase Manhattan, First Chicago NBD, MasterCard, Michigan National Bank, Dean Witter Discover (Novus) and Wells Fargo joined together as purchasers of the Mondex franchise rights in the US.

2.7 FSTC - Electronic Check Model

The FSTC Electronic Check is an innovative, all-electronic, payments and deposit gathering instrument that can be initiated from a variety of devices, such as a personal computer, screen phone, ATM, or accounting system. Electronic Check provides rapid and secure settlement of financial accounts between trading partners over open public or proprietary networks, without requiring pre-arrangement, by interconnection with the existing bank clearing and settlement systems infrastructure.

The Electronic Check is modeled on the paper check, except that it is initiated electronically, uses digital signatures for signing and endorsing, and digital certificates to authenticate the payer, the payer's bank and bank account. However, unlike the paper check, through the use of an issuer defined parameter, the Electronic Check can resemble other financial payments instruments, such as electronic charge card slips, travelers checks, or certified checks. Although Electronic Check's primary use is to make electronic payments on public networks, the project design will enable Electronic Check to be used in any situation where paper check is used today. For example,

banks will use Electronic Checks to gather electronic deposits from public network users, thus opening the opportunity for complete full service electronic remote banking, anywhere the customer is connected. Later, point-of-sale implementations are possible, if the marketplace demands.

2.8 Conclusion

There are dozens of electronic payment systems proposed or already in practice. But they can be grouped into three based on what information is being transferred online.

The first type maintains all sensitive information (such as bank account and credit card numbers) for its clients, which include both buyers and sellers. When there is a transaction, order information is transmitted along with information about payment confirmation and clearing, all of which do not include sensitive information. In effect, no real financial transaction is done online.

The second type is an extension of the conventional notational fund transfer. In credit card or check transactions, sensitive information is being exchanged. For example, you give your credit card to a merchant, who sends the card number through phone line and receives confirmation. Banks meanwhile receive the same information and adjust buyer and merchant's accounts accordingly. The information being transmitted online in this case is encrypted for security. This type is becoming the mainstay of online payment methods because consumers are familiar with this system and current players have vested interest in extending that system to the Internet.

The third type includes variations of digital cash, electronic money and coins. What distinguishes these systems from the other two is not simply the anonymity they afford, but the fact that what is being transferred is "value" or "money" itself.

CHAPTER THREE

THE UNITED STATES VISION ABOUT

ELECTRONIC COMMERCE

The U.S. position was taken from a report -- "A Framework For Global Electronic Commerce" -- approved by the President of United States in July, 1997. It is setting out his Administration's vision of the emerging electronic marketplace and outlining the principles that will guide the U.S. Government's actions.

"The Clinton Administration recognizes that electronic commerce is a process that is driven by the private sector and that the government should take a

contractual rather than regulatory approach to addressing issues requiring policy or legal redress."

U.S. Secretary of Commerce Bill Daley

Governments can have a profound effect on the growth of commerce on the Internet. By their actions, they can facilitate electronic trade or inhibit it. The report approved by the President articulates the Administration's vision for the emergence of the Global Information Infrastructure (GII) as a vibrant global marketplace by suggesting a set of principles, presenting a series of policies, and establishing a road map for international discussions and agreements to facilitate the growth of commerce on the Internet.

3.1 Principles

1. The private sector should lead.

The Internet should develop as a market driven arena not a regulated industry. Even where collective action is necessary, governments should encourage industry self-regulation and private sector leadership where possible.

2. Governments should avoid undue restrictions on electronic commerce.

In general, parties should be able to enter into legitimate agreements to buy and sell products and services across the Internet with minimal government involvement or intervention. Governments should refrain from imposing new and unnecessary regulations, bureaucratic procedures or new taxes and tariffs on commercial activities that take place via the Internet.

3. Where government involvement is needed, its aim should be to support and enforce a predictable minimalist, consistent and simple legal environment for commerce.

Where government intervention is necessary, its role should be to ensure competition, protect intellectual property and privacy, prevent fraud, foster transparency and facilitate dispute resolution, not to regulate.

4. Governments should recognize the unique qualities of the Internet.

The genius and explosive success of the Internet can be attributed in part to its decentralized nature and to its tradition of bottom-up governance. Electronic Commerce faces significant challenges where its intersects with existing regulatory schemes. We should not assume that the regulatory frameworks established over the past sixty years for telecommunication, radio and television fit the Internet. Existing laws and regulations that may hinder electronic commerce should be reviewed and revised or eliminated to reflect the needs of the new electronic age.

5. Electronic commerce on the Internet should be facilitated on a global basis.

The Internet is a global marketplace. The legal framework supporting commercial transactions should be consistent and predictable regardless of the jurisdiction in which a particular buyer and seller reside.

3.2 Issues

3.2.1 Financial Issues

3.2.1.1 Customs and Taxation

For over 50 years, nations have negotiated tariff reductions because they have recognized that the economies and citizens of all nations benefit from freer trade. Given this recognition, and because the Internet is truly a global medium, it makes little sense to introduce tariffs on goods and services delivered over the Internet.

The United States will advocate in the World Trade Organization (WTO) and other appropriate international fora that the Internet is declared a tariff-free environment whenever it is used to deliver products or services. This principle should be established quickly before nations impose tariffs and before vested interests form to protect those tariffs.

In addition, the United States believes that no new taxes should be imposed on Internet commerce. The taxation of commerce conducted over the Internet should be consistent with the established principles of international taxation, should avoid inconsistent national tax jurisdictions and double taxation, and should be simple to administer and easy to understand.

