

# Electronic Commerce Today & Tomorrow

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**The following is an extract from the address by JoAnn Patrick-Ezzell, President, AT&T Online Services, 4 July 1997 to Tradegate and ECA members. It examines the likely future development of electronic commerce and the elements that drive and shape its evolution.**

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Forecasting the future is always difficult. I do believe, however, that the Internet is fundamentally changing how we communicate, how we collaborate, how we conduct commerce, and how we learn. This paper sets out a vision of the emerging electronic commerce environment and some of the requirements to enable its continued successful development.

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## Growth of the Internet and Electronic Commerce

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The evolution of electronic commerce will be shaped, in large measure, by Internet-related developments.

Calculating and reporting on Internet statistics has become as commonplace as assessing the weather — and just about as accurate.

One of the better statistical measures of Internet growth is the number of Host Computers (a host computer is defined as a domain name that has an IP address associated with it— think of it as a computer connected to the Net).

From January 1996 to 1997, the number of Host Computers worldwide has grown by 70 percent to over 16 million. I would not be surprised if the *Network Wizards* survey to be released later this month pegs the July 1997 number of Host Computers at over 20 million.

In North America, the number of Host Computers in just one year had grown by 151%, totalling seven million. In the same period, the number of Host Computers in South America grew by 215%. Europe represented 37 percent of the total, with growth at 62%. Closer to home, the growth of Host Computers in Asia/Pacific was 154%. And second only to Japan, Australian Host Computers represented about one-third of the total in Asia/Pacific and the growth rate here was 66% for the past year.

The Internet is developing rapidly in Asia/Pacific, not surprisingly, as the region is home to so many of the world's semiconductor, disk drive, and PC

factories. With about 2.7 million users, Australia is currently the most connected country in Asia/Pacific. The number of Internet users in Asia/Pacific is expected to exceed 50 million by the year 2000.

Today, there has also been unprecedented growth in electronic commerce as well. I believe the forecasts that electronic commerce will reach US\$50 billion by the year 2000 are much too conservative.

In one survey published earlier this year by CommerceNet (an industry consortium) and Nielsen, the media-research firm, 73% of Internet users had used the web for shopping in one way or another in the past month.

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## Electronic Commerce – the Big Money

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However, the big money is not in consumer shopping but in business-to-business commerce. The reason of course is that many business transactions are already conducted at a distance, whether by fax, telephone, post, or private network.

EDI has made the supply chains of businesses today far more efficient. Today, an estimated 95% of Fortune 1000 companies use EDI in one way or another.

I will highlight what I believe are the most significant ways the Internet will impact on these four components.

It's important to keep in mind that existing secure messaging systems, and notably EDI, will play a key role in the development of this emerging electronic commerce environment. What will change is the level of ubiquity and user-friendliness inherent in applications— if you will, the end of the "Tyranny of Distance."

By using Internet technology a business can enhance the flow of information within their operation and establish a one-to-one relationship with their customers. The back office can interact directly with employees, partners, suppliers, and customers, creating new synergies and

opportunities. The store front can be reached by customers and monitored by managers, at anytime, from anywhere. And the consumer and end user can finally participate as an equal in the flow of information that is the lifeline of commerce.

It's true that before we reach this level of productivity and sophistication, there are some basic requirements that need to be met.

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## Requirements for Continuing Development of Electronic Commerce

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I think one of the best salespeople of all time must have worked for AT&T, some 100 years ago. Can you imagine what it took to sell the first telephone? Think about it... who was the person going to call? Connectivity today is as critical to the success of electronic commerce as it was to our first customer. It follows, therefore, that ubiquitous and accessible communication infrastructure is indispensable to the adoption and implementation of electronic commerce.

Another requirement for electronic commerce is the economic readiness of the parties involved. Consumers must be able to afford the necessary technology and must have the means to stimulate the interest of businesses around the world. Businesses must also afford the technologies that will bring their operations into the information age.

And importantly, we will need to bridge the cultural gaps that separate us. We must find a way to overcome communication barriers.

Five years ago it would have been inconceivable to fulfill these requirements in the near future. The Internet is changing this.

