Retooling With Electronic Commerce

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Introduction

The array of eCommerce tools that are being introduced daily are evolving at a dizzying pace and are having a profound effect on the way organizations create value. This textbook explores how eCommerce is impacting the manner in which the procurement profession delivers service to its customers.

A new generation of procurement professional is emerging to take advantage of the Internet's ability to exchange information, process transactions, leverage new technology and develop new ways of achieving success. The leaders of this new generation are focused eCommerce players with the skills, training and tools that enable them to lead changes in the way their organizations acquire goods and services.

Internet savvy businesses are helping to create an eCommerce marketplace that will establish global business trends well into the 21st century and help carry the Internet's impact throughout the private and public sectors. The accompanying paradigm shifts will be so vast that they will launch distinctly new ways of doing business.

> The days for paper pushers and those who only know how to get bids and make purchase decisions based on low prices are numbered. The purchasing professionals who remain in the profession will add value to their organization by working closely with their customers on business strategies and will competently master vendor relationships.

Procurement professionals can react to the changes being brought about by eCommerce in one of three ways. They may choose to ignore the trend and leave their organizations unchanged. They may take half-hearted steps to adapt the Internet into the way they do business but only superficially alter their organization or change core processes. Lastly, they may recognize the tremendous opportunities offered by today's technology and transform the way they serve their customers to ensure a future for themselves in the organization.

Those who are leading the procurement profession to become a primer 21st workforce equipped with the tools, knowledge and skills necessary to be successful will be influenced by what is going on around them. In our profit motivated economy, private industry will be selling products and services that they believe will fill gaps between the technology that exist today and what may be needed in the future. This activity is reflected by the eCommerce solutions that are being implemented in the business world today. Many of these solutions hold great promise to increase productivity and better manage scarce resources. However, in the evolving marketplace for eCommerce solutions, some of these products may or may not be the right answer.

The government is making great strides toward employing eCommerce solutions to deliver an array of services to the American public and is developing the ability to interact with businesses as never before. The tools being made available today are helping to ensure that the public sector procurement professional has the ability to move

the procurement process beyond a manual one and into a streamlined electronic one. This conversion is taking place now and much has been done to ensure the evolution continues.

Much of the progress being made by private sector purchasing professionals can be employed by the public sector. However, the private sector differs from the public sector purchasing practices in areas such as socio-economic considerations and maintaining a fully competitive level playing field. These considerations create special challenges for eCommerce application developers and the products and services that are deployed to the Government for the conversion effort.

Today's procurement profession also involves adjusting to and recognizing the influences brought about by political power shifts (i.e., changing Administrations and Congressional leadership) and the resulting initiatives. Many new laws and presidential initiatives have been introduced recently that have strengthened the ability for procurement offices to provide better customer service. Additionally, our nation has an Administration that emphases the importance of using technology to better serve the American public and is building on the eCommerce initiatives and developments that were begun during the latter part of the last century by the former Administration.

The procurement profession will continue to experience profound changes because the eCommerce evolution that is taking place today will bring about tomorrow's challenges and opportunities. It is best that the profession recognize the need to be prepared for them and adapt accordingly. If they do not, the procurement profession will be as useful as an 8 Track Tape player.

Chapter One – Introduction to eCommerce

The role of the procurement professional within an organization is undergoing a metamorphous. Until recently the procurement function within an organization was perceived as being undertaken in the back office by people wearing green eyeshades thumbing through thick catalogs and phoning or faxing vendors for pricing quotes. This perception is slowly being changed by the procurement profession developing into a more widely respected profession, one that adds value to the organization by providing strategic planning, expertise on the marketplace and by becoming more responsive to customer needs.

How is all of this possible while managing each of the hundreds of tasks and sub-tasks that comprise the procurement process? The answer: through eCommerce tools.

Before we can understand the tools that eCommerce makes available, it is important to have an understanding of what eCommerce is and why eCommerce is important to the procurement professional.

Regardless how eCommerce is defined, it is fundamentally changing the way businesses interact with internal and external organizations and how goods and services are traded.

The definition of “eCommerce” depends on whom you ask.

Some refer to eCommerce as selling to customers online over the Internet or selling and buying products and services through Web sites. The products being purchased may be physical, such as a camera or a PC, or they may be a service such as airline tickets or an on-line training course. Increasingly, web sites are beginning to include digital products such as news, audio and video, databases and software.

However, eCommerce is not confined to just buying and selling products online. For example, a business can set up a Web site to not only attract customers but also to find potential suppliers, utilize payment services, get information or services from government agencies and learn more about their competitors. The added flexibility to do these activities via the Internet has led to a broader definition of eCommerce.

