



A DELAWARE POLICY FORUM

# **E-Commerce:**

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## **Changing the Face of Goods, Services, & Transportation**

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Sponsored by the  
Institute for Public Administration  
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## **PREFACE**

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### **Jerome R. Lewis, Director, Institute for Public Administration**

As the director of the Institute for Public Administration (IPA), I am pleased to provide this report on the 1999 Delaware Policy Forum, “E-Commerce: Changing the Face of Goods, Services and Transportation.” Held at the University of Delaware’s Clayton Hall Conference Center on Thursday, February 4, 1999, the forum was sponsored by the Institute in cooperation with the Delaware Department of Transportation. The goal of this forum was to focus on the impact of the rapid growth of electronic commerce—how it is changing the way businesses, individuals and governments buy and sell and how these changes will affect the infrastructure of our state and region. Topics addressed include:

- Electronic Commerce in the Digital Economy
- Amazon.com—Innovation & the Future
- Applications of E-Commerce in the Public Sector
- From Cyberspace to Real Space: Delivering the Goods

Completing a project like this is a team effort. I wish to thank those who contributed greatly to this forum. My colleague, Dr. Robert Warren, was principally involved in the planning of this forum and presented a detailed introduction and overview of e-commerce. I am particularly appreciative of the interest and support of Representative Roger Roy who has been instrumental in securing from the State of Delaware the funding for the infrastructure forum series. I want to express my genuine thanks to our speakers, David Henry, Susan Benson, Gary Lambert and Michael Schneider, for their keynote addresses. Also, I would like to acknowledge Dan Rosen for his knowledgeable audiovisual assistance, Gloria Wilkins for providing exceptional staff support, Lisa Moreland for her capable project coordination, and Pamela Belmont for her outstanding graphics work.

In addition, I want to recognize the valuable contributions of the following individuals involved in the production of this report. Dr. Robert Warren provided editorial guidance and direction. I would also like to especially thank Lisa Moreland who managed the overall effort to edit and produce the final printed document. Institute Research Assistant Kama Boland demonstrated tireless energy while working to transcribe and edit the draft report. Pamela Belmont provided the inspired design and formatting for the report.

## **INTRODUCTION**

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### **Dr. Robert Warren, Professor School of Urban Affairs and Public Policy, University of Delaware**

As indicated, this is one in a series of policy forums looking at telecommunications and information technology and how it affects work, lifestyles, transportation, and infrastructure needs within the state. Electronic commerce and the Internet—upon which e-commerce is based—are sweeping like a giant wave over our economy and society. It is widely believed that e-commerce will be a major factor in driving the future economy. To accurately map out how this will unfold is a difficult task. Like a tidal wave, e-commerce is a moving target and its configuration changes as it evolves. As soon as we think we have a hold on it, its parameters change.

A respected analytic firm has projected that electronic commerce has the potential to be a \$3 trillion dollar industry by the year 2003. One of the most publicly visible dimensions of this growth is in retail sales. Over the recent winter holidays, the business pages of our newspapers read like scorecards for electronic commerce. As one story put it, “If you hate crowds and you are looking for an alternative to telephone-based catalogue shopping, the Web can be just the thing.” The Internet offers benefits beyond point and click. Some online stores offer special discounts. You can also shop smarter by using comparative services that will search the Web for the best buys.

A 1998 survey reported that over one third of U.S. consumers made online purchases, a number well beyond that of the preceding year. Some transactions can be conducted entirely online such as hotel reservations, airline tickets, and insurance. Others are digitally ordered and physically delivered: books, computers, clothing, and even groceries. Sales that are digitally ordered and physically delivered involve a side of e-commerce that has received less public and media attention. However, there is a question of how to get the physical goods sold over the Internet to buyers. As one commentary put it, “These books purchased online from Amazon.com do not just pop out of the computer monitor.” The rapid growth of e-commerce is having a major effect on the cargo-shipping sector. This is putting major demands on our roads and highways. It is not simply a cyberspace phenomenon. Retail e-commerce is just the tip of the iceberg. The bulk of Internet sales is coming from businesses selling products to other businesses and the growing business-

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government digital interaction. In 1998, \$43 billion dollars were transacted in this way—more than five times e-commerce retail. Businesses are using the Internet to cut purchasers' costs, managing supplier relations, streamlining their inventories, and expanding customer bases.

There is also a side of the electronic commerce development that is still perplexing and creating trade barriers. This includes a predictable legal environment and the reliability and security of Internet transactions. The effect that e-commerce is having on business is only just beginning. There will be changes in travel patterns for sales and delivery for citizens and businesses among and between businesses in government. Some argue that we will have more closed supply chains. Others are arguing for the advantages of open chains that involve a much wider variety of vendors. Settled patterns today may change next week or next year. Innovations are occurring by the minute in companies and firms. As one analyst stated, "To succeed online, you have to reinvent yourself everyday. One month on the Internet is like a year in the offline world." We are fortunate to have on our program speakers who can provide both system and ground level insights into the current status and future directions of important dimensions of electronic commerce. Through presentations, questions, and general discussions we hope to start mapping the future of electronic commerce for Delaware.

David Henry, Secretariat on Electronic commerce at the U.S. Department of Commerce, is one of the authors of the ground-breaking study *The Emerging Digital Economy*, and will take on the heroic task of providing an overview of e-commerce in today's economy. Following his presentation, Susan Benson, Editor-in-chief of Amazon.com, will guide us through the history and current status of the company. Amazon.com is an icon of e-commerce retailing and also has a significant physical presence in Delaware with its warehouse in the City of New Castle. Immediately after lunch, Gary Lambert, Deputy Purchasing Agent for the State of Massachusetts, will provide a review of the cutting edge Internet-based procurement systems in the government sector. Closing will be Michael Schneider who is the Alliance Manager from the United Parcel Service Electronic Commerce Group. He will discuss e-commerce in relation to the delivery of e-commerce goods. As most e-commerce goods are digitally ordered and physically delivered, we will see how e-commerce extends to the ground or street level. Along with Amazon.com, UPS maintains a physical presence in Delaware.

## **ELECTRONIC COMMERCE IN THE DIGITAL ECONOMY: AN OVERVIEW**

### **David Henry, Secretariat on Electronic Commerce U. S. Department of Commerce**

My task is to provide an overview of e-commerce. First, allow me to give you some background information. I am with the Economics and Statistics Administration at the Department of Commerce. I became involved in the electronic side of statistics at the end of 1997 after someone asked me to look at the industries that provide the necessary infrastructure for the Internet. These industries are what we consider to be Information Technology (IT) industries. I will also talk about the policy side of electronic commerce or e-commerce. The federal government is trying to keep ahead of this revolution by developing policies. Only in 1993 did federal policies begin to incorporate electronic commerce and the national and global information infrastructures.

In analyzing industry for the Economics and Statistics Administration I look at structural change in the economy and the effects it has on business and industry. We are just beginning to understand this thing that we call electronic commerce and the digital economy. One theory of federal policy is that the government should approach policy in a "hands-off" manner. This approach purports that it is better to have less government involved in policy regarding a phenomenon like electronic commerce. The government should be active, however, in facilitating the development of electronic commerce by providing access to all citizens in this country and in other countries. This can be accomplished by obtaining trade agreements with other countries such as the North American Free Trade Agreement (NAFTA) and economic development initiatives. From the current U.S. administration's viewpoint it is best if the government keeps its hands out of electronic commerce and its intervention on the Internet should be restricted to law, not regulation. Governments should allow the Internet to grow naturally but facilitate e-commerce globally. Some e-commerce policy concerns include: financial issues (customs, taxation and electronic payments), legal (uniform commercial code for e-commerce, intellectual property rights and security), and market access issues (telecommunications infrastructure, content, technical standards).