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## PC Penetration and Teledensity

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Let's take a look at telephone, television, computer, and wireless penetration. Australia has the highest percentage of

PC penetration and teledensity in Asia/Pacific. There are many countries in Asia/Pacific with low teledensity, however. The Philippines, Indonesia, the PRC, Thailand, and Malaysia have low telephone penetration, but relatively high TV penetration. This is an important characteristic that may enable them to overcome current infrastructure shortcomings as new access methods are developed.

Teledensity growth—the number of lines per person—in Asia is expected to jump 111%. And by the year 2000, the number of actual lines will more than double to 375 million.

To give an example of the enormous expansion, China is planning to install telephone lines at the rate each year equivalent to the size of a US Bell regional operating company. Or put another way, they'll duplicate Australia's entire national network every year. The projected teledensity growth rate in the US pales in comparison to the Pacific Rim—with a 15% growth opportunity expected by the year 2000.

Plans for the first fibre optic undersea telecom cable directly between the US and China were announced this year. The cable will increase capacity 16 fold—jumping from 5 to 80 gigabits per second. It will transmit more than one million simultaneous calls, higher than any undersea facility now in operation.

Overall, Asia/Pacific's cellular subscriber base is expected to exceed 70 million by the year 2000, quadrupling revenues to \$50 billion.

And, one of the biggest changes over last year in the Asia/Pacific Internet market has been the building of Internet backbones. I'm pleased to say AT&T was at the forefront—building the first Internet backbone network in Asia/Pacific, linking Japan, Hong Kong, and Australia with connectivity back to the US.

The flexibility of digital technology allows information to become independent of the medium. WebTV, for example, broadens the Internet user base and integrates the computer with the television, and vice versa. For network computers recent technology breakthroughs range in significance from being able to carry a device with powerful information access capabilities in your pocket to slashing computer costs to under US\$500. Cellular telephones are being applied to the Internet through

companies such as Unwired Planet. Infrastructure solutions like these potentially make computers and networks available to many more people—to masses of people in Asia/Pacific and the world.

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### **New Economic Models**

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As you know, Australia ranks in the top 10% in the world and fourth in Asia/Pacific in terms of per capita income—estimated to be US\$21,000 this year. Obviously, an adequate income level is necessary in order to truly benefit from the breakthroughs in Internet technology and from the vast information resources available online. Much of the hardware needed to use the Internet to its fullest is still too expensive.

Just as there are new technologies to overcome infrastructure challenges, there are new economic models that may help bridge the affordability gap. For example, companies like Hotmail offer free email service by subsidizing it with advertising. This presents a new economic model. Businesses may choose to carry access costs previously charged to consumers in exchange for the chance to build a direct relationship with a customer.

In addition, the appliances used to access communication services need not be economically prohibitive. Take Diba for instance. Diba produces inexpensive appliances that perform basic Internet functions, such as browsing, e-mail and fax, in some cases by combining with common home appliances to minimize costs. For example, Diba Internet uses the television as a monitor. Inexpensive devices and access methods such as these will broaden the type, and number, of participants in the electronic commerce environment.

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### **English Literacy**

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Cultural readiness is related to literacy since most information available on the Internet today is print based. I'm defining literacy here as the population over 15 years of age with the ability to read and write a short, simple statement about everyday life. Even with today's graphical Websites, for a user to manoeuvre online, he or she must be literate. Australia has one of the highest literacy rates in the world. High literacy rates enable most of the people of Australia to easily use the Internet related information available to them.

Apart from literacy, the language issue must be addressed in the development of

the emerging electronic commerce environment. In most cases, up until now, to use most of the information available online, it is not enough for one to be literate—one must also be proficient in English. Here again, Australia has an advantage as a native English speaking country.

This requirement is also being addressed by technology. The development of real-time translation software allows users to communicate and access content in their own language. Many websites, such as our site in Japan, are available in more than one language. Providing multilingual content and access is an important part of bridging cultural differences worldwide. Australia's multi-cultural society and skilled multi-lingual workforce again is relevant to note.

Software such as Typhoon translates English content into passable Japanese. The sentence construction and idioms may not always be perfect, but users who don't read English at least have access to a passable translation of Website information. The need for multilingual usage goes further. Inability to conduct foreign language searches has traditionally hindered non-English readers from accessing foreign language Website information. Now multilingual search engines, such as Globepage, allow Chinese and other foreign language search queries.