The Administration is also concerned about possible moves by state and local tax authorities to target electronic commerce and Internet access. The uncertainties associated with such taxes and the inconsistencies among them could stifle the development of Internet commerce.

The Administration believes that the same broad principles applicable to international taxation, such as not hindering the growth of electronic commerce and neutrality between conventional and electronic commerce, should be applied to subfederal taxation. No new taxes should be applied to electronic commerce, and states should coordinate their allocation of income derived from electronic commerce. Of course, implementation of these principles may differ at the subfederal level where indirect taxation plays a larger role.

3.2.1.2 Electronic Payment Systems

New technology has made it possible to pay for goods and services over the Internet. Some of the methods would link existing electronic banking and

payment systems, including credit and debit card networks, with new retail interfaces via the Internet. "Electronic money," based on stored-value, smart card, or other technologies, is also under development. Substantial private sector investment and competition is spurring an intense period of innovation that should benefit consumers and businesses wishing to engage in global electronic commerce.

At this early stage in the development of electronic payment systems, the commercial and technological environment is changing rapidly. It would be hard to develop policy that is both timely and appropriate. For these reasons, inflexible and highly prescriptive regulations and rules are inappropriate and potentially harmful. Rather, in the near term, case-by-case monitoring of electronic payment experiments is preferred.

From a longer term perspective, however, the marketplace and industry self-regulation alone may not fully address all issues. For example, government action may be necessary to ensure the safety and soundness of electronic payment systems, to protect consumers, or to respond to important law enforcement objectives.

As electronic payment systems develop, governments should work closely with the private sector to inform policy development, and ensure that governmental activities flexibly accommodate the needs of the emerging marketplace.

3.2.2 Legal Issues

3.2.2.1 'Uniform Commercial Code' for Electronic Commerce

In general, parties should be able to do business with each other on the Internet under whatever terms and conditions they agree upon.

Private enterprise and free markets have typically flourished, however, where there are predictable and widely accepted legal environments supporting commercial transactions. To encourage electronic commerce, the U.S. government should support the development of both a domestic and global uniform commercial legal framework that recognizes, facilitates, and enforces electronic transactions worldwide. Fully informed buyers and sellers could voluntarily agree to form a contract subject to this uniform legal framework, just as parties currently choose the body of law that will be used to interpret their contract.

Participants in the marketplace should define and articulate most of the rules that will govern electronic commerce. To enable private entities to perform this task and to fulfill their roles adequately, governments should encourage the development of simple and predictable domestic and international rules

and norms that will serve as the legal foundation for commercial activities in cyberspace.

The U.S. supports the development of an international uniform commercial code to facilitate electronic commerce. Such a code should encourage governmental recognition of electronic contracts; encourage consistent international rules for acceptance of electronic signatures and other authentication procedures; promote the development of alternative dispute resolution mechanisms for international commercial transactions; set predictable ground rules for exposure to liability; and streamline the use of electronic registries.

3.2.2.2 Intellectual Property Protection

Commerce on the Internet often will involve the sale and licensing of intellectual property. To promote this commerce, sellers must know that their intellectual property will not be stolen and buyers must know that they are obtaining authentic products.

International agreements that establish clear and effective copyright, patent, and trademark protection are therefore necessary to prevent piracy and fraud. While technology, such as encryption, can help combat piracy, an adequate and effective legal framework also is necessary to deter fraud and the theft of intellectual property, and to provide effective legal recourse when these crimes occur. Increased public education about intellectual property in the information age will also contribute to the successful implementation and growth of the GII.

Copyrights

The recently negotiated WIPO treaties for copyright protection should be ratified. Issues of liability for infringement, application of the fair use doctrine, and limitation of devices to defeat copy protection mechanisms should be resolved in a balanced way, consistent with international obligations.

The government will study and seek public comment on the need to protect database elements that do not qualify for copyright protection and, if such protection is needed, how to construct it.

The Administration will promote global efforts to provide adequate and effective protection for patentable subject matter important to the development of the GII, and establish standards for determining the validity of patent claims.

Patents

Development of the GII will both depend upon and stimulate innovation in many fields of technology, including computer software, computer hardware, and telecommunications. An effectively functioning patent system that encourages and protects patentable innovations in these fields is important for the overall success of commerce over the Internet. Consistent with this objective, the U.S. Patent and Trademark Office (PTO) will significantly enhance its collaboration with the private sector to assemble a larger, more complete collection of prior art (both patent and non-patent publications), and provide its patent examiners better access to prior art in GII-related technologies; train its patent examiners in GII-related technologies to raise and maintain their level of technical expertise; and support legislative proposals for early publication of pending patent applications, particularly in areas involving fast moving technology.

The United States will pursue these objectives internationally. Officials of the European, Japanese and United States Patent Offices meet, each year to foster cooperation on patent-related issues. The United States will recommend that a special committee be established within the next year to make recommendations on GII-related patent issues.

3.2.2.3 Privacy

It is essential to assure personal privacy in the networked environment if people are to feel comfortable doing business across this new medium.

Data gatherers should tell consumers what information they are collecting and how they intend to use it. Consumers should have meaningful choice with respect to the use and re-use of their personal information. Parents should be able to choose whether or not personal information is collected from their children. In addition, redress should be available to consumers who are harmed by improper use or disclosure of personal information or if decisions are based on inaccurate, outdated, incomplete or irrelevant personal information.

The Administration supports private sector efforts now underway to implement meaningful, user friendly, self regulatory privacy regimes. These include mechanisms for facilitating awareness and the exercise of choice online, private sector adoption of and adherence to fair information practices, and dispute resolution. The government will work with industry and privacy advocates to develop appropriate solutions to privacy concerns that may not be fully addressed by industry through self-regulation and technology.