Most recently a broader definition of eCommerce has come into being by referring to the use of electronic means to improve the way a company does business and to create value or competitive advantages for the company. Improvements can be in the way a company transacts business-to-business (B2B), business-to-consumer (B2C) and its intra-business transactions to provide goods and services.

As eCommerce has taken its place in the way business is conducted, the term eCommerce has evolved from its humble origins of meaning electronic online shopping to now represent all aspects of business and market processes that are enabled by the Internet and World Wide Web technologies.

To understand the future of eCommerce, it is also important to understand its past.

ECommerce did not spring up overnight. Indeed it was conceived in the infancy of the computer era of the 1950's and matured with the development of the Internet. ECommerce development as we know it today can be defined by four distinct phases.

Phase 1 Simple One-Way Communication (circa 1985)
ftp; gopher; research
File transfer; communication to academic and computer enthusiasts

Phase 2 One-way marketing (circa 1993)
Mosaic
Simple World Wide Web vanity pages for market information dissemination; basic customer service

Phase 3 Customer interaction (circa 1995)
World Wide Web
Simple transactions; basic communication to/from a company

Phase 4 Organization and process transformation (Today)
eCommerce
Transformation of business processes and new lines

A brief history of the Internet can be found in Appendix 1.

In 1993, students at the University of Illinois/National Center developed a software program called Mosaic for Supercomputing Applications. The Mosaic browser allowed users to view both text and graphics. This transition to a visual interface sparked rising interest in the Web. Marc Andreesen, one of the students who created Mosaic, later cofounded Netscape, one of two dominant Web browsers (the other is Microsoft Explorer).

Factors Influencing eCommerce

Development and Industry's Embracing it

In recent years public sector firms have been rapidly employing eCommerce strategies into their business models. This activity has been brought about by a variety of factors. These factors include the Internet, the new digital economy, dynamic pricing capabilities, political influences and the availability of resources.

The Internet

The Internet is by far the most important tool to deliver eCommerce. Since its debut in the mid 1990's, it has transformed the way business transactions are conducted, information is shared and goods and services are delivered. Its importance in the way business is conducted cannot be understated.

In a recent poll of US firms by the Cutter Consortium respondents overwhelming indicated that eCommerce is here to stay. Of those surveyed, sixty-seven percent stated that they consider eCommerce initiatives to be critical for long term success. Fifty-six percent of the respondents indicated that they were working on eCommerce process reengineering projects. The main reason cited for establishing these eCommerce initiatives is to reduce costs, cited by forty-seven percent of those polled. Keeping up with competition and offering better service and prices were cited by forty-six percent and thirty-seven percent, respectively. However, the biggest hindrance to deploying eCommerce, according to survey respondents, is the Internet poses security concerns and the threat of having information fall into the wrong hands.

The widespread adoption of web-based technologies inside corporations is also spawning the growth of intra-company eCommerce. The tool primarily used to deliver intra-company eCommerce is the Intranet. Intranets can be considered a closed circuit Internet that permit people behind a common firewall to share information in a more secure manner. The use of Intranets to deliver services and permit collaboration on a project is gaining equal importance with the Internet for the way business is being conducted. This is due to the Intranet allowing collaboration, financial transactions and information sharing to take place behind a common firewall. Thus, it is a safer network that helps ensure security of the data being transferred across the wires.

Increasingly, companies are integrating their business-to-business and intra-company eCommerce strategies. As new ways of sharing internal information among users outside the organization have become more commonplace, the term Extranet has been coined. An Extranet is a hybrid of the Internet and the Intranet in that it restricts access to the information, but it extends beyond the protection of a common firewall and allows suppliers and partners to work more closely with each other. These Extranets provide a wealth of opportunities that did not exist until recently. These opportunities include the development of making greater amounts of information available to more people, the ability for people in a variety of internal and external organizations to collaborate on projects, facilitating the ability to share knowledge across organizational boundaries and transforming business processes.

The Digital Economy

eCommerce is helping to develop a new "digital" economy. This new digital Economy may be summarized as the effects that globalization and investment in information technology have had on U.S workers' productivity. In turn, this increased productivity

has produced a sharp rise in the rate of growth that the U.S. economy experienced in the 1990s.

The new digital economy is heavily influencing investment in eCommerce solutions by US companies in many ways. One factor influencing eCommerce investments is the sharply falling IT prices and the resulting booming investment in IT goods and services across virtually all American industries. Another factor is businesses have been gaining increased efficiencies through standardizing and automating routine transactions.

The effects that these investments in information technologies are having on the economy are just the beginning. As the number of people connected to the Internet multiplies and its commercial use grows, its importance on the economy will eventually impact every sector of the economy in some way.