Internet resources are useful in proportion to the number of people who can make use of the Online information. Multilingual access devices are broadening the user base by helping bridge language differences. Soon, users may be able to communicate and access Online content in any language, and this ability will tie all users together in a way we have never known before.

I see the aspects of Infrastructure, income, and culture I just talked about as key requirements to address in order for the emerging electronic commerce environment to grow.

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### **Examples of Electronic Commerce in Action**

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As I mentioned at the outset, I'd like to share some examples of how the Internet is currently being used to enable electronic commerce. These examples give us an idea of how far we've come, and help us think about how much further we can go.

Ford and CustomBoard integrate the Internet into their entire business operation. The Australia Customs Service facilitates back office operations through EDI. ImageNet has set up a Store Front on the Internet, and Qantas and JAL provide the Consumer with online support.

CustomBoard, the American snowboard manufacturer, is an innovative example of a company that is integrating the Internet into the core of its business operations. CustomBoard uses its Website to automate the ordering process. Interested consumers provide information such as their desired board base and size. Customers can also email the company graphics they want on their snowboard. The customer information is then sent to the company's production department. Using this information, CustomBoard's snowboard crafting machines automatically build the board to customer specifications. From there, the finished product is shipped directly to the customer. There are virtually no inventory costs associated with this method of production. Although CustomBoard serves a niche market, it is a useful example of just how companies are currently using the Internet to improve the efficiency of their business.

The key feature of electronic commerce applications in the customs area is back office integration and the economies this brings. The integration of customs' in-house applications with the EDI messaging program is one side of the equation. The other is the potential for the many trading partners to automate their business systems.

Current levels of integration have improved the delivery of trade facilitation across many of the customs applications. The latest electronic commerce developments offer information services as well as transaction processing and address a wider range of potential applications extending from the present base through the extended commercial processes. There are great potential user benefits from these functions.

One of the great qualities of Internet enhanced electronic commerce is that in some cases the entire commerce transaction can occur online. ImageNet uses its Website to display and sell its photographic images. More interestingly, once a customer has made a purchase, ImageNet then allows the buyer to download the image as a high-resolution file.

Information transactions are just as integral to the emerging electronic commerce environment as transactions that involve the exchange of capital or goods. Qantas and JAL, for example, share information from their company databases with consumers, providing them with a valuable service.

Qantas provides worldwide flight locations information, from which users can put together their itineraries. Consumers can also access contact numbers for sales agents who can handle ticketing and information on destination hotels. Similarly, one of our customers in Japan, JAL, has a Website that provides information on public transportation to airports around the world. The site also lists flying regulations, such as acceptable luggage sizes and materials allowed on board. Information resources like these benefit both the consumer and the business. On the business side, Qantas and JAL save on staff requirements and time needed to provide this customer information.

There is so much potential for using the Internet to help improve electronic commerce. The examples I shared with you demonstrate current business uses, but in the future, new technologies, along with the same creativity and innovation, will enable even more powerful applications.

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### **Technologies that will Drive More Complex and Powerful Applications**

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The transformation brought forth by the technology industry over the past 20 years, exemplified by the invention of the microprocessor and the advent of the PC, pale in comparison to the explosive and innovative growth of Internet technology. Five developments: information push technology, artificial intelligence, Internet telephony, electronic cash and Intranets, are among the exciting technologies driving change.

If we look at the unprecedented growth of the Internet in the last few years, there is no question about the critical role played by the introduction of the browser. This because to a great degree, the growth was driven by the explosion of the World Wide Web.

The Web, however, is not the Internet. It is part of the Internet, a part that has sprung to life around the browser. How much longer will the browser and the Web drive the growth and expansion of the Internet? I believe not much longer.

This is not to say that the 150 million web pages of today will not reach the 1 billion mark by the Year 2000. Websites will continue to grow but they will not be driven by browser technology alone. The next technology that will revolutionize the Internet is here and will soon be pushing its way onto desktops and televisions around the world.

Information push technology is what I believe will drive the Internet into the 21st Century. It is at the heart of what will drive different media and industries to converge on the Internet. Push technology combines aspects of the web with the qualities of broadcast media and this will no doubt create incredible opportunities.