3.2.2.4 Security

The GII must be secure and reliable. If Internet users do not believe that their communications and data are safe from interception and modification, they are unlikely to use the Internet on a routine basis for commerce.

Encryption products protect the confidentiality of stored data and electronic communications by making them unreadable without a decryption key. But strong encryption is a double-edged sword. Law abiding citizens can use strong encryption to protect their trade secrets and personal records. But those trade secrets and personal records could be lost forever if the decrypt key is lost. Depending upon the value of the information, the loss could be quite substantial. Criminals and terrorists to reduce law enforcement capabilities to read their communications can also use encryption. Key recovery based encryption can help address some of these issues.

The Administration, in partnership with industry, is taking steps to promote the development of a market driven public key infrastructure that will enable trust in encryption and provide the safeguards that users and society will need.

3.2.3 Market Access Issues

3.2.3.1 Telecommunications Infrastructure and Information Technology

Global electronic commerce depends upon a modern, seamless, global telecommunications network and upon the computers and "information appliances" that connect to it. Unfortunately, in too many countries, telecommunications policies are hindering the development of advanced digital networks. Customers find that telecommunications services often are too expensive, bandwidth is too limited, and services are unavailable or unreliable.

Domestically, the Administration recognizes that there are various constraints in the present network that may impede the evolution of services requiring higher bandwidth. Administration initiatives include Internet II, or Next Generation Internet. In addition, the FCC has undertaken several initiatives designed to stimulate bandwidth expansion, especially to residential and small/home office customers.

The goal of the United States will be to ensure that online service providers can reach end-users on reasonable and nondiscriminatory terms and conditions. Genuine market opening will lead to increased competition, improved telecommunications infrastructures, more customer choice, lower prices and increased and improved services.

The Administration will also seek effective implementation of the Information Technology Agreement concluded by the members of the WTO in March 1997, which is designed to remove tariffs on almost all types of information technology.

3.3 Content

The U.S. government supports the broadest possible free flow of information across international borders. This includes most informational material now accessible and transmitted through the Internet, including through World Wide Web pages, news and other information services, virtual shopping malls, and entertainment features, such as audio and video products, and the arts. This principle extends to information created by commercial enterprises as well as by schools, libraries, governments and other nonprofit entities.

In contrast to traditional broadcast media, the Internet promises users greater opportunity to shield themselves and their children from content they deem offensive or inappropriate. New technology, for example, may enable parents to block their children's access to sensitive information or confine their children to pre-approved websites.

To the extent, then, that effective filtering technology becomes available, content regulations traditionally imposed on radio and television would not need to be applied to the Internet. In fact, unnecessary regulation could cripple the growth and diversity of the Internet.

3.4 Technical Standards

Standards are critical to the long term commercial success of the Internet as they can allow products and services from different vendors to work together. They also encourage competition and reduce uncertainty in the global marketplace.

The United States believes that the marketplace, not governments, should determine technical standards and other mechanisms for interoperability. Technology is moving rapidly and government attempts to establish technical standards to govern the Internet would only risk inhibiting technological innovation. The United States considers it unwise and unnecessary for governments to mandate standards for electronic commerce. Rather, we urge industry driven multilateral fora to consider technical standards in this area.

Numerous private sector bodies have contributed to the process of developing voluntary standards that promote interoperability. The United States has encouraged the development of voluntary standards through private standards organizations, consortia, and R&D activities. The U.S. government also has adopted a set of principles to promote acceptance of domestic and international voluntary standards.

3.5 Conclusion

The success of electronic commerce will require an effective partnership between the private and public sectors, with the private sector in the lead. Government participation must be coherent and cautious, avoiding the contradictions and confusions that can sometimes arise when different

governmental agencies individually assert authority too vigorously and operate without coordination.

The variety of issues being raised, the interaction among them, and the disparate fora in which they are being addressed will necessitate a coordinated, targeted governmental approach to avoid inefficiencies and duplication in developing and reviewing policy.

Private sector leadership accounts for the explosive growth of the Internet today, and the success of electronic commerce will depend on continued private sector leadership. Accordingly, the Administration also will encourage the creation of private fora to take the lead in areas requiring self-regulation such as privacy, content ratings, and consumer protection and in areas such as standards development, commercial code, and fostering interoperability.

There is a great opportunity for commercial activity on the Internet. If the private sector and governments act appropriately, this opportunity can be realized for the benefit of all people.

CHAPTER FOUR

THE PRIVATE SECTOR POSITION

The Private Sector position can be placed by the Global Internet Project (GIP), which is a voluntary, cooperative effort of sixteen software and telecommunications industry CEOs and senior executives. Their companies each have a direct stake in Internet development. They compete against one another in the marketplace. But just the same, they all share a vision of the Internet future. By allowing them to commingle and transform the various, formerly distinct media. They share a conviction that the implications of this new medium are enormous for global knowledge and communication. Indeed, the Global Internet will have a revolutionary impact upon business, education, healthcare, and indeed all society. What is now still for the most part simply a technological "platform" (computers and information linked by copper wire across the globe) will soon become something a great deal more.

The Global Internet Project (GIP) strives to inform and educate governments, industry, international organizations and individuals on the nature and significance of the Internet and what it can become. The GIP is committed to promoting the Internet as the global platform for computing and communications. The GIP members believe that Internet expansion will depend to a great extent on the ability of companies and consumers to obtain products and services in a secure, flexible, convenient, and easy-to-use manner. A fundamental precept of the GIP is that because the Internet is a global medium, it is critical to address its challenges globally. The group is working with appropriate national and international bodies to find answers to

a variety of difficult issues to assure the best possible future for all members of the Internet community.