Dynamic Pricing

In a retail store a customer generally pays the price marked on the item. However, eCommerce has fostered a variety of pricing schemes where prices change to reflect the marketplace in which the pricing is being offered.

One of these dynamic market places is an online auction. Live auctions have existed for a long time, but their practical uses have been limited by the expense and difficulty of getting prospective buyers to a single location at the same time. Sealed bid auctions are less expensive, but they often do not produce the highest possible return to the seller. By contrast, the Internet provides a relatively low-cost and convenient way of bringing buyers and sellers together, and the use of auction sites such as eBay have grown rapidly.

Variations on the standard auctions are also gaining popularity. In the reverse auction format of PriceLine.com, the consumer names the price and the seller decides whether or not to accept it. Additional information on reverse auctions is presented in Chapter 2.

Today the Internet gives customers access to price and product information from many sources. This in turn results in pricing that reflects the competitive environment that is now prevalent in the Internet environment. The result is companies are forced to be more price competitive than ever before.

Political Influences

Politics plays a major role in the development, accessibility and deployment of eCommerce. The Congress is keenly aware of the new market opportunities that eCommerce presents and has worked to facilitate the advance of eCommerce in many ways.

One is the passage of E-Sign legislation that recognizes the validity of electronic signatures to replace hand signed documents. They are also influencing eCommerce by

addressing concerns such as transaction security, spreading spam (unwanted solicitations), and maintaining personal privacy on the Internet among others.

Past and present presidential administrations have also enhanced the development and deployment of eCommerce. The groundwork for fostering eCommerce growth was formed in the report, "A Framework for Global Electronic Commerce," issued by President Clinton in 1997. The framework described in this report set forth five principles for eCommerce that continue to hold true today. These principles are:

- private sector leadership,
- avoidance of undue restrictions,
- establishment of a legal environment based on a contractual model of law,
- recognition of the unique qualities of the Internet, and
- facilitation of global eCommerce.

These principles are being carried over into the present administration by its calling for agencies to take eCommerce to the people that the government serves.

The eCommerce phenomenon is also beginning to spread to the federal, state and local agencies. These governments are now using new eCommerce tools to design and implement eCommerce applications that provide value-added services to all citizens.

The major organizations that are helping to mold the future of the government eCommerce at the federal level are the Procurement Executive Council, the Chief Information Council and the Chief Financial Officer Council. Working in concert with one another, these councils are beginning to merge into one cohesive organization that will enable the government to electronically deliver services to citizens and facilitate government and private sector business dealings.

Resource Availability

Resources also play a major role in eCommerce deployment and development. The economic expansion that our country experienced throughout the 1990s helped companies venture into the eCommerce. Companies were able to invest in the new technology at higher rates than would have otherwise not been possible.

The cost of deploying eCommerce has been dropping steadily due to mass migration to eCommerce and the advent of new business solutions. In the past many large business firms such as Ford, IBM, and Coca-Cola have invested millions to deploy eCommerce and these investments helped reduce the overall costs for the solutions employed by others.

Today new business models are being developed to allow mid-sized and small businesses to engage in eCommerce. One of these new business entities is known as Application Service Providers (ASP). The ASPs helps drive down the cost of entering the eCommerce marketplace by the customer not having to employ technical staff, or

maintain information technology systems. In a recent survey, the Aberdeen Group found that hosted solutions provided by ASPs helped reduce the deployment costs of eCommerce solutions by 60% while implementing the solution 23% faster than a firm doing it themselves. Also according to this survey, the average cost of implementing an enterprise-wide eProcurement system is now $1.09 million, down from $1.4 million in 1998.

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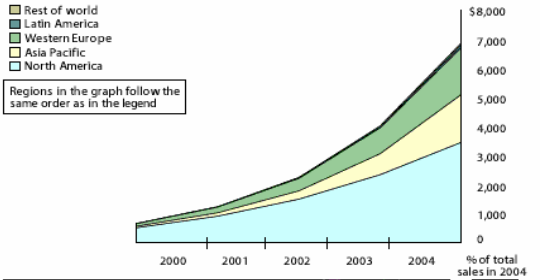
eCommerce is becoming more important than ever to the procurement professional as time passes. Why? Because eCommerce has become a widely adopted popular technology platform that enables business processes to be transformed and organizations to be streamlined.