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The principles of federal policy hold that the private sector should take the lead and the government should avoid undue restrictions. However, if the private sector does not accept this leadership role, the government will need to take over. Some issues for private sector leadership include privacy protection, global standards, and domain name system privatization. The system for domain names is currently in the hands of the federal government, but that will not last forever. The plan is that the system will be handed over to the private sector by the year 2000. As of December 1996 about 627,000 Internet domain names had been registered. By the end of 1997, the number more than doubled to reach 1.5 million.

There are a number of companies that are interested in being more involved on the Internet. If these companies can come to an agreement with the Secretary of Commerce, then they will be responsible for privacy protection on the Internet with close monitoring by the government. The federal government is also concerned with domestic and international market access and barriers to access. Internationally, China is an example of a nation that limits private sector access. Being closely tied to the government, the Chinese telecommunications industry does not allow free enterprise involvement in Internet access issues.

While more than 200 countries are linked by the Internet, the United States dominates the access field for the Internet. In 1996, the U.S. had 64.7 main line phones per 100 inhabitants. The Organization for Economic Cooperation and Development (OECD) drops members down to 47.1. OECD has compiled comparative information for a number of countries. The non-OECD estimate is 5.2. Thus, there is a big disparity between the Internet access of different countries. There are some countries, such as Finland, that currently handle their Internet access issues better than the United States. Another indicator that the U.S. will dominate, until other countries get their infrastructure in place, is Internet hosts. In the U.S., Internet hosts represent 3.81 per 100 inhabitants, while average OECD was 1.43 and average non-OECD was 0.02. There is also an issue of how international trade will affect customs and tariffs. There is no customs tariff when you buy a non-tangible purchase over the Internet.

Switching gears to talk about e-commerce measurement, I would like to cite the *First Annual Report of the U.S. Government Working Group on Electronic Commerce* that stated, "Finally, we have gained additional understanding about the economic significance

of the revolution in electronic commerce and information technology now underway.” The report continues on to cite the publication on which I worked, that discussed some specifics about the growth in IT industries—the infrastructure of electronic commerce. We are just at the edges of understanding the economic significance. The edges of that understanding are being pushed by the evolution or transformation that is happening but no one understands how big it will be or even how to define it. Is electronic commerce a transaction? Is electronic commerce ordering over the Internet? Or, is electronic commerce reviewing and gaining information from a web page and then going out and making a purchase? Electronic commerce has not been accurately defined and that has become an important issue.

The measurements that currently exist have not been accurate or reliable and therefore the volume of electronic commerce has not been defined. In talking about measurement, three companies—the International Data Corporation (IDC), Jupiter Communications, and Forrester Research—have taken a close look at the current status of electronic commerce and where it is going. Some of their indicators include Internet use, computer bandwidth, technology change, investments, and venture capital. These areas are indicators for demonstrating where growth is happening. Companies such as IDC, Jupiter or Forrester have come out with volume and growth estimates that are all over the ballpark. In 1997, estimates range from 51 to 62 million people online in the U.S. and 101 million people online worldwide. IDC estimates for Internet use online is 147 million in 1999.

There are two areas in electronic commerce: business-to-consumer transactions and business-to-business purchases. Once again, these terms bring up questions concerning definition. In government jargon, when analysts say “Gross Domestic Product” they are talking about final demand on the economy. GDP concerns transactions from businesses to consumers. Business-to-business transactions (input production of that particular business) are not part of GDP. Those transactions are the total output in the economy. When analysts talk about the size of e-commerce to GDP, they may not be talking about business-to-business transactions. However, when a business purchases a computer it is an investment and therefore included in the GDP. The three companies I just mentioned are talking about a very small portion of the economy—the IDC estimate for e-commerce in 1998 is 0.4 percent of GDP or \$34 billion dollars. Thirty-four billion dollars is a very small portion of GDP when compared to an \$8.1 trillion dollar economy.



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However, the size of business-to-business sales is important because that is where Internet commerce is growing fastest. According to *The Emerging Digital Economy*, it is used for coordination between purchasing operations of a company and its suppliers; the logistics planners in a company and the transportation companies that warehouse and move its products; the sales organizations and the wholesalers or retailers that sell its products; and the customer service and maintenance operations and the company's final customers. Growth of business-to-business electronic commerce is being driven by lower purchasing costs, reductions in inventories, lower cycle times, more efficient and effective customer service, lower sales and marketing costs and new sales opportunities.

Business-to-business sales constitute intermediate inputs to production. In 1992, accurate data was produced on intermediate inputs to production for the first time; it was a benchmark year. In 1992, total output of the economy was \$10.8 trillion dollars. Broken down, sales to consumers were \$6.2 trillion dollars (GDP) and intermediate inputs to production was \$4.6 trillion dollars. The gross numbers will be coming out for 1997, the next benchmark year, shortly.

When looking into the future, everyone talks about the potential for phenomenal growth. You start out with some small numbers like \$8 billion, \$34 billion, and even \$64 billion dollars. That growth is not so large when compared to the total economy. Phenomenal growth constitutes about a thousand percent increase over a five-year period, and even that is a conservative figure. Investments are already taking place to realize the \$300 billion in business-to-business Internet commerce analysts predict by 2002. Even at \$300 billion Internet commerce will only represent 3 percent of total GDP.

Forrester Research predicts growth in e-commerce sales between businesses of \$327 billion dollars. If Forrester's definition of business-to-business sales follows national accounting conventions, then e-commerce sales between businesses will account for about 4.6 percent of intermediate inputs in 2002. Therefore, 2 1/2 percent of GDP, which is the final demand on the economy, will be coming from the business-to-consumer purchases. The government is taking this seriously. For instance, there will be some changes in how the 2000 census surveys industries and how the Bureau of Economic Analysis reports its data based on electronic commerce.

When I looked at the infrastructure of the Internet, I became interested in its definition. As we first set out to define IT and what its infrastructure constituted, we used standard industrial classification codes, or SIC codes, that have been promulgated some years ago. SIC codes define an industry and indicate what it produces. Soon, there will be a new classification system called the North American Classification System, or the NAC system, which increases the number of industries included in the information sector. This expansion of industry coverage is due to the increase in the number of industries in the sector. For instance, Internet service providers are categorized as an industry in this new classification system.

The SIC code classification system was developed in 1987. Typical industries that are included in the system are the hardware (computers and related equipment, semiconductors, and some instrument measuring sectors) and computer software sectors. Under the new system, these categories are broken down into about thirty SIC four-digit industries in the IT sector. In doing so, we are trying to analyze what is happening in the industries that support the Internet—the foundation for e-commerce. The findings came out in *The Emerging Digital Economy*. Summarizing the report fairly quickly, some phenomenal things have happened in these industries. In measuring these industries, we took out all double counting that normally would go into the total output of the industries. It is an appropriate accounting format to present its effects and its relative importance to the rest of the economy. In 1996, it gets close to 8 percent and we are estimating forward to 1999. In the early 1990s, the sector saw a fairly gradual increase from about 6 percent, which is phenomenal because it constitutes a small number of industries. In an \$8 trillion dollar economy, a 2-percentage point increase is a pretty large shift for the IT sector which includes computers, semiconductors, printed circuit boards, and the software industries in the communication sector. What was even more fantastic was its effect on GDP growth.

The federal government, and in particular the Clinton administration, has taken a lot of credit for the growth of the economy in the last several years. Much of this increase can be attributed to growth in the IT industries. In real dollar terms, when you take out the effects of inflation on the total economy and separate these particular industries and how they affect the economy, you are talking about 25-33 percent of real economic growth from these industries. This estimate was presented as an official government number. This alone helps to keep inflation down by one full percentage point across the economy.