The GIP notes that the acceptance and use of electronic commerce plays a key role in the evolution of the Internet. While the amount of electronic commerce conducted on the Internet may be small today, it is expected to grow in the future as concerns are addressed relating to enforcement of contracts, taxes, intellectual property protection, privacy, security and other matters. Because many of the same public policy issues involve the Internet, the GIP believes its positions to promote the Internet will also help the promotion of electronic commerce. Policy decisions on electronic commerce and Internet participation and usage made in each country should be done with the knowledge that others are considering the same issues, often with a somewhat different historical and cultural perspective as well as different legal and regulatory frameworks. With a global medium such as the Internet, national policies on electronic commerce have implications far outside national borders, creating a unique shared interest.

4.1 Government Participation

In promoting the development of electronic commerce and the Internet, the GIP has an immediate interest in supporting the deregulation of telecommunications markets, fostering competition and thus increasing user choice, and lowering prices for consumers and businesses.

The essential challenge is to let markets unfold without rigid government regulations on electronic commerce in ways that satisfy the demands of consumers and businesses, and to promote competition and innovation.

The GIP has identified several specific categories where governments must make certain that law, regulation, and policy promote, not hinder, the development of electronic commerce. Many of these same issues affect the Internet. These categories are:

- Taxation and Customs Matters
- Uniform International Commercial Principles for Electronic Commerce
- Intellectual Property Protection
- Security
- Privacy
- Telecommunications Infrastructure
- Standards (Interoperability)

- Regulation of Content
- Import and Export Regulations

4.1.1 Taxation and Customs Matters

Unreasonable tax burdens will hinder the growth of electronic commerce. Taxation of electronic commerce should be guided by the principle of neutrality. Neutrality rejects the imposition of new or additional taxes on electronic transactions and instead simply requires that the tax system treat such transactions equally, regardless of whether it is through electronic means or through existing channels of commerce. Where the administration of transactional taxes in this medium may be complicated given the difficulty in capturing relevant customer information, government and industry must work together to provide acceptable solutions.

Cross-border transactions may run the risk that states and countries will claim inconsistent taxing jurisdictions, and that taxpayers will be subject to unpredictable taxation. The adoption of consistent taxing terms, definitions and concepts would eliminate many of the problems that will otherwise occur when one jurisdiction seeks to impose income tax based on one criteria while another jurisdiction embraces a conflicting taxing criteria. Rules that provide certainty and prevent double taxation are required. At the international level, changes may be needed to existing international tax treaties for the avoidance of double taxation.

Concerning customs, we believe that the Internet should be a tariff-free environment for products and services delivered over the Internet. This is consistent with current trends to reduce or eliminate tariffs on products with the recent example of the World Trade Organization's International Technology Agreement designed to eliminate tariffs on technology products.

4.1.2 Uniform International Commercial Principles for Electronic Commerce

In order to facilitate international electronic commercial transactions, it is important to establish a unified treatment for commercial transactions. The private sector should continue to shape the rules governing transactions in electronic commerce, such as commercial practices, agreements and industry guidelines, as it does today in more traditional commercial activities. The role for government is to ensure that the legal environment supporting commercial transactions in the private sector is flexible and adaptable to electronic commerce. We recognize and encourage the ongoing work of groups and organizations to define national and international sets of uniform principles for electronic commerce.

Concerning disputes that may arise between parties conducting commerce over the Internet, particular attention should be paid to the functions of arbitration and mediation. If the structure necessary to conduct arbitration and mediation on the Internet is established and functions well, disputes may be resolved before they become more complicated, thereby reducing the costs to solve such disputes. Current arbitration

organizations should study possible systems and structures for arbitration and mediation on the Internet, with a goal of giving arbitration awards on the Internet the same effect as traditional arbitration decisions. The use of the Internet is also worth considering for litigated disputes, given the litigation cost for the parties involved may be enormous due, in part, to the geographical distance between the parties.

4.1.3 Intellectual Property Protection and Rights

A balanced approach to intellectual property protection and rights will help to expand the use of electronic commerce. The Internet permits rapid and efficient dissemination of information in digital form. It has the potential to be a major medium for distribution of content in various forms, for example, textbooks, papers, drawings, music and video. Appropriate policies governing the communication and distribution of this information to the public are being put in place as a result of the World Intellectual Property Organization's landmark global conference held in Geneva in December 1996 and the two treaties that resulted from it. The GIP applauds the results of WIPO efforts to create the two new treaties. The GIP also supports WIPO activities to assess and resolve future intellectual asset issues. The GIP must also be aware of new issues such as the liability of network access and information providers - with a goal of multilateral solutions and international harmonization.

4.1.4 Security

The GIP supports policies that work globally on information security, giving companies and individuals the ability to ensure that their communications have an adequate level of security. Because the Internet is not designed to provide centralized information security, individuals and companies bear the responsibility for securing and verifying information sent or received over open networks. To promote confidence in and usage of electronic commerce on the Internet, the private sector requires effective encryption for information security of business and personal data, including confidentiality, authenticity, and integrity of information in electronic form.

The GIP notes an important international step taken in March 1997 with the adoption of the OECD's "Guidelines for Cryptography Policy", setting out principles to guide countries in formulating their own policies and legislation relating to the use of cryptography. The OECD Guidelines are intended to promote the use of cryptography, to develop electronic commerce through a variety of commercial applications, to bolster user confidence in networks, and to provide for data security and privacy protection.

4.1.5 Privacy

The GIP encourages the private sector to implement processes for protecting customer and personal privacy. The increasing capability of computers and telecommunications to obtain and correlate personal information about individuals will continue to raise privacy concerns. If not addressed, these concerns could severely limit the growth of electronic commerce. In the near term, industry is studying different approaches to achieve an

equitable balance between privacy interests and the desire to use personal information to promote electronic commerce.