Total (billions US$)	**$657.0**	**$1,233.6**	**$2,231.2**	**$3,979.7**	**$6,789.8**	**8.6%**
North America	**$509.3**	**$908.6**	**$1,495.2**	**$2,339.0**	**$3,456.4**	**12.8%**
United States	$488.7	$864.1	$1,411.3	$2,187.2	$3,189.0	13.3%
Canada	$17.4	$38.0	$68.0	$109.6	$160.3	9.2%
Mexico	$3.2	$6.6	$15.9	$42.3	$107.0	8.4%
Asia Pacific	**$53.7**	**$117.2**	**$286.6**	**$724.2**	**$1,649.8**	**8.0%**
Japan	$31.9	$64.4	$146.8	$363.6	$880.3	8.4%
Australia	$5.6	$14.0	$36.9	$96.7	$207.6	16.4%
Korea, Republic of	$5.6	$14.1	$39.3	$100.5	$205.7	16.4%
Taiwan	$4.1	$10.7	$30.0	$80.6	$175.8	16.4%
All other	$6.5	$14.0	$60.6	$130.5	$197.1	2.7%
Western Europe	**$87.4**	**$194.8**	**$422.1**	**$853.3**	**$1,533.2**	**6.0%**
Germany	$20.6	$46.4	$102.0	$211.1	$386.5	6.5%
United Kingdom	$17.2	$38.5	$83.2	$165.6	$288.8	7.1%
France	$9.9	$22.1	$49.1	$104.8	$206.4	5.0%
Italy	$7.2	$15.6	$33.8	$71.4	$142.4	4.3%
Netherlands	$6.5	$14.4	$30.7	$59.5	$98.3	9.2%
All other	$25.9	$57.7	$123.4	$240.8	$410.8	6.0%
Latin America	**$3.6**	**$6.8**	**$13.7**	**$31.8**	**$81.8**	**2.4%**
Rest of world	**$3.2**	**$6.2**	**$13.5**	**$31.5**	**$68.6**	**2.4%**

(Totals may not equal sum of rows due to rounding)

Source: Forrester Research, Inc.

Table 1.1 Worldwide eCommerce Growth Forecast

Another reason why eCommerce is important to the procurement professional is it is critical to the way business is being conducted today and its importance and magnitude is growing exponentially because of its ability to accommodate complex transactions.

In February 2002 the Department of Commerce's Bureau of the Census reported that in the fourth quarter of 2001, U.S. eCommerce retail sales exceeded $10.0 billion–up 13.2 % from the fourth quarter of 2001. In this same report the Bureau of the Census announced that total US e-commerce sales for calendar year 2001 were estimated at $32.6 billion, an increase of 19.3 percent from 2000.

What these statistics reveal is that even with the current economic slowdown that began at the early part of 2001 and with many new "dot-com" businesses no longer in existence, business being conducted over the Internet continues to grow rapidly.

eCommerce is also making significant gains worldwide as countries adapt to online trading. In an April 2001 briefing report[1], Forrester Research, Inc., a firm specializing in analyzing the future of technology, estimates global eCommerce will reach $6.8 trillion in 2004, or 8.6% of the world's sales of goods and services.

Their forecast also indicates that North America will continue to be the global eCommerce leader - contributing nearly $3.5 trillion in online business-to-business (B2B) and business-to-consumer (B2C) sales in 2004 - but the region's dominance will fade as Western Europe and Asian-Pacific countries hit hyper growth in 2002. A chart showing the anticipated increases is shown in Table 1.1 on page 8.

[1] Global eCommerce Approaches Hypergrowth, Forrester Research, April 19, 2000

Procurement Profession

Automation of the Acquisition Processes

eCommerce is developing tools that will accelerate the pace at which procurement processes can be accomplished. There is a wide range of information technology solutions that are available today that relieve purchasing staff from many of the necessary, low value-added administrative responsibilities. These tools offer the opportunity to shift manual procurement processes into automated ones while affording the procurement professional the opportunity to focus on supply management tactics and strategies and to become the business leader of tomorrow.

> According to Jupiter Media Metrix, government e-spending will grow from $29.4 billion in 2001 to $286.1 billion be 2005. By comparison, business-to-business e-commerce is expected to reach $6.3 trillion.

Take for example the role of the credit card in today's purchasing arena. When used in conjunction with the Internet and electronic catalogs, the cardholder can bypass the labor-intensive purchasing process by allowing the end user to purchase low-cost items themselves directly from the supplier. Here is an example of how procurement in an agency that employs sound procurement policies and the purchase card as an eCommerce tool can work.

Annie Body of the CFO's office needs to upgrade the office's thirty-four computer monitors. After checking the office budget and having been given purchasing authority up to $50,000 in advance, Alice browses online catalogs of various monitor suppliers that have government-wide contracts and agency-wide contracts with her Department. Upon deciding on an appropriate model, she enters basic information about the monitors into an online ordering system that populates the order form with prices, terms

and conditions from the existing contracts, shipping addresses and other pertinent information.