One interesting technology driver is artificial intelligence. Intelligent agents will become critical as more and more information is pushed on to our desktops, laptops, palmtops, set top boxes and the myriad of devices that we use. Intelligent agents, which understand our individual needs and preferences, will filter information and help the content provider deliver the right stuff, in the right amount, to the right person, at the right time.

Among their many uses, intelligent agents will also be able to automate production level adjustments, and arrange for the efficient delivery of goods. Intelligent agents will be able to handle much of the work previously handled by people. Intelligent agents will also be our online assistants, helping us in handling our day to day tasks. For example, if an intelligent agent knew its "boss"—for example, a company, was interested in upgrading its employees' computers, it could search for and possibly purchase the best bargains from a hardware provider on its own, thus saving its "boss" money and time.

It's easy to see how Internet telephony can be a major catalyst for Internet adoption. The savings offered by Internet voice over IDD and LD will drive Internet use and in doing so open the way for other Internet applications. The enhanced features Internet telephony will provide, such as real-time data sharing and video capabilities, will also help improve communication in the electronic commerce environment.

The recent deregulation of the Australian telecommunications industry should encourage a new diversity of communications services such as Internet telephony. An example of Internet Telephony is AT&T's Project iA—iA stands for "Instant Answers". This is an

example of how toll-free services and web hosting can make it easier for businesses and consumers to conduct electronic commerce. Project iA is a two-way, agent-assisted transaction processing technology for the Internet. Users click on an icon to initiate a telephone conversation with a customer service agent. The agent can send images to a customer's screen to illustrate the products or services being discussed. Consumers will be able to get "instant answers" on demand and make secure credit card purchases. Businesses will benefit from a new sales channel and more completed transactions.

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### **Methods of Payment**

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To make that next step in enabling consumers to easily use the Internet to conduct electronic commerce, new means of payment will evolve. One possibility is electronic cash— money in the form of electronic information that can be stored on a computer or on a plastic card with a microprocessor imbedded in it. Electronic cash can be moved around the world through the Internet or any other electronic medium.

Electronic cash lets the consumer pay the storefront directly, through an anonymous and secure connection, without having to go through an intermediary, such as a credit card company for verification. Electronic cash addresses two key issues that today inhibit the development of electronic commerce: security and anonymity.

However, I do agree with Jim Barksdale, Netscape's CEO, when he says he doesn't know of a dime that's been lost over the

Internet. Executives at Visa International indicate that there is not a single properly documented case of fraud involving credit card numbers stolen over the Internet. Clearly, though, users need to become more confident in using credit cards and potentially electronic cash to make purchases over the Internet. The security exists to conduct these transactions safely, but this must be proven to the user.

One of the questions I'm often asked is: "Will the Internet become the environment for electronic commerce?" The Internet is a lot of things. My personal belief is the Internet is more important in what it enables and what it will evolve to than simply what it is today.

One of the keys to the future lies in the future of Intranets. Intranets use Internet technology, leverage the ubiquitous nature of the Internet, and address security requirements. By creating virtual private networks, user entrance is regulated. Such levels of security will encourage users and enable the electronic commerce environment to flourish.

In electronic commerce, many of these trends have been gathering force for years and are only now becoming obvious as they are harnessed to the explosive growth and global reach of the Internet. For all the attention, hype, and impact of the Internet to date, I think it's about to get even more exciting.

In reflecting on these technological trends it's clear that there exists a strong inter-relatedness and, in fact, interdependence. As these and other technologies develop, they fuel each other and will eventually create a critical mass effect that will

catapult electronic commerce even further.

So, although the Internet can be thought of as a network of networks embracing software, hardware, and other technologies, it is more significantly a new mass medium, a catalyst for change— enabling new things never before imagined.

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### **Using the Functionality of the Internet to Further Evolve Electronic Commerce**

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Whereas most technological innovations have taken five or even ten years to achieve significant scale, the Internet is impacting industries and even culture in time frames measured in months or a few years.

Speed has become everything in this business. Our challenge is to enable EDI and other systems and services to benefit from the flexibility and ubiquity of the Internet.

In terms of the technology, we need solutions which incorporate the ubiquity and economy of the Internet, the imagination and functionality of web development, and a secure transaction processing environment. At the organizational and institutional level it is of paramount importance that links between businesses, individuals, community groups are enhanced and function effectively - to the benefit of all parties.

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