Appropriate consumer protection is also essential for the healthy development of electronic commerce over the Internet. As consumer activities occur on a global level, an international consensus will be required with respect to minimum required regulations for consumer protection. Work is already underway within the OECD to establish international principles for consumer protection.

4.1.6 Telecommunications Infrastructure

Competitive environments for the provision of both local and long distance transport underlying the provision of Internet services, including electronic commerce, should be encouraged. This will help provide greater choice, functionality and value to Internet Service Providers for building their services on top of the infrastructure, and will ultimately benefit users. The World Trade Organization's recent agreement on basic telecommunications services, which opens telecommunications markets to competition, is another helpful step to promote electronic commerce on the Internet.

Many countries still maintain a monopoly provider of Internet access, or restrict the number of competing providers by adopting a licensing process that serves ultimately to limit competition, thereby reducing the choices available to users. OECD studies have shown positive correlation between the freedom to compete and provide Internet services within a country and the attractiveness of price and feature packages for consumers and businesses in that country.

4.1.7 Standards (Interoperability)

Electronic commerce will benefit from the development of technical standards to secure Internet interoperability. The Internet's development was based on voluntary industry standards and global interoperability. This key strength should continue to be fostered for its future growth. Governments should promote interoperability by encouraging industry-led global standards-setting processes, and by advocating open interfaces where multiple providers can interoperate. Such essential interfaces, where they are not open, can be used to diminish user choice by forming bottlenecks to access, which limit or deny competition. Market-driven processes should be encouraged wherever feasible in order to facilitate interoperability that can keep up with the rapid pace of technological and industry growth.

4.1.8 Regulation of Content

The GIP recognizes that the diversity of individual nations enriches the global environment. The promotion of diversity of content and respect for national culture and traditions are important. Encouraging trade in content (by removing barriers) is a means of promoting diversity of content, including cultural and linguistic diversity, and of preserving and maintaining the various national and regional cultures.

There is concern on the part of various governments regarding access to inappropriate information over the Internet. In the U.S. this concern primarily focuses on protecting children from pornographic content. The level of concern varies with the norms of each society, but countries as varied as the U.S., the U.K., China and Singapore have varying levels of concern. Censorship by governments can significantly dampen Internet growth and use. The Internet industry, including the GIP member companies, are developing and deploying content filtering mechanisms as a form of industry self-regulation, and are committed to supporting continued progress in this area.

Certain governments view the Internet's free flow of information across borders as a political threat and are putting in measures that stifle its growth. These kind of censorship and government controls poses major challenges to the Internet.

CHAPTER FIVE

THE FUTURE OF COMMERCE

The future of commerce is "Electronic Commerce". Electronic commerce is not some futuristic dream. It's happening now, with many well-established success stories. It's happening world wide - while the USA, Japan and Europe are leading the way, electronic commerce is essentially global in both concept and realization. It's happening fast. And, with the maturing of EDI and the rapid growth of Internet and the World Wide Web, it's accelerating.

Box 5.1: EDI

Electronic data interchange (EDI) is the exchange of documents in a structured form between computers via telephone lines. It is being increasingly used to great effect worldwide, most commonly, but not exclusively, for purchasing and distribution - orders, confirmations, shipping papers and invoices - but also for dentists payments and the distribution of exam results.

The impact of electronic commerce will be pervasive, both on companies and on society as a whole. For those companies that fully exploit it's potential, electronic commerce offers the possibility of breakpoint changes - changes that so radically alter customer expectations that they re-define the market or create entirely new markets. All other companies, including those that try to ignore the new technologies, will then be impacted by these changes in markets and customer expectations. Equally, individual members of society will be presented with entirely new ways of purchasing goods, accessing information and services, and interacting with branches of government. Choice will be greatly extended, and restrictions of geography and time eliminated. The overall impact on lifestyle could well be comparable to say that of the growth in car ownership or the spread of the telephone.

Box 5.2:What Is Electronic Commerce?

Electronic commerce is any use of electronic networks and technology for commerce and other economic activity. This includes the use of electronic communication as the medium through which goods and services of economic value are designed, produced, advertised, catalogued and inventoried, purchased and accounts settled. Private and public enterprises, citizens, companies, entrepreneurs, public institutions and government organizations, all types of social organizations and corporations will be able to freely participate in economic activities over a wide range of sectors including agriculture, forestry and fishery, industry, private and government services. Electronic commerce will allow products to be marketed worldwide, while providing a wide array of options to the consumer. Electronic commerce can also enhance a nation's economic position in an increasingly competitive global market.

Modern business is characterized by ever-increasing supply capabilities, ever-increasing global competition, and ever-increasing customer expectations. In response, businesses throughout the world are changing both their organizations and their operations. The barriers between the company and its customers and suppliers are lowering. Business processes are being re-designed so that they cross these old boundaries.

One special case of electronic commerce is electronic trading, in which a supplier provides goods or services to a customer in return for payment. A special case of electronic trading is electronic retailing, where the customer is an ordinary consumer rather than another company. However, while these special cases are of considerable economic importance, they are just particular examples of the more general case of any form of business operation or transaction conducted via electronic media. Other equally valid examples include internal transactions within a single company or provision of information to an external organization without charge.

Electronic commerce is technology for change. Companies that choose to regard it only as an "add on" to their existing ways of doing business will gain only limited benefit. The major benefits will accrue to those companies that are willing to change their organizations and business processes to fully exploit the opportunities offered by electronic commerce.