Given that Alice has a credit card limit equal to her purchase authority, she can pay for the order with her card. Since the online ordering system contains the Department's business rules for purchase approvals, the system immediately routes the order electronically for any necessary approvals and the order is placed electronically with the supplier the same day. The order is received electronically and processed by the supplier and the monitors are shipped the same day. The next day Alice receives the monitors and they are installed.

Paradigm Shifts Are Required

Making the transition from a task oriented, paper based, faxing for quotes procurement bureaucrat to an effective business leader will require some paradigm shifts. These include new ways of viewing the procurement profession and how one performs their role within the organization.

The changing paradigms include:

◊ Moving Away From Being:	◊ Toward:
• Satisfied with "good enough"	• Reaching for Excellence
• Sustaining the base; focusing on initiatives	• Evaluating programs; ensuring all operations add value
• Looking only to obtain more resources	• Improving management of existing resources
• Paying the price for external & institutional roadblocks.	• Removing barriers & roadblocks

Source: Memorandum from Treasury Secretary Paul O'Neil, "A World Class Treasury Department", June 14, 2001

Over the years, the emphasis has been to use electronic tools to collect vast amounts of information. There is paradigm shift occurring that is changing this notion. While there continues to be a need to collect information, it is becoming increasingly important to also add value to it by analyzing it and sharing it with others. As organizations are attempting to shift away from collecting information to one that analyzes it and shares the findings with others, organizations must overcome the natural human tendency to resist change. Here are some steps that should help employees embrace a new way of doing business.

- Make sure those at the top strongly believe in and advocate change.

- Involve end users from the start of the process, asking about their concerns, needs and specific business processes.

- Break down ownership barriers by building in incentives for people to share information.

- Tie long-term benefits to short-term challenges.

- Recognize and emphasize that every employee has the know-how to contribute to the organization.

- Focus on being a learning organization.

- Provide users with opportunities for informal networking

- Institute discrete and specific learning processes such as after-action reporting, which debriefs employees as specific points on lessons learned.

- Consider implementing one of the new software applications that documents tasks and processes of each worker and job description, providing the opportunity to keep track of lessons learned and determine learning objectives for the future.

Does Conversion Mean Extinction?

Does converting manual processes to electronic ones mean the procurement professional's skills are no longer needed? Absolutely not! It means that their responsibilities will be different.

Changing from a rule bound dogmatic bureaucrat to a flexible business leader within an organization is part of the answer. How can one get there from here? The answer- eCommerce.

Firms such as Ariba, Commerce One and others are developing end-to-end eCommerce tools that will perform manual processes in the acquisition cycle. However, these systems are no substitute for knowledge and experience that one possesses. No matter how good technology is, it can't think for itself--at least not yet. This means that tomorrow's procurement professional will be required to be able to manage the information technology that takes over the procurement process. This will require a mastery of the eTools that are available now and those that will become available tomorrow.

For example, many eTools, like the Treasury Acquisition Data System, afford a buying organization the opportunity to extract information contained in a database for meaningful analysis. This analysis can be used to determine how much of a commodity was purchased last year, who the largest suppliers are and help establish opportunities

for aggregating smaller purchases to leverage large quantity discounts. To make these kinds of eTools work for the buying organization, someone in the organization must have the skills needed to run the queries to get useful results and analyze those results to draw meaningful conclusions. eCommerce tools cannot do this. It takes a technically savvy individual to accomplish these feats. Additionally, this kind of analysis cannot be performed by procurement professionals that are bogged down by a labor-intensive, manual procurement process.

Why Do it at All?

Why is it important for the procurement profession to embrace changes brought about by eCommerce anyway? Because eCommerce is vital to staying competitive in the future.

First, the market place is changing rapidly and eCommerce tools can aid with evaluating those changes and can help an organization stay ahead of its competition by being more forward focused and cost competitive. Another reason is competitors are rapidly deploying eCommerce themselves. Therefore, it is best to adapt or die. The last significant reason for employing eCommerce to stay competitive is there is an increased emphasis on achieving a more efficient, business-like, and better managed government and federal, state and local government agencies have set out to consolidate processes, restructure or reengineer activities, adopt better business management practices, and terminate obsolete services or programs.

Internet activity “facts”:

- The Internet connects more than 72 million host computers in 247 countries.

- The number of machines physically connected to the Internet is growing at a rate of about 40% to 50% annually, according to data from the Internet Domain Survey, the longest-running survey of Internet hosts.