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In other words, if you didn't have IT production we would see inflation reach 3 percent rather than 2 percent. This has been considered to be somewhat revolutionary.

Now, let's consider industries that use production or output from the IT industries as a percent of their total investment. Forty-five percent in real inflation adjustment terms is being purchased as capital equipment across the board for all industries in the IT sector. Even in nominal dollars, investment in Information Technology (IT) equipment was the only type to increase between 1977 and 1995. The other types of equipment such as machinery, transportation equipment, and other office equipment have declined.

An industry's purchase of equipment is considered to be capital equipment expenditure and therefore part of GDP. In the service industry, over 70 percent of purchases are capital stock. Looking at it as IT investment per worker in 1992 dollars, you can see that even some manufacturing sectors have a large investment in IT equipment and computers.

Now let's examine the *Productivity Paradox*. There is an inability to find a statistical relationship between IT investments and productivity (production per labor output or multifactor productivity) in the private sector. According to the productivity measures from the Bureau of Labor Statistics, there has not been significant growth in productivity. The data from 1995 and 1996 shows an increase by 1.0 percentage point. The government wants to see an increase in productivity so that the nation can move forward.

If you look at productivity in terms of output and capital, you can see that productivity has been fairly flat and low and even declining by 0.3 percentage points between 1994 and 1995. Many economists argue that we are unable to measure the productivity portion of industry output per hour. They reason that it is too difficult to single out the productivity for IT labor, capital and equipment.

Earlier we talked about thirty IT industries as a subset of the emerging NAC classification system. In our definition, we included all workers in those industries; even those workers that are typically not considered information type workers such as low-skilled workers. We also included twenty occupations that we consider to be information related. For example in 1996, there were 7.4 million workers making up 8 percent of the 110 or 120 million workers in the United States. It is not surprising that it may grow to 9.6 million.

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Even then, there could be a shortage of these workers in the years 2002 and 2006. These workers include computer programmers, computer scientists, and systems analysts. Evidence to support their conclusion includes reports of unfilled vacancies, offshore recruitment abroad, the current estimate of IT worker supply and demand, and rising salaries for IT workers.

The average annual salary for IT workers is considerably higher than for those workers in non-information technology industries—comparing for instance a \$48,000 annual salary versus a \$28,000 annual salary for non-information technology workers. In 1996 for example, an occupation in software and computer service industries paid upwards of \$56,000 dollars per year. The Department of Commerce indicates there will be a shortage of IT workers in the future even as higher wages are being paid in these particular sets of occupations and the number of graduates in the fields grows.

In May, a White House Conference on the Digital Economy will be held at the Department of Commerce. At the request of the National Economic Council and the White House Office of Science and Technology Policy, the Department of Commerce and the National Science Foundation are holding the conference to discuss the measurement and policy issues of electronic commerce. The purpose of the conference is to facilitate the federal government's understanding of electronic commerce.

The conference will reflect upon what electronic commerce means to the global economy. Economists as well as individuals from IT industries and government will be making presentations. Topics include: Macroeconomic Implications, Market Structure and Competition, Employment and the Workforce, Small Business, Access, and Organizational Change. Speakers from the Macroeconomic Implications panel include Rob Shapiro, U.S. ESA; Paul David, Stanford and Oxford; Jack Triplett, Brookings Institute; Brent Moulton, BEA; Ed Dean, BLS; and Bob McGuckin, Conference Board. The conference is open to the public and is being held at the Department of Commerce. If you would like to learn more about the conference, the web page can be found at [www.e-commerce.gov](http://www.e-commerce.gov). The documents that I have mentioned are also included on the website.

## **AMAZON.COM— INNOVATION & THE FUTURE**

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### **Susan Benson, Editor-in-Chief, Amazon.com**

I am the Editor-in-Chief for Amazon.com and I am very pleased to be able to share with you the story of our company. I will walk you through the company's history and give you some background on Jeff Bezos' considerable vision and guiding principles for the company. I will also talk about the business side of the company, although I will warn you that I am not a financial analyst, but an editor. Finally, I will guide you into the culture that has developed at Amazon that is absolutely essential to how we do what we do. It is a place with very interesting people and a great deal of fun. I feel extremely lucky to work at Amazon.com.

To start, I would like to take you back in time to the "Online Stone Age of 1994." This was the year that 30-year old Jeff Bezos, who was by anyone's fair description a whiz kid Wall Street programmer, stumbled across a figure that would literally change the way we shop. That figure was the projected annual growth rate for the World Wide Web—2,300%. So picture if you will, an animated light bulb going off over Jeff's head. He thought, what if you could use the Internet as a retail outlet? What if you leverage the Web's unique ability to deliver huge amounts of information rapidly and effectively? Jeff has been quoted as saying, "Nothing grows that fast outside of a petri dish." With that kind of a growth rate, his sense of urgency became his most valuable asset. Up to that point, he had worked at the intersection of computer science and finance since graduating Summa Cum Laude and Phi Beta Kappa with a degree in electrical engineering and computer science from Princeton University in 1996. He led the development of computer systems that helped manage more than \$250 billion dollars in assets for Banker's Trust Company and he helped build one of the most technically sophisticated, quantitative funds on Wall Street for D.E. Shaw & Company. At that point, Jeff was one of the youngest vice presidents at the firm.

Three months after he heard the figure for Internet growth and quite a bit of research later, he was convinced the Internet could revolutionize shopping. He capitalized on that sense of urgency and set out to determine what would be the first and best products to sell online. He made a list of twenty products—everything from clothing to appliances. He ranked them according to several different criteria. He looked at the book market,

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which worldwide is an \$82 billion dollar market per year. It is a unique market because there are more items in the book category than in any other. There are more than three million different titles available in active print. Music constitutes the number two category. There are about three hundred thousand active titles in CDs.

Jeff also considered what it would mean to convert customers who were used to shopping in the physical world into online purchasers. It would be a new behavior and clearly would feel risky to some. He wanted to offer a familiar product that was not threatening to new or novice online shoppers and one that was reasonably low priced. It is less scary to buy online for the first time something that is inexpensive. Jeff's vision was to create a shopping experience that would only exist online, one that could not be replicated in the physical world. The power of computing plays a big role here. When you have so many titles, you can use computers to sort, organize, and help you to find what you are looking for quickly. Selling books online offers the kind of selection that is unimaginable in a physical environment. Brick and mortar superstores carry only an average of 175,000 titles compared to an online selection of 3 million titles.

With excitement and urgency, Jeff quit his job on Wall Street and started mapping out a plan. He decided that he would sell books in an online environment, but did not know where to locate his headquarters. He narrowed the choices to Portland, Oregon; the Nevada side of Lake Tahoe; Boulder, Colorado; and Seattle, Washington. He wanted to locate near a large high-tech workforce and large book distributor. Ingram, the nation's largest book distributor, is located in Roseburg, Oregon, which is a few hours outside of Portland and a day drive from Seattle. With his wife, Mackenzie, who was driving and his Labrador Retriever snoozing in the back of the van, they hit the road. They did not even know where to direct the moving van when it left New York. They just said, "Go west and we will call you from the road." They settled in Seattle and phoned the movers to direct them to their new address.

By the time they pulled into Seattle, Jeff had finished the first draft of the business plan. He started rounding up investors. He also finished some of the preliminary interviews of the early software people who were hired. Five days later, he moved into a rented house in the Seattle suburb of Bellevue, Washington; had secured \$1.2 million in initial funding; hired his first programmers; and set up shop in his garage. Setting up in the garage was symbolically very important to the company. The garage was uninstalled, strung with

orange extension cords and heated by a black cast-iron potbelly stove. It was a very unpleasant work environment. Before long, they were siphoning so much power from their house that vacuuming or running any household appliances tripped the circuits. When they negotiated with UPS and Federal Express, however, they did not want them to see how marginal their operation was. So they met in a nice café at a Barnes and Noble superstore. Jeff feels some level of debt for all the meeting space that he used at the café because he still buys books from them.

It was a challenge to think of a name for the company. Originally, Jeff wanted to call it “Cadabra,” as in “Abracadabra,” but one day he was on his cell phone with his lawyer who mistakenly heard the name as “Cadaver,” and quickly Jeff thought, “No, that is not the right name.” What to call the earth’s biggest bookstore, the store with the greatest volume? Finally, it was named after the river that carries the greatest volume of water—the Amazon. There are several reasons why this is a good name. A name that begins with “A” comes up at the top of search engines. It is also easy to remember and spell—two very important factors in Internet retail. You do not need to know how to spell McDonald’s to order a Big Mac, but you do need to know how to spell “Amazon” to find our store. Also, the name can fit many things; it does not have to be books.

Much of the software development took place in the early stages when we were figuring out how to make the distribution systems and customer service systems work. In July of 1995, Amazon.com’s virtual doors swung open. Our mission was, and still is, to offer products that educate, inform, and inspire. At first, our only customers were the friends, family, and parents of everyone that worked there. There was incredible excitement when someone we did not know placed an order. Those early customers were essential in testing the software systems.

In the early stages, one of the biggest problems in testing the systems was that book distributors would not take an order that contained fewer than ten items. However, most people wanted to order only one item. Jeff went to the distributors and asked if they could work it out so they could provide the title that customers wanted. The distributors replied with a resounding “No,” which caused a lot of anguish. Finally, one of our programmers realized that there was an obscure title on lichens that all of the distributors listed but did not carry. Every time a customer placed an order, we would ask for the title they ordered plus nine books on lichens. The distributors would send us the book we needed for our

customer and a very sincere apology about not being able to fulfill the books on lichens. This is something that we have joked about with our friends at Ingram and fortunately they also think it is very funny. Another innovation we had implemented that no longer exists was put in place by one of our programmers. He set it up so that at every computer terminal a bell would ring when an order was placed. That was very motivating for the first couple of days, but word of mouth spread so quickly—even in the beginning stages of Amazon—that the bells started driving people insane!

In 1995, a big break for us came with a listing in the “What’s Cool” section of the Yahoo! website. Although Jerry Yang and David Filo created Yahoo! as a hobby in 1994, it was truly influential in directing online “surfers” to new sites and trends. Jerry told us he liked the Amazon site and wanted to list us. He asked us because he wanted to warn us about the amount of traffic we might get as a result of the listing. He said it could be overwhelming. One of our programmers decided it was time. The sales level rose more rapidly than we were able to staff and handle so everyone in the company, including the software developers, were working day and night—staying until three o’clock in the morning to pack books. Jeff would load up his car, mail the packages that had to be shipped, and repeat the process again the following day.

Soon, the company outgrew its surroundings and moved into an office with one thousand square feet, just above a color tile store in Seattle’s industrial district. There was no time during our rapid rise to think about how to improve our operation. When books start coming in fast and furious, it is easy to forget to reflect upon improvement. You have to get the work done. However, it is essential that someone takes a step back and thinks about how things can be improved. Our staff did not have packing tables, so they were down on their hands and knees on a cement floor packing books into a box. Jeff, driving to the post office late at night with the car jammed with shipments thought, “We have to get knee pads.” It never dawned on him that we should get packing tables! Finally, someone wisely drove to the nearest Home Depot and returned with packing tables. This may seem like a ridiculous story, but it is the heart of what and who we are. It is a story that we take very seriously. A lot of our efforts to better our operation deal with the need to plan, project, increase capacity, and make sure staffing scales with the growth of the business as well as stand back and reflect upon what we are doing. Of course at the time, taking time to reflect feels a little like laying track in front of a speeding train—but that is business.



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My husband and I interviewed with Jeff in the first warehouse. There was no question that there was something pathetic about the 400 square foot warehouse. It included impossibly low ceilings that were only about six feet tall. I still do not know how one of our workers who is 6'4" managed to work. The warehouse had brick walls, bad lighting, and a musty smell. It was Amazon's first warehouse and Jeff was glowing as he ushered us through the building. He was so delighted to have a warehouse. He walked us a couple of blocks down the street to the "new" building where Amazon, now with employees in the double digits, was to move. I stressed the word "new" because it was an old janitorial supply house, which was absolutely cavernous compared to the previous office. There were rows of shelves for books and high ceilings. While the office and warehouse space looked marginal, Jeff's vision for Amazon was so clear. His enthusiasm and connection to his customers was so apparent and he knew how to make his ideas into reality.

At Amazon we think it is important to provide customers with feedback. We want people to have the opportunity to express informed opinions about products they do and do not like. We want other customers to know that their experience was like with the products. Of course, we screen for appropriate language, but we want our customers to be able to make the best purchasing decisions for themselves. Customer evaluations are valuable because they have no vested interest in selling our products. A community of customers offering opinions on products is a very powerful thing. A great example of this can be shown by the reviews for a book called *The Tenth Justice*. Our customers destroyed that book in their reviews. I challenge someone to go to that page and still buy that book. You will look at the reviews and think, "Okay, it is time to find something else." On the other hand, there is a book entitled *Endurance: Shackleton's Incredible Voyage* by Alfred Lansing, which is an amazing story about a man's ill-fated expedition to the Antarctic. His ship was crushed by an ice floe, and he traveled over 850 miles with 28 of his men over the South Atlantic's heaviest seas back to civilization. Their story demonstrates the power of the human spirit. There are over two hundred customer reviews for this book, which was originally published in 1956. It has been on our top hundred best seller's list due to the passionate and strong recommendations people have given. There is also recent photo essay book about the Shackleton story. I challenge you to visit the web page without buying the book. We have also just introduced a system to rate the helpfulness of the customer evaluations.

Discovery is an incredibly important concept to us at Amazon. While everyone has a handful of books, CDs, and movies that are really meaningful to them, there are many more titles you would find exciting if you knew how to find them. So, we are using collaborative filtering on our sites. We offer instant recommendations to help people make those discoveries. When you search for a book on our site, you are directed to the book's web page where you will also find the top three titles of books that people who purchased that same book also bought. That is an application of simple data mining to help customers find other books that might interest them. That is not an experience you can have in a physical store.

Customization is certainly something that we also offer. We want to provide a store where customers have the experience that is best for them. What may be the best experience for one customer, may not be the right one for another. We are constantly striving to build features that will make our site easier to use, such as *1-Click* shopping. This is a feature that we have instituted that allows you to purchase a book with just one click of your mouse. We also have *Gift Click*, which allows you to send a gift to someone without knowing anything more than their e-mail address.

The past year has brought great expansion to Amazon. We added new product lines and customers have responded with great enthusiasm to them. We opened our music store in June of 1998, which quickly became the number one online music retailer in its first quarter of operation. The music store expanded in September adding 42,000 classical and opera titles to its catalog. With more than 200,000 CDs in our store, we are twenty-five times bigger than a physical music store. Our video store opened in mid-November with more than 60,000 theatrical and general interest videos and 2,000 DVD titles—a selection that is roughly seven times larger than the typical physical video retailer. We offer the Web's largest selection of video titles available for immediate shipping. This holiday season, we added a gift section to our store that offers toys, games, gadgets, personal electronics, and of course we gift wrap and ship for holiday delivery.

In 1998, we acquired several companies to expand our reach including Bookpages in the United Kingdom and Telebook in Germany—making it much easier for us to serve our European customers. Our acquisitions have allowed us to start building an area of our site called *Shop the Web*. This allows our customers to find everything they are looking for in one place with our partner merchants who share the same values as Amazon: vast

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selection, incredible customer experience, and a great online shopping experience. We are just beginning to build that service and are relying very heavily on customer feedback to improve it. My personal favorite acquisition is the Internet Movie Database ([www.imdb.com](http://www.imdb.com)). The database is a spectacular thing and I encourage you to visit that site if you are a movie fan.

We have come a long way from the days of the 400 square foot warehouse. Our Seattle distribution center is now a very small 17,000 square feet. We are tremendously proud of our 200,000 square foot distribution center in New Castle, Delaware. The center is the length of three football fields. It has increased our company's shipping capacities to nearly six times their previous level. The New Castle location allows for much faster delivery times to our customers. East Coast publishers are also benefiting from faster shipping and receiving service. We have also just acquired a massive warehouse in Nevada. With our distribution services overseas and in the United States, we have more than thirty times the distribution capacity than we had a year ago.

Behind the buildings, products, software and the website are the people who collaborate to make it happen. It is safe to say that Amazon is not cut from any standard corporate mold. We are creating a distinct culture—we are actually quite frugal. Employees sit at desks made from 2X4s and doors, and computer monitors tend to be supported by stacks of telephone books or rings of copier paper. We conduct workshops in the new building to teach our employees how to build their own desks. Our customers do not care about what kind of desk we have and the desks we create are cool and we like them anyway. We like to spend money on things that have value to customers.

Rufus, our little corgi, also has been a trendsetter. At Amazon, employees are allowed to bring their office-friendly dog to work. Amazon employees work incredibly long hours and they do it with a spirit of adventure. No one is cracking a whip over them. Occasionally, as a manager, even I have to say, "Go home and get some sleep." Our employees have a true sense of ownership in the company. We have an amazingly diverse group of people. The young, pierced and tattooed employees; the employees with MBAs; and the middle-aged managers like myself. For the range of diversity that exists, we all wear the same T-shirt. It is a simple shirt with an Amazon logo on the front and a little man riding a rocket on the back. It reads, "Work hard, have fun, make history." We are lucky to be able to do that. Thank you.

## **APPLICATIONS OF E-COMMERCE IN THE PUBLIC SECTOR**

### **Gary Lambert, Deputy Purchasing Agent State of Massachusetts**

There are three levels of government: federal, state, and local (county, city, town, or village) jurisdictions. These comprise three very distinct groups in the electronic commerce arena. There are all equally important, but with very different capabilities and ideas for the future of e-commerce.

What is driving e-commerce in the public sector? The obvious reason is the explosion of the Internet. For example, in 1995 a debate was held in Massachusetts about whether or not to buy an AS400 packaged solution from IBM or to go to the route of the Internet and set up a solicitation distribution system electronically. At that time, there were many questions about whether or not the Internet was going to progress forward. I am happy to report that we chose the Internet and not the AS400 route. Another issue at the time was the level of comfort by businesses for receiving solicitations on the Web. There was a question about how willing the business community would be to conduct interactions with the publication and distribution of information over an electronic medium. Some other issues that were alluded to earlier included:

- Does everyone have access to a personal computer?
- Do they have access to a personal computer that can access the Web?
- Do they know how to use the Web if they do have access?

Those were the questions that frequently arose in the past. Now we are in the age of the \$700 personal computer at 333 megahertz with a celeron chip. Most personal computers today have the capacity for Web access. For those in government, access is the first issue that small businesses raise. The current issue is regarding how far the Internet will progress and the affordability of the process. Drivers for the Internet are the National Procurement Reform and the Federal Government Paperwork Elimination Act. They both have big and small impacts on businesses.

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The question of whether or not the Web is secure is often raised. I will relate the story that I have used to illustrate my answer to others. How many of you have ever picked up the phone to order something from a catalog? What are the first things they ask you?

- Where do you live?
- What are your daytime and evening phone numbers?
- What credit card will you be using? What is the expiration date on the card?

They might even say, "For security purposes, could we have your date of birth?" Some of us are lured into that and say, "Oh, sure January 31, 1942." Just then we have given away very dangerous information to a complete stranger who is making \$5.25 an hour in a little telemarketing cubicle. We have no idea how the information will be used, although we assume it is being entered into the ordering system. We do not think that it may be scribbled on a piece of paper to be used again by the same telemarketer planning to wreck havoc upon your already large credit card bills! Yet people hesitate to put their credit card number over a secure, encrypted transaction line on the Internet. This is one issue that continues to be raised by customers. People are asking themselves, "Do I want to give my credit card over the Internet to the Registry of Deeds to pay to get a copy of the deed for my property? Or, do I want to drive 20 miles, pay \$7.00 to park, pay the same fee to the registry, and hope to get the information that same day?"

Security on the Internet continues to improve. Over the Internet you have a 128-bit encryption on the browsers for no cost. Microsoft and Netscape do not charge customers. There is Secure Socket Layer Technology—SSL2 and SSL3. This technology sets up a direct pipe from your personal computer to the server. The transaction is broken when it is finished. A thief would have an average of 10 minutes to crack the code, get the 128-bit encryption, steal the credit card number and run. It would not be an easy task.

Average business costs for paper-based transactions are between \$100 and \$150 dollars. In 1993, Massachusetts implemented electronic data interchange in a limited capacity with a limited number of trading partners. While it did not work particularly well, it did drive transaction costs down. Transaction costs for the government went down to \$67 dollars. This was almost a 50 percent reduction. Depending on where you receive your information, transaction costs can be as low as \$3 dollars. I would estimate that the cost in the public

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sector would be cited at \$25 dollars. Nevertheless, if you are moving from paper to web-based transaction activity, a \$75 cost reduction is significant.

There is a growing public acceptance of retail business on the Web. How are transactions reshaping public acceptance? Three years ago, business people would file small business corporation documents the way they always have done it—on paper. Using web-based transactions however, they realized that they could get permit issued in 20 minutes and that they could start digging immediately. Currently, there is an acceptance on the business side of Internet use. More businesses are wondering how they can get there, when they can get there, and what it is going to cost them to get there.

The goal when using the Internet is to get a high transaction volume going through the system for routine items and services, in other words to get a significantly reduced transaction cost for a large number of items. It raises questions about how to deal with organizational structure. It also raises questions about the need for warehouses, trucks, and a distribution network. Conversely, suppliers need to think strategically about what data they need to capture for solicitation purposes. In this way, they can price items according to their customers' needs and demands.

This translates into better business and contractual relationships between parties because if you are buying certain IT services or programs, perhaps at no additional expense, you wind up being able to put new value propositions around areas such as maintenance, services, and educational units. If the projections for e-commerce growth are accurate, we are only four years away from a major shift in the way we do business. The question is whether the brick and mortar shops will remain in the picture. If they fade away, what will that do to your tax base? What will it do to communities if there is no physical mall to bring people together? What will happen to business real estate if people shift to a telecommuting environment?

Electronic commerce has also created new approaches for the way we think about government. More business roundtables are being invited into the executive branch of government, procurement, and the IT arm. Most of this is being driven by electronic commerce, even while still in its infancy. It is also shaping the way government leaders are thinking about long-term relationships. If we are going to invest money in this technology to solve problems, can it be done in the short-term? The questions involve

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issues of legislation and statutory requirement. Are there limits on the amount of time a contract can run in a particular state? Are there ethical prohibitions about business relationships that were created 20 years ago that now do not make sense? Should universities create centers that research best practices and involve technology companies that conduct development? What does that mean in terms of patenting and shared information and knowledge? Who receives the royalties and who owns the development?

In a limited number of areas, electronic commerce is creating opportunities to take risks the government traditionally would not take. It builds consensus over long periods of time. An example of this is the Multi-State Mall of Massachusetts. One million dollars was secured to create the pilot program. The program creates an extranet-based mall where each state brings at least one statewide contract partner to conduct online transactions such as catalog ordering, receipt confirmation, and invoicing. There are nine different theories and hypotheses that need to be tested.

The best practices and value-added services have been driven in part by e-commerce. Customers want services from the public sector that they see in the private sector and they are starting to get them. They expect no less service from the public sector once they have grown accustomed to it at a certain level from the private sector. That has forced government to think of different ways to deliver procurement and service. So, what are the value-added services that we provide? What are those we should not offer? Connecticut has just outsourced its entire IT operation for the entire state. That is a radical change. Pennsylvania is discussing whether or not they will do the same. Numerous changes are occurring. Once you turn your entire system over to someone else, it will cost an enormous amount of money to reclaim it and your institutional memory and talent are lost. You will not be able to easily recruit and retain a very talented, experienced senior programmer on a government salary when companies such as Amazon.com will recruit them at a higher rate and give them more flexibility.

We are seeing internal alliances as a result of e-commerce. There is a collaborative effort from the IT community and the states' procurement and financial officers who are coming together to try to solve the dilemmas of e-commerce. For example, as a procurement official, I can set up a procurement system but without help from the finance department on how to administer the system, it will fall apart. If I can not get backing from the people in IT about the directions in which we are headed and what platforms we will be using, the

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systems will not last. So a new community is forming internally in a number of states. There is also a new group that has been formed in the last two years called the National Electronic Commerce Coordinating Council (NECCC). They are gathering information on the future directions of e-commerce in the states.

This all leads to cross-boundary cooperation and coordination. From a business perspective, it is more effective if multiple departments within states work together, rather than having territorial solutions. Internet and e-commerce solutions bind people and facilitate collaboration. Again, the Multi-State Mall is a perfect example of collaboration across state lines. Five states that are cooperating in that effort toward a single solution. The advantage that results is a significant decrease in the cost of infrastructure. It is bought and built once. It is not replicated in 50 states. The advantage for the business community is that there is one set of rules, one access point, and one standard. This avoids building the infrastructure differently for each state and receiving much public abuse for its inconsistency.

As I mentioned earlier, there is a question about whether or not universities should create centers that research best practices and involve technology companies that work on prototype development. The State of New York has a center for excellence where they have used the university system to attract private sector participation for the development of e-commerce and other IT solutions. While still a test case, the center is nevertheless trying to solve problems that the executive branch is facing within the IT world. For instance, Open Buying on the Internet (OBI) is made up of both the public and private sector. Researchers are working to set up standards to conduct e-procurement over the Internet.

The State of California has launched with private sector firms a new purchasing system that includes an electronic ordering component. Their e-procurement solution, an agreement that was signed with Andersen Consulting, Ariba Technologies, PeopleSoft, KPMG Peat Marwich LLP, and Logicon, will run on a Sun platform. It is a multi-year project costing over \$10 million dollars. It cost \$6 million dollars alone just for the integration development work.

Currently, purchasing cards are being used in over 30 states with varying degrees of authority and responsibility. Florida is using a special account without a card to aggregate



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the utility billing across their facilities, thereby paying one single bill. The system is driving transaction costs down. They are using it as a special account with their utility company, shifting to the company the responsibility for reporting. The utility company must provide a summary statement of what each line item represents, but is happy to do so because it means they are getting their money through the program in forty-eight hours. Florida retains the responsibility for reconciling with the card company, so they are also happy with the agreement. For their initial investment for creating the database solution, they are saving a large amount of money.

Earlier I mentioned the association partnership through the National Electric Commerce Coordinating Council (NECCC). In this regard, Virginia is using financial electronic data interchange (FEDI) to process transactions. Not many other states are engaged in FEDI. However, procurement solicitation websites exist in most states in varying degrees. For example, in Massachusetts, we issue all solicitations exceeding \$50,000 over the Internet without papers, mailings or bid lists. In other states, it exists as an advertisement where one can get solicitations or a formal bid system. Some times, there is a subscription charge to get those solicitations. There are a variety of static solutions. There is one pilot program occurring in the State of Washington where bids are returned through their solicitation system using digital signature technology. As business or government representatives, we need to migrate to that place where we can receive solicitations electronically. There is a question about how we are going to be able to do that so that they are legally binding. Currently, the only way to do that is through some form of electronic signature or some form of Public Key Infrastructure (PKI).

The National Automated Clearing House Association (NACHA) Internet Council, in collaboration with the federal government, the states, and the private sector, developed guidelines on PKI called CARAT. The certificate authority rating and task force guidelines were published in December. They are both set up to allow commercial and government entities to access and utilize guidelines to develop their own certificate policies around digital signatures.

Indiana is providing government services to their constituencies through the Access Indiana website. The public-private partnership was established to resolve access issues because their state government was unable to do it effectively on their own.

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There is also *Governet* in Orange County, California. *Governet* is a Lockheed Martin solution where the public is able to request deed information, download records, and get the information shipped to their house for a fee. Customers may use this service by punching in their credit card number on the website. This demonstrates the power and effectiveness of online services. You do not have to drive to the Registry of Deeds to file your papers, only to find out that they will not be shipped to you for ten days.

There is a brand new commodity code structure in procurement called UNSPSC that was developed by Dun and Bradstreet. There is no cost for the government to run the code. Traditionally, the National Institute of Government Purchasing, Inc. offered the Procurement Code and charged states \$10 thousand dollars. Dun and Bradstreet see this as a strategic opportunity to start using these codes internationally. On February 23, the UN will take over management for the commodity codes as a strategic way to start to unify certain activities using structure-coding methodology so that it is usable in their service base.

Thirty-five states are now using digital signature laws; the most recent state enacting such legislation was Nebraska. This is also an international issue. For the past 10 years in Singapore, e-commerce has been used to restructure the banking industry and the way ships move in and out of ports. I call their approach to e-commerce the "slow trigger, fast bullet approach." They spent a lot of time planning, but in an incredibly short period of time they have completely overhauled their structures and systems.

States are facing many dilemmas with regard to e-commerce and there are no easy answers. Each state has its own unique characteristics. Another issue deals with Internet standards. Currently, there are no identified standards because it is a brand new world. Is the Lockheed Martin solution in Orange County the right one? Is OBI the right standard for procurement-based activity? Is the proprietary solution being implemented in California the right solution? Is IBM the right solution?

For now, the federal government seems to be more comfortable with an open platform type standard, as opposed to a proprietary standard. Most people are waiting to see what happens before they make a decision. There is no clear industry leader in the development of the standard government solution. PeopleSoft and Oracle will offer their own solutions. American Management Systems, Inc. has developed a solution for the e-commerce environment. While, states that have KPMG say that they have the solution.

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No one is certain of the right solution. There have been a reasonable number of early failures. Two phrases that are often heard in government, "Once bitten, twice shy," and "I have already given you money for that."

There is also a cultural issue. If we are going to be leaders in this area we are going to have to take some risks, and when you take risks you will have some failures. Venture capitalists do not hit 100 percent of their opportunities. They may hit 8-10 percent but when they do, it is big. Government leaders need to discuss what we are trying to hit and what we are willing to accept as risk and failure, knowing that we may have to document why we failed. Innovation does not come without some level of risk taking. There is nothing wrong with failing if doing so leads to a greater success later. A number of companies have implemented a "just do it program" in which they try to see if an idea works but if an attempt fails, their employees do not get fired. Government workers also need to be reassured that they are not going to be fired for trying something innovative.