5.1 Electronic Commerce Categories

5.1.1 Business-Business

The business-business category would be a company that uses a network for ordering from its suppliers, receiving invoices and making payments. This category of electronic commerce has been well established for several years, particularly using Electronic Data Interchange (EDI) over private or value-added networks.

5.1.2 Business-Consumer

The business-consumer category largely equates to electronic retailing. This category has expanded greatly with the advent of the World Wide Web. There are now shopping malls

all over the Internet offering all manner of consumer goods, from cakes and wine to computers and motor cars.

5.1.3 Business-Administration

The business-administration category covers all transactions between companies and government organizations. Currently this category is in its infancy, but it could expand quite rapidly as governments use their own operations to promote awareness and growth of electronic commerce

5.1.4 Consumer-Administration

The consumer-administration category has not yet emerged. However, in the wake of a growth of both the business-consumer and business-administration categories, governments may extend electronic interaction to such areas as welfare payments and self-assessed tax returns.

5.2 Supplier Opportunities and Customer Benefits

As summarized in table 1, electronic commerce offers several opportunities to suppliers and commensurate benefits to customers. These include:

5.2.1 Global Presence / Global Choice

The boundaries of electronic commerce are not defined by geography or national borders, but rather by the coverage of computer networks. Since the most important networks are global in scope, electronic commerce enables even the smallest suppliers to achieve a global presence and to conduct business worldwide.

The corresponding customer benefit is global choice - a customer can select from all potential suppliers of a required product or service, regardless of their geographical location.

Table 1: Opportunities and Benefits

Supplier Opportunity	Customer Benefit
Global Presence	Global Choice
Improved Competitiveness	Quality of Service
Mass Customization	Personalized Products & Services
Shorten or Eradicate Supply Chains	Rapid Response to Needs
Substantial Cost Savings	Substantial Price Reductions
Novel Business Opportunities	New Products & Services

5.2.2 Improved Competitiveness / Quality of Service

Electronic commerce enables suppliers to improve competitiveness by becoming "closer to the customer". As a simple example, many companies are employing electronic commerce technology to offer improved levels of pre-and post-sales support, with increased levels of product information, guidance on product use, and rapid response to customer enquiries. The corresponding customer benefit is improved quality of service.

5.2.3 Mass Customization / Personalized Products and Services

With electronic interaction, customers are able to gather detailed information on the needs of each individual customer and automatically tailor products and services to those individual needs. This results in customized products comparable to those offered by specialized suppliers but at mass market prices. One simple example is an on-line magazine that is tailored for the individual reader on each access to emphasize articles likely to be of interest and exclude articles that have already been read.

5.2.4 Shorten or Eradicate Supply Chains / Rapid Response to Needs

Electronic commerce often allows traditional supply chains to be shortened dramatically. There are many established examples where goods are shipped directly from the manufacturer to the end consumer, by-passing the traditional staging posts of wholesaler's warehouse, retailer's warehouse and retail outlet. (Typically the contribution of electronic commerce is not in making such direct distribution feasible - since it could also be achieved using paper catalogues and telephone or postal ordering - but rather in making it practical in terms of both cost and time delays.)

The extreme example arises in the case of products and services that can be delivered electronically, when the supply chain can be eradicated entirely. This has massive implications for the entertainment industries (film, video, music, magazines, and newspapers), for the information and educational industries, and for companies concerned with the development and distribution of computer software.

The corresponding customer benefit is the ability to rapidly obtain the precise product that is required, without being limited to those currently in stock at local suppliers.

5.2.5 Substantial Cost Savings / Substantial Price Reductions

One of the major contributions of electronic commerce is a reduction in transaction costs. While the cost of a business transaction that entails human interaction might be measured in dollars, the cost of conducting a similar transaction electronically might be a few cents or less. Hence, any business process involving "routine" interactions between people offers the potential for substantial cost savings, which can in turn be translated into substantial price reductions for customers.

5.2.6 Novel Business Opportunities / New Products and Services

In addition to re-defining the markets for existing products and services, electronic commerce also provides the opportunity for entirely new products and services. Examples include network supply and support services, directory services, contact services (i.e. establishing initial contact between potential customers and potential suppliers), and many kinds of on-line information services.

While these various opportunities and benefits are all distinct, they are to some extent inter-related. For example, improvements in competitiveness and quality of service may in part be derived from mass customization, while shortening of supply chains may contribute to cost savings and price reductions.

5.3 Examples of Electronic Commerce

There are many well-established examples of electronic commerce in a wide range of industry sectors and a wide range of application areas. A few of these will serve to illustrate the nature of current activity.

5.3.1 Retail

ibs (http://www.bookshop.co.uk)

The Internet Bookshop exists only as a site on the World Wide Web - it has no physical outlets. The shop specializes in technical books and currently offers more than 780000 titles. Customers visiting IBS can browse, search using keywords, and obtain detailed information on individual titles, including a descriptive text, bibliographic information, contents list, reviews, and suggested readership. They can order and pay for books, which are then delivered through publishers', established international delivery channels.

Virtual Vineyards (http://www.virtualvin.com)

Like ibs, Virtual Vineyards exists only as a site on the Web. It offers wines and gourmet foods, providing an outlet for a number of small Californian wine producers. There is detailed on-line information on the various wines and foods, and also an on-line query service (using e-mail). Customers can order and pay using either credit cards or electronic cash.

Customer orders are transferred electronically from Virtual Vineyards' San Jose office to their Napa Valley warehouse, along with instructions from printing the shipping label and enclosures (such as tasting notes). The goods are shipped by Federal Express. Customers can track the progress of the delivery on-line by accessing the Federal Express site.