- In July 2000, Cyveillance, an Internet consulting company, estimated that there were 2.1 billion unique, publicly available pages on the Internet. Cyveillance states that the Internet grows by 7.3 million pages each day,

- In a January 2000 study of the Internet, NEC Research Institute and Inktomi researchers found:

    - Number of documents in Inktomi database: over one billion
    - Number of servers discovered: 6,409,521
    - Number of mirrors (identical Web sites) in servers discovered:1,457,946
    - Number of sites (total servers minus mirrors): 4,951,247
    - Number of good sites (reachable over 10-day period): 4,217,324
    - Number of bad sites (unreachable): 733,923

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Number of Sessions per Month	19
Number of Unique Domains Visited	47
Page Views per Month	826
Page Views per Surfing Session	43
Time Spent per Month	10:14:17
Time Spent During Surfing Session	0:32:13
Duration of a Page Viewed	0:00:45
Active Internet Universe	257,854,751
Current Internet Universe Estimate	447,857,377

Source: Nielsen//NetRatings

A word of caution - there is inherent difficulty in measuring the scale of the Internet and eCommerce activity and there are concerns about the accuracy and timeliness of eCommerce statistics.

The concerns center on the methodologies that are used to collect responses from individual users. Because of the differing methods used to arrive at conclusions, it is not uncommon for industry reports to reflect widely varying findings. For example, Forrester Research Group reported worldwide eCommerce was $657 billion in 2000 and they are projecting growth to $6.8 trillion by 2004. Meanwhile, the consulting firm International Data Corporation (IDC) reported an estimated $354 billion in eCommerce sales in 2000 and is projecting growth to $5 trillion in 2005. What these and similar reports indicate is how difficult it is to precisely measure eCommerce on a macroeconomic scale.

One explanation for the disparate reporting is that attempting to contact every Internet user to get complete census figures is neither practical nor financially feasible. Therefore, Internet surveyors attempt to derive conclusions based on selecting a subset of the universe of Internet users to participate in the survey. This process is called sampling.

Sampling involves one of two basic techniques, random and non-probabilistic. With random sampling, a sample is created by using a random process for selecting

members of the entire population. Results obtained from measuring the sample can be generalized to the entire population because each person had an equal chance of being included in the sample population. However, with non-probabilistic sampling, bias can be introduced into the sampling selection process because of factors such as the desire for convenience or expediency can lead to certain portions of the population being excluded from the sample group. This can lead to inaccurate results.

Difficulty in measuring Internet usage is also partly due to the fact that analysts use different survey methods and differing definitions. For example, some companies and researchers consider "Net surfers" as anyone age 2 and up, while others it is age 16 or 18. Others include users who have been on the Web only within the past month, while others include people who have never used the Internet. In addition, definitions of "active users" vary from one market research firm to another. Some companies count Internet users over 15 years old who surf the Web at least once every 2 weeks for any amount of time. Other companies count casual surfers or e-mail browsers in their surveys.

Other difficulties associated with measuring the Internet include the fact that many domain names are unused. An individual or organization might buy one or more domain names with the intention of building a Web site; other individuals or companies buy hundreds or thousands of domain names in the hope of reselling the name. Another difficulty counting the number of Web sites is that some sites are merely synonyms for other sites. In other words, many domain names point to the exact same site. For example, *barnesandnoble.com* and *bn.com* both point to the same site. And finally, some sites are mirror sites, which are exact duplicates of the original site on another server. Usually these are created to reduce network traffic, ensure better availability of the Web site, or make site downloads more quickly for users.

While there is much debate over which of the Web measurement methods are the most accurate and useful, and researchers disagreeing about sampling methods, the bottom line is--the size and magnitude of the Internet makes it very difficult to measure its scale, calculate the number and types of users (age, sex, race, gender, location, etc.), or even forecast future growth. Further, predictions about the size and shape of eCommerce and many reports reflecting these results are often outdated before they are published. However, virtually every researcher agrees that a vast majority of today's business are beginning to use the promises that eCommerce has to offer and eCommerce is likely to experience strong growth over the long term, particularly eCommerce sales in the global economy.

Summary

The potential of eCommerce technologies to transform business practices is evident in the new marketplaces that are developing online. These marketplaces have emerged rapidly in virtually all industries, providing new places for buyers and sellers to meet, allowing a variety of pricing schemes to flourish, altering the role of traditional procurement functions, enabling complex transactions, and by making vast amounts of information available at very low costs. The procurement professional must recognize the coming environmental changes that are forcing a rapid evolution of their profession.

Chapter Two – What Private Industry is Doing With eCommerce

Only a few short years ago eCommerce was just beginning and its potential was not widely recognized. Estimated sales generated by the World Wide Web in 1995 totaled just over $435 million. Since then, business-to-consumer (B2C) and business-to-business (B2B) eCommerce have skyrocketed. Some estimates suggest that global B2C eCommerce totaled some $1.2 trillion or more in 2001. Some sources suggest that global B2B eCommerce exceeded $218 billion in 2000. Further, the Forrester Research, an independent Internet research firm, estimates that eCommerce will account for $6.8 trillion or 8.5% of the global sales of goods and services in 2004. Although estimates vary, there is strong consensus that there will continue to be further growth.

As defined today, B2B eCommerce covers everything from Bob setting up a web site to advertise his auto body shop to General Motors using Web technology that permits customers to purchase an automobile tailored to a customer's taste to Ford employing an enterprise-wide resource tool to acquire the direct goods (components used to produce a finished goods such as engine blocks, axles and A/C units) and indirect goods, items such as office supplies, PCs, paper, pens and spare parts.

The fertile eCommerce landscape is dotted with thousands of solutions, and like trees, come in many varieties, some are even producing fruit. Some of the eCommerce solutions that are available today are mature and are providing a harvest of savings and high rates of return for those who are using them. Others are seedlings that hold the hope and promise of becoming fruit producing some day.

With the thousands of eCommerce solutions being employed in a variety of ways by businesses worldwide, it is beyond the scope of this textbook to cover them all. Therefore, this chapter focuses on those eCommerce tools and concepts that have the ability to be useful in the public sector's acquisition arena.

Business (B2B) Defined

One of the fastest growing sectors of eCommerce is business-to-business transaction, often referred to as "B2B." B2B eCommerce tools enable new kinds of relationships and provide new incentives and business models for what were once strictly buying and selling relationships. With B2B, business partnerships are strengthened and the relationship of partners is literally transformed from supplier/customer to true business partnerships where they collaborate at the same level on the value chain.

For example, Nike does not manufacture a single pair of shoes, but rather engages manufacturers as production partners so that Nike can focus on its core competence of marketing and distribution. Production partners invest in research and development to deliver new shoes based on the market insights Nike shares with them. It is B2B eCommerce that provides the platform for exchanging this kind of data.

How B2B eCommerce

Can Transform A Business

An example of the old way of doing business and the new way of doing business is illustrated below.

Example of a manufacturing firm's transitioning to B2B:

Old Way –

1. Customer orders three products, which requires three orders.
2. Procurement personnel make calls and send faxes to suppliers for raw material to build the items
3. Raw materials arrive a week before manufacturing.
4. Ordered items are built in three different plants at three different times.
5. Items are shipped at different times to a distribution center where they sit for a week awaiting all items to arrive.
6. Items are delivered to the customer, who has no idea where the order is at any given time during the process

New Way –

1. The customer places a single order for all three products and receives a price and delivery date.
2. The order is automatically transmitted via Internet to the plants and to the plants' raw material suppliers. The delivery of raw materials is synchronized by computers to arrive at three plants and completed on the same day the items are to be built.
3. The plants are synchronized so the orders are built simultaneous and completed on the same hour of the same day.
4. The final order is consolidated the day it is built and – without being stored in a warehouse or distribution center – shipped to the customer.
5. The customer can track the progress of the order on the Internet.

Transition to the new way of doing business results in reductions in costs and delivery times are reduced significantly.

B2B revolves around businesses working together with vendors, distributors, and other businesses using Web technologies and Internet sites. While there are many different types of B2B eCommerce sites that work in various ways to allow each of these businesses to work with each other, they are broken into two major groups: the verticals and horizontals. Horizontals and verticals can connect buyers and sellers together directly or act as intermediaries to facilitate transactions.

Vertical marketplaces are B2B sites designed specifically to meet the needs of a particular industry, such as automobile manufacturing. Vertical sites are most likely to contain community features like industry news, articles, and discussion groups. An example of a vertical market is rooster.com which is a Web marketplace where farmers can conduct price comparisons and identify opportunities for markets for their crops.

Covisint Success Metrics
(Jan. 2001 - Sept. 2002)

- Over 11,500 registered customer companies
- Over 47,000 active users are connected
- Over 2,900 online bidding events
- Over $82 Billion in auction transaction volume throughput
- Over 350 catalogs online

Another is Covisint which is backed by DaimlerChrysler, Ford Motor Company, General Motors, Renault SA, Nissan Motor Company, and PSA Peugeot Citroen SA and is powered by CommerceOne and Oracle. The Covisint exchange was created in February of 2000 to help automakers and suppliers drive costs down and prevent waste. To help accomplish this, the company offers a variety of online tools to support everything from buying parts to managing supplier relationships to collaborating in real-time on engineering work that once took days or weeks and a flurry of faxes and phone calls to accomplish.