Many of the organizations that I have visited are still conducting the organizational, hierarchical, structured type processing was developed done in the 1960s and 1970s. Their entire rulebook is process driven rather than outcome driven. The wonderful, slick technology solutions that we have can be put on the front or back end of this, but they will not work unless the workforce, or functions of the workforce, are redefined. Who is accountable? Too many people in government spend the whole day pointing fingers at others. By the end of the day, it is the constituents who are upset. We are finding that there are a number of suppliers who are not ready for the growth. We have also heard small companies arguing that they are unable to afford to get into the electronic commerce business. An office supply company with ten thousand items can get into an OBI compliant mode in about 2 1/2 weeks for approximately \$10 thousand dollars. That is not a lot of money in the long run.

A number of states grapple with infrastructure requirements and the question of whether or not they are ready. They ask, Is our infrastructure ready to handle this? Do we have the bandwidth? Are we willing to give Internet access to all of our employees or are they going to spend the day surfing the Internet for fun things to do rather than work? Well, employees have had telephones for years. You can monitor outgoing calls but even with telephones you still cannot monitor incoming traffic.

Other questions governments are posing include: How strong is the IT world? Can the companies handle this growth? Can you retain their services if they can or will they accept a better job with a company who will pay twice as much, give more flexible hours, and offer stock options? It is our current reality that the government offers only two weeks of vacation, holidays, and no overtime.

There is a need for people to see that the projected numbers are real and not just a part of the appropriation figures. Soft savings in terms of transaction costs translate into an increase of productivity. However, after documenting soft savings in a government environment, an analyst from the financial community may claim that there is no need for the money in the next budget cycle. People are afraid to say that they reduced transaction costs by \$75 dollars. The central authority will get blamed for not figuring out a way to improve these savings.

Another big issue that we face in government application of the Internet is borderless communities. When it comes to business opportunities we are extremely border restricted. Internet-based technologies are creating major challenges for cross-border, cross-boundary cooperation. Should online service fees be charged to traditional customers who are from other states? Should neighboring states be charged for the same services? Should there be one set of terms and conditions for a multi-state mall or should there be one contract for each state? How will this affect our suppliers' sales forces? Who is paid a commission? Who deals with the headaches for any ensuing problems? Simplifying through collaboration will make it easier for suppliers to do business with governments.

We are moving towards borderless environments. Cross-boundary cooperation will have implications for legislation. There are many difficult questions such as whether or not to tax. While the e-commerce industry is still in its infancy, there may be \$3.2 trillion dollars to be made over the next four years. Before we start taxing, we need to look at the maturity of the technology and public's acceptance of online business activity over the Internet. Hesitation or tentativeness may damage any progress that has been made. We have to be very careful when we introduce new taxes. We also have to look at our tax-based revenues from a general perspective. Are our traditional tax revenues decreasing as a result of online business? In most states, the revenue coffers are full for

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a variety of economic factors. We need to step back and reflect seriously before we address the issue of taxation.

There is a need to hire and retain skilled workers to carry this growth forward in the private and public sectors. In Virginia, there exists a 250,000-worker shortage for jobs requiring technology experience. In Boston, there is a shortage of IT workers because the government cannot offer the incentive packages that other employers provide. The challenge for the government is to attract and maintain their state's workforce. The challenge for our educational institutions is to train individuals in the technological fields. In doing so, businesses will be attracted to those areas. Another challenge is to create a flexible working environment. Much migration has transpired to the northwest due to the greater amount of flexibility offered in comparison to other areas. People that want the ability to think freely will migrate to those areas where that flexibility and lifestyle is offered.

## **FROM CYBERSPACE TO REAL SPACE: DELIVERING THE GOODS**

### **Michael Schneider, Alliance Manager Electronic Commerce Team, United Parcel Service**

As an Alliance Manager with the Electronic Commerce Team, I am responsible for developing relationships with technology partners in the enterprise application arena. I deal with enterprise resource planning (ERP) firms, supply team management firms, and procurement. My objective is to explain the role of UPS in electronic commerce and how it is evolving as we continue to move forward. I will discuss how transportation can be a major component of many business processes throughout the transaction. Transportation is often the forgotten piece. We do very well at marketing and communicating information about the product and conducting the transaction, but communication gets lost in the shipping. I will demonstrate how UPS can complete this cycle so there is visibility from the entry point to the doorstep. I will identify some opportunities and risks that are associated with e-commerce. Our e-commerce group has been together for two and a half years with the specific task of developing a strategy for UPS to meet the challenge of electronic commerce. When we talked with our customers and our alliance partners, we quickly realized that not only did we have to explain UPS technology to them but we also had to discuss UPS as a company in general.

UPS has remained a private organization. It was founded in 1907 in Seattle, Washington. So, UPS has been in business for 92 years. In 1997, our revenues were \$24.1 billion dollars, and we will exceed that figure in 1998. We employ 350,000 individuals around the world. We have service to, from, and between 207 countries and territories. Our delivery fleet includes close to 121,000 vehicles and over 500 aircraft. Each day, UPS delivers approximately 12 million packages and documents. Over 95 percent of our volume is considered *durables* or non-paper instruments of commerce—the nuts and bolts of operations. A very small portion of that volume is documents, which can be digitized.

UPS is a key component in worldwide electronic commerce. To be effective, we have had to change our internal market perception. A UPS driver will visit 1.5 million addresses each day to pick-up packages. Our major activities are pick up and delivery. As an e-commerce group, we realized the story was much bigger than that. Our customer base also includes the 5-6 million consignees per day. On any given week, UPS will deliver

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packages to over 20 million addresses. If you annualize that in a given year, we estimate that we will touch about 98 percent of all businesses and households throughout the United States. The reach that UPS has is pretty astounding.

In terms of goods, UPS is trusted to handle over 400 billion dollars of valued goods, which is estimated to be around five and a half percent of the GDP. UPS is a great key component in electronic commerce today and will continue to be in the future as it evolves. Many people think that Federal Express (FedEx) is a much larger operation than UPS. In reality, UPS is about 4 times bigger than FedEx. We deliver 12 million documents and packages a day, whereas FedEx delivers about 3 million. While a very small percent of our volume is documents, a very large percent of their volume is documents—leaving a great risk for revenue loss due to future digitalization. Last June, UPS developed *UPS Document Exchange*. This is a guaranteed product that provides a secure transmission of documents, video, and audio over the Internet. UPS decided to proactively develop this a service whereby e-packages can be delivered securely, thereby taking advantage of our growing understanding of where e-commerce is headed.

One of the issues in global e-commerce is bridging the physical and online worlds. It is not always an easy transition to integrate technologies and systems. There are companies whose representatives take orders over the Internet and then have to re-key the information into their existing order entry system because their online application does not communicate with their existing system. This extra step decreases productivity. In building a new model, we see the supply chain changing from a push model to a pull model where the customer has the power. With the shortage of IT resources, companies are starting to collaborate with companies whose core development is based on information technology. Rather than trying to build the system themselves they are electing to purchase the system.

One very important UPS concept is *Extending the Enterprise*. Extending the Enterprise involves enabling and empowering users outside the enterprise to interact with functions and information inside the enterprise. This allows for systems to extend outside of the four walls of the organization and therefore communicate and integrate with partners, suppliers, and even customers. This is very critical for success. In order to move forward and define a strategy, UPS had to define electronic commerce. Our definition for electronic commerce is the use of network computer technology to facilitate the buying and selling of goods and

services between trading partners. The word Internet is not mentioned in that definition because electronic commerce is much more than the Internet, even though the Internet receives most of the attention.

How will electronic commerce affect the supply chain? As I mentioned earlier, traditionally it has been a push model—a series of transactions between buying and selling partners. There are three flows that are required in order to have a transaction. The first is the flow of information about a product and the intention of purchasing that product. The second is the flow of funds and the third is the flow of goods. UPS has been the provider for the flow of goods for over 90 years. Electronic commerce is now changing the supply chain. Now, there are manufacturers that are directly involved in communicating and conducting business with consumers. For example, Dell is changing the business model for personal computers. UPS supports and maintains these relationships 12 million times a day by delivering those packages, thereby completing the cycle. UPS does not promote *disintermediation*, the elimination of players throughout the supply chain, because our customer base demands the entire supply chain. However, the supply chain is evolving and we will be there to help our customers succeed.