5.3.2 Finance

Barclays Bank (http://www.barclays.co.uk)

Many banks have offered on-line querying of accounts for some time. Following relaxation of controls on the export of security technologies from the USA, Barclays has

extended this to a large scale trial offering customers full banking services from their home computers.

ESI (http://www.esi.co.uk)

Electronic Share Information Ltd offers an on-line share information and trading facility. Customers can view London Stock Exchange prices and the FTSE 100 index, buy and sell shares on-line via ShareLink, use a range of technical analysis and research tools, obtain company profiles and share tips, request automatic notification of share price changes, and obtain real-time portfolio valuations. Launched in September 1995, the service now has 15000 registered users and attracts 1.25 million visits per month.

5.3.3 Distribution

DIPA

DIPA GmbH supplies high quality photographic images. Customers can browse an extensive photographic library and order the required images, which are then delivered over satellite links.

Oracle (http://www.oracle.com)

Potential customers can now access Oracle's Web site and browse information on the company's products. They can then download free trial versions of various products, or pay on-line and download full versions. Because of potential legal and financial problems, the on-line purchasing and delivery service is currently limited to United States customers only.

5.3.4 Pre/post Sales Support

Hewlett Packard (http://www.hp.com)

Hewlett Packard's "Access HP" Web site provides thousands of pages of information, including general company information, news, world-wide contact points, new product announcements, and details of HP's wide range of products and services.

GE Plastics (http://www.ge.com/gep)

GE Plastics is an industry leader in the field of engineering plastics. The company's Web site provides an overview of the company's products, detailed profiles of the properties of each material, and guidance and recommendations for designing applications using the company's materials. There is also an on-line "Technical Tip Of The Week" contest whereby any visitor can submit a tip for working with GE materials. The company selects the best tips for incorporation into its "Past Technical Tips" pages.

5.3.5 Engineering Design

Ford

Ford engineering teams worldwide collaborate in the design of new car engines using Ford's private network. The design support system is a combination of a real-time videoconferencing system and a shared "design whiteboard". Any participant in a design conference can draw or write on the whiteboard, drag objects onto the whiteboard, and edit objects on the whiteboard. All changes to the whiteboard are immediately visible to all other participants. The object types supported include CAD drawings, text documents, and video clips.

GEN (hhtp://www.gen.net)

The Global Engineering network is coordinated by Siemens Nixdorf and has participants from many European countries. GEN is a "marketplace for engineering knowledge", bringing together the suppliers of components and sub-assemblies and those who might incorporate those components or assemblies into their own new products. The suppliers enter detailed technical information (perhaps including 3D CAD drawings) into the GEN network. Potential customers can then search the supplier information looking for "best fit" components or assemblies, and can experiment with incorporating those components or assemblies into the early stages of their own product designs.

5.3.6 Business Support

citiusNet (e-mail: citius@mail.citius.fr)

citiusNet is a well established system for supporting business-to-business electronic commerce. It currently has three major elements - altius, citius and fortius. Altius is an electronic catalogue of industry and office supplies. Citius is a system for handling trading transactions. Fortius supports electronic payment by EDI, and is used not only for payment of goods selected from altius and traded over citius, but also for routine transactions such as pension and insurance payments. citiusNet is a multi-language service that is offered internationally. The systems were developed by DDP from Lyon, France, with the cooperation of various partners from Spain, Belgium, Germany and Italy.

DDP now plans to extend its services to offer general business support ("Intermediation"). DPP will handle all routine operations (banking, administration, pension funds, etc.) on behalf of its subscribers, thus allowing those subscribers to concentrate on their core businesses.

5.3.7 Publishing

The Times (http://www.the-times.co.uk)

The Times and the Sunday Times are now published on-line. The complete content of the newspapers is available, and access is free. Using the "Interactive Times" facilities, users of the on-line service can tailor the newspaper to their own personal interests and tastes or perform a search for past articles that include specified keywords.

5.3.8 Professional Services

de Kreek (http://www.dds.nl/dekreek)

Mr Jeroen de Kreek, a lawyer from Amsterdam, provides a legal question answering service that is available 24 hours a day. Users of this service are led through a hierarchy of menus that aids them in ultimately formulating their question as a text message. Mr de Kreek then responds to this question, normally within two hours. The response to the first question is free, but subsequent questions incur charges.

5.3.9 International Contact

Global Tradepoint Network (http://www.unicc.org/untpdc)

The Global Tradepoint Network is a huge network of business information, developed under the UN-supported Electronic Trade Efficiency Programme. By interfacing to establish national databases, the network aims to supply key trading data for countries across the world. Such data might cover, for example, market information, transportation options and prices, insurance facilities, credit availability, customs requirements, and import/export regulations. Further, through its "electronic trading opportunities" system, the network serves as a meeting place for buyers and sellers worldwide. Potential matches between buyers and sellers are identified by using both geographical details and information on products offered or required, the latter being expressed using the Harmonised Customs Tariff codes. Once a potential match has been identified, the buyer and seller establish contact directly.

5.3.10 Shared Business Processes

Tesco

Tesco operates around 540 supermarkets in the UK. The company has a "sales based ordering" system whereby information on product sales at individual supermarkets, as collected by the checkout scanners, is forwarded electronically to the computers at the company's Store Control Center. These computers determine the goods needed to replenish the stock at each store, and send this information electronically to the computers at the Tesco depot serving that store. For many products Tesco itself holds no stock, so orders are generated automatically and forwarded to Tesco's suppliers using EDI. On delivery to the Tesco depot, the replacement stock is immediately shipped on to the appropriate stores. Within 24 hours of an item being sold by the supermarket its replacement is back on the shelves. The re-stocking system relies on electronic communication and on close co-operation between Tesco and its suppliers, who in effect are partners in a shared business process of replenishing products on the supermarket shelves.