Horizontal marketplaces, on the other hand, provide products, goods, materials, or services that are not specific to a particular industry or company but serve multiple industries. For example a horizontal market might provide the insurance, financial or retail industries with their travel, transportation services, office equipment, or maintenance and operating supplies needs. An example of a recently developed horizontal exchange is UVentures.com from University Ventures Inc. The UVentures.com site creates a central marketplace for the electronic exchange of information between those seeking cutting-edge technologies with the universities and institutions that are developing these innovations.

The UVentures portal creates an online network of relationships among members of this community who list or browse entries on the database and participate in its forums. It also provides the latest news, editorial content, event listings and resources of interest to technology transfer professionals.

B2B Challenges

As with all changes, there are challenges with converting to a B2B environment.

One challenge is there are a number of legacy programs in use that must be joined in a B2B relationship. This creates the need to expend resources to have the legacy systems talk with one another. A second challenge with B2B relationships is a need to reorganize internal systems and recognize that changes to the internal systems do not occur easily or inexpensively. Yet another concern involves issues related to security, such as ensuring authenticity of a sender, determining if a message was altered before or after receipt or if someone can deny receiving a message. And of course there are human resources issues as well. This challenge must address concerns like, does the organization have people with the requisite skills and how does one overcome their natural tendency to resist change.

Another challenge is the technology that is available to businesses. Often the software isn't robust enough to deliver the special requirements of those who need it. Also, companies are finding that their computers are not able to talk with one another, which requires expensive translation software to be developed or purchased.

Examples of the

Deployment of B2B by the Private Sector

Online Catalogs

In the 90s there was a steady development of database technology that began to make it possible to digitize catalogs. Now, the easiest way for a business to go online is with an electronic catalog, which enables the company's customers to search or browse its entire product line over the Internet. Buyers can place orders as simply as buying a pair of pants from Lands End at landsend.com.

The first high-profile applications were seen in the business-to-consumer retail space that companies such as Amazon.com occupy and until recently the business-to-business sector, remained business as usual with respect to adopting the digitized catalog concept.

This is slowly changing however with the online catalog model giving rise to several electronic catalog companies. One eCatalog solution provider is Cardonet whose solution is built on Java and matches incoming content to catalogs defined by the user.

For example, one of Cardonet's customers, Newark Electronics, does business with 35 different major businesses, including Intel, Motorola, HP, and TI and each of these businesses want to receive information in a certain way. Additionally, Newark provides different products at different prices to each of these customers. The solution that Cardonet provides accommodates their customer's requirements online and today Newark maintains 60 catalogs consisting of over 150,000 items since the information presented in each catalog is different. It is estimated that that 5 percent of Newark's sales (roughly $40 million) are now coming from their online eCatalogs.

As these new eCatalogs have shown, the catalog marketplaces have come a long way from the Sears catalog where pricing and product presentation were universal.

Supply Chain Management

There are numerous, independent firms and customers involved in a supply chain (e.g., manufacturers and parts suppliers; parcel shippers, senders and receivers; wholesalers and retailers). Supply chain management allows companies to better manage their production schedules and inventory levels through the use of supply chain management. Accomplishing the coordination of supply chain players is done through the expanded use of the Internet and Extranets (connected intranets) which link them together in an eCommerce environment.

Using networking technologies to improve processes, Conexant, a semiconductor producer, has created Web-enabled tools for its new product development process. The company's 2,000 engineers use a standard Web browser to access the company's portfolio of projects and obtain information on phase of development, team composition, deliverables, and milestones.

There are many benefits to managing the supply chain electronically. This is because interoperable Intranets make it easy for supply-chain partners to share and exchange information. This whole management process may also be contracted to a third party instead of developing one's own applications and investing in separate systems. In this intermediary market, sophisticated logistics management and automated supply-chain management are available almost universally. Third party supply chain management providers include Oracle, Peoplesoft and SAP American.

Supply chain management in an eCommerce environment works like this: A company has a contract to supply widgets to a large manufacturer. Using supply-chain software, it can track the number of widgets the manufacturer is expected to use every day – in some cases by the hour-based on actual and forecast orders. The company can also see how fast the manufacturer is going through its supplies, so that it produces only enough to satisfy this customer (and all of its others), and a new order can be shipped to arrive just-in-time to meet its customers' needs. What's more, the Company's own suppliers also can time their production and shipping to meet the company's needs.

Collaborative Design Work

This form of B2B eCommerce allows people, like engineers, to use the Internet to work with others at another plant or at a supplier's firm to make changes to an existing product. For example, by communicating over the Internet, product development from several departments at both companies can view the same blueprint and make changes on the blueprint that's visible to all, saving the time and cost of faxing or mailing drawings with each new change. Collaboration also allows buyers and sellers to work on new products, provide better forecasts, and improve responsiveness.