Our customers' needs are changing and some of the problems that they are facing are due to new competitors, cost pressures, and margin squeezes. They are looking to technology solutions to lower operating costs and gain competitive advantages. Many people ask UPS to help them reach their goals. In any case, the digital world will not replace the physical world. The companies that are going to be most successful are those that can deliver their goods and track the status of those goods. Transportation plays a major part in that process. UPS can provide complete visibility throughout the delivery process. In March 1997, the Gartner Group indicated that "Seventy percent of enterprises that fail to incorporate logistics application and content into their Internet strategies will fail to gain competitive differentiation." A few months later they indicated that, "Clearly companies such as UPS and those that are similar to UPS are the winners because smaller, more frequent shipments are going to be the consequence as manufacturers and distributors deal directly with consumers." We are moving away from large truckload shipments. The question is not who can provide the lowest cost transportation, but instead who can cleanly extend themselves into customers' businesses by integrating technology and providing value added information to the process.



## **E-Commerce: Changing the Face of Goods, Services & Transportation**

In order for UPS to move forward, our Electronic Commerce Group developed the vision to be an indispensable, branded component of every global electronic commerce solution, leveraging our competency in the transportation of hard goods. One key word is *indispensable*—to be a standard value-added component of every system, not merely a transportation and tracking commodity. We do not want to be the only solution; we want to be a part of every solution because our diverse customers have a variety of needs. It is unrealistic to think that there can be only one solution. The second key word is *branded*, or making sure that the information we provide throughout processes is represented with the UPS logo. UPS is a company that is associated with commerce. There is much more to transportation than just picking-up and delivering packages. The third key word is *component*, or collaborating with our customers to develop solutions. Also as a component in the solution, UPS is not attempting to reduce technology leaders. The relationships that we enter are non-exclusive and we give our customers the option of choosing their preferred transportation carrier. We would love to have all of their business, but we are not going to force them. Instead, we will win them based on the superior solutions that we provide. UPS has consciously chosen to partner with leading technology companies to provide superior solutions rather than trying to build solutions ourselves. The fourth key word is *global*, reflecting the worldwide nature of commerce and e-commerce. Emphasizing the concept of globalization demonstrates our long-term goals.

We try to communicate two things to our partner organizations: integration and conformity. The first involves integrating UPS technology in the business processes of our customers to add value throughout their transactions. Many customers feel that information-based tracking gives them more control through the delivery process. UPS is trying to make tracking easier for the customer. Integration must be seamless and the process must be user-friendly. For example, UPS and Gateway are working together to provide a tracking solution.

The UPS product called *DockMerge* is an agreement between UPS and Gateway whereby UPS is informed by Gateway when orders are taken and are made aware when the CPU is ready for shipment. Based on the destination, UPS estimates when the shipment will arrive on the customer's doorstep. Integration must be easy and should provide added value. Tracking has become very important and is now available on our website. Retailers claim that 15-20 percent of the phone calls they receive are related to their order status. We have enhanced our tracking system by allowing customers to track packages based on the information they receive at the time they place their order. In 1996, 83 percent of UPS

inquiries were conducted over the telephone. In 1998, 77 percent of inquiries were being conducted electronically over the Internet or an automated phone system; human intervention is no longer required. This is a huge cost savings. Previously, each inquiry used to cost \$1.70 that today, through electronic means, cost \$0.10, which is \$1.60 in savings. Integration dramatically reduces the amount of staff, costs, and time needed for inquiries. In short, we are able to provide better customer service.

Tracking also promotes customer self-service by allowing customers to use the tracking function directly from the manufacturer or retailer's website. Marshall Industries is one of the companies that have integrated their tracking system with UPS. The interesting thing about our integration system is that it drives traffic back to the merchant's website, not [www.ups.com](http://www.ups.com). It does not force customers to visit the UPS site to track their purchases.

Integration also improves efficiency by reducing the amount of inventory one has to maintain on location. From our standpoint, we are trying to promote customer loyalty by working with our customers to provide solutions. This includes getting them to look beyond transportation costs. The information we provide to complement our delivery is invaluable. By providing these enhanced services, UPS hopes to increase our volume and profitability.

Our website, [www.ups.com](http://www.ups.com), is loaded with information that highlights our services and allows people to schedule pick-ups, view rates, and time schedules and transmit information. The website [www.ec.ups.com](http://www.ec.ups.com) demonstrates how UPS plays a role in electronic commerce and lists the Internet commerce partnerships that we have formed. One of the services that UPS provides its partners is information. UPS captures over 200 data elements per package delivered every day. We are the only carrier that captures customers' signatures electronically. We provide a service called *Proof of Delivery*, which gives the customer a copy of their signature on UPS letterhead. Many companies are just beginning to utilize this technology. We are also able to conduct inbound and outbound management by utilizing the tracking services. UPS is the only company that has the breadth of services necessary for true inbound management.

*Document Exchange* is a product that UPS developed to secure transmissions over the Internet. There are two types available. Our premier service is called *UPS Online Courier*, which is a 40-bit encryption—a security feature that ensures your e-package will only be

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seen by its intended recipients. The other is a 100-bit encryption package and requires digital certificates and signatures. There is a guarantee associated with the product that is designed for contracts. We have created nine e-commerce alliances with companies such as Adobe, Compaq, Hewlett Packard, Mind Spring, and Verisign.

We have continued to develop new products that can be integrated. One is entitled *Internet Tools* and the next generation is called *Online Solutions*. We created individual modules that can be implemented in different business processes throughout the transaction. Last October, UPS made an equity investment in TanData Corporation. They offer multi-carrier shipping systems that are designed to be integrated directly into business processes. We have found that our customers are very interested in this type of service.

Throughout the course of a transaction, there are several business processes that take place such as order entry, accounting, customer service, inventory, and returns. Our shipping systems contain a lot of functionality, but traditionally they have sat on the shipping dock. Now, we have created a module that validates customers' city, state, and zip codes. There is also service validation. For example, only certain addresses are able to receive deliveries on Saturday—our employees are kept informed this way. The final processes are tracking, proof of delivery, and shipment processing. The collection research went from four hours to three minutes because of the information that UPS was able to provide to its partners.

IBM, Harbinger, Lotus, Open Market, TradeEX, PeopleSoft, Pandesic, iCat, and AT&T, are just a few of our alliance companies. These include both large and small companies that assist UPS to provide solutions that meet the challenges of our entire customer base. We offer a portfolio of solutions from which our customers may choose. UPS is being chosen as a preferred partner because the market is moving towards our strength. As the supply chain evolves and manufacturers increasingly communicate directly with the consumer, there will be smaller and more frequent shipments. We are already involved in the three flows of e-commerce: goods, funds and information. We hold valuable information about goods flow up and down the supply chain by capturing over 200 data elements per package. It would be very difficult and costly for someone to capture that amount of

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information and provide visibility throughout the whole transaction without integration solutions. The technology that UPS has developed is designed to be easy to use and provides added value to the customer.

To summarize, supply chains are transforming and moving towards a pull model. Capturing information from the flow of goods is essential. Many people feel that the information collected is just as important, if not more important, than the package. Integrated solutions are the key to continued success in the e-commerce environment. Re-keying e-mail orders is costly and not productive. This business is more than just transportation. Transportation functionality can be imbedded throughout the process to create more value-added services; eliminate duplication of functions; provide wider access to information; improve overall response times; reduce steps to information retrieval; and eliminate costs in various business processes.