CONCLUSION

In fact, electronic commerce began more than two decades ago with the introduction of electronic data interchange (EDI) between firms (sending and receiving order, delivery and payment information, etc.) Even consumer-oriented electronic commerce has a

rather long history: each time you use automatic teller machines or present your credit cards, you transact business electronically. These EDI and ATM, however, operate in a closed system; they are of a more convenient communications medium, strictly between the parties allowed in.

Traditional electronic data interchange (EDI) is an automated system of business-to-business data exchange. Two primary areas of EDI are data interchange (for orders, invoices) and electronic funds transfer (EFT) used among banks, which have high volume in relatively small number of data items, and long-term relationship. Setting up an EDI is expensive such that only large firms could justify investing in EDI. Security-wise, EDI offers robust transactions compared to the Internet since EDI runs on closed, private value added networks.

In the last few years, we have seen a new phase of commercialization. Originally, commercial efforts mainly comprised vendors providing the basic networking products, and service providers offering the connectivity and basic Internet services. The Internet has now become almost a "commodity" service, and much of the latest attention has been on the use of this global information infrastructure for support of other commercial services. This has been tremendously accelerated by the widespread and rapid adoption of browsers and the World Wide Web technology, allowing users easy access to information linked throughout the globe.

The World Wide Web (WWW), the Internet's client-server, opened up a new age by combining the Internet and the Electronic Commerce.

Electronic commerce is not limited to buying and selling products online. The online or digital partners demand changes in the way we do business from production to consumption, and they will affect companies who might think they are not part of electronic commerce. Electronic commerce is leading to significant changes in the way products are customized, distributed and exchanged and the way consumers search and bargain for products and services and consume them.

CASE: Amazon.com vs. Barnes & Noble

The case of Amazon.com vs. Barnes & Noble shows that the very definition of "stores" has to be re-evaluated. This also touches upon the issue of taxable nexus and sales tax collection on the Internet.

Distributing books require numerous local outlets (local bookstores) to provide convenient access to customers. At the same time, mail order distribution has been used for many decades through various book clubs. Taking this direction into the Internet, Amazon.com has become the leading online bookstore, billing itself as the "largest bookstore" on earth not by opening numerous branch stores but via the Internet. The "biggest bookstore", Barnes & Noble with a towering share of revenues and physical book stores, has been forced to respond to Amazon.com's challenge by opening its own Web store as well as by bringing a law suit against its challenger.

The Internet has the potential to become the Worlds' most active trade vehicle within a decade, creating millions of high paying jobs. In addition, Internet shopping may revolutionize retailing by allowing consumers to sit in their homes and buy a wide variety of products and services from all over the world.

The growth of Electronic Commerce over the Internet was estimated by Forrester Research in July 1997, and indicated that business-to-business commerce over the Internet would reach $8 billion in 1997, a tenfold increase from 1996. In 2002, it is estimated that the value of goods and services traded between companies will rise to $327 billion. Forrester Research predicts that durable goods manufacturers will lead the rush to Internet-based electronic commerce, reaching $99 billion in sales by 2002. Makers of paper, plastics, apparel, and other non-durable good will sell $17 billion online by 2002.

However, to ensure the growth of global electronic commerce over the Internet, standards must be observed to assure reliability, interoperability, ease of use and scalability in areas such as:

- electronic payments;
- security (confidentiality, authentication, data integrity, access control, non-repudiation);
- security services infrastructure (e.g., public key certificate authorities);
- electronic copyright management systems;
- video and data-conferencing;
- high-speed network technologies (e.g., Asynchronous Transfer Mode, Synchronous Digital Hierarchy); and
- digital object and data interchange.

Both telecommunications networks and computer technologies are heading toward the "convergence". In short, the convergence is a process that allows a certain incompatible devices to talk to each other (interoperable), products to be interchangeable and processes to be integrated. The digital technology is much wider than a simple network convergence we are aware of today.

Today's Electronic Commerce processes are based on personal computers because of their origin within the Internet, a network of computers. The first stage of Electronic Commerce expansion is that within the installed base of computer users. The second wave will come when more people get access to computers (via lower computer prices or cheaper devices). The third and more important, expansion is predicted to be from those with non-computer access to the global network: through broadcast TV, cable TV, telephone networks, and new appliances. A widespread use of these cheaper access

media represents the phase of "bringing workplace computers into the living room". It means the steps for The New Era of commerce. Although……

The Limiting Factors of Electronic Commerce

Will Be our Limited Vision of

Electronic Commerce

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"WITHOUT FREEDOM OF THOUGHT

THERE CAN BE NO SUCH THING AS WISDOM

AND NO SUCH THING AS PUBLIC LIBERTY

WITHOUT FREEDOM OF SPEECH"

BENJAMIN FRANKLIN 1722

"FREEDOM OF THOUGHT

AND THE RIGHT OF PRIVATE JUDGMENT

IN MATTERS OF CONSCIENCE

DIRECT THEIR COURSE TO THIS HAPPY COUNTRY"

SAMUEL ADAMS 1776

"WE DEFEND AND WE BUILD

A WAY OF LIFE

NOT FOR AMERICA ALONE

BUT FOR ALL MANKIND"

FRANKLIN DELANO ROOSEVELT 1940

"WHENEVER A PEOPLE

OR AN INSTITUTION

FORGETS ITS HARD BEGINNINGS

IT IS BEGINNING TO DECAY"

CARL SANDBURG 1963

Sérgio da Silveira Malta

O ex-bolsista é funcionário da Telecomunicações da Bahia S.A. – Telebahia.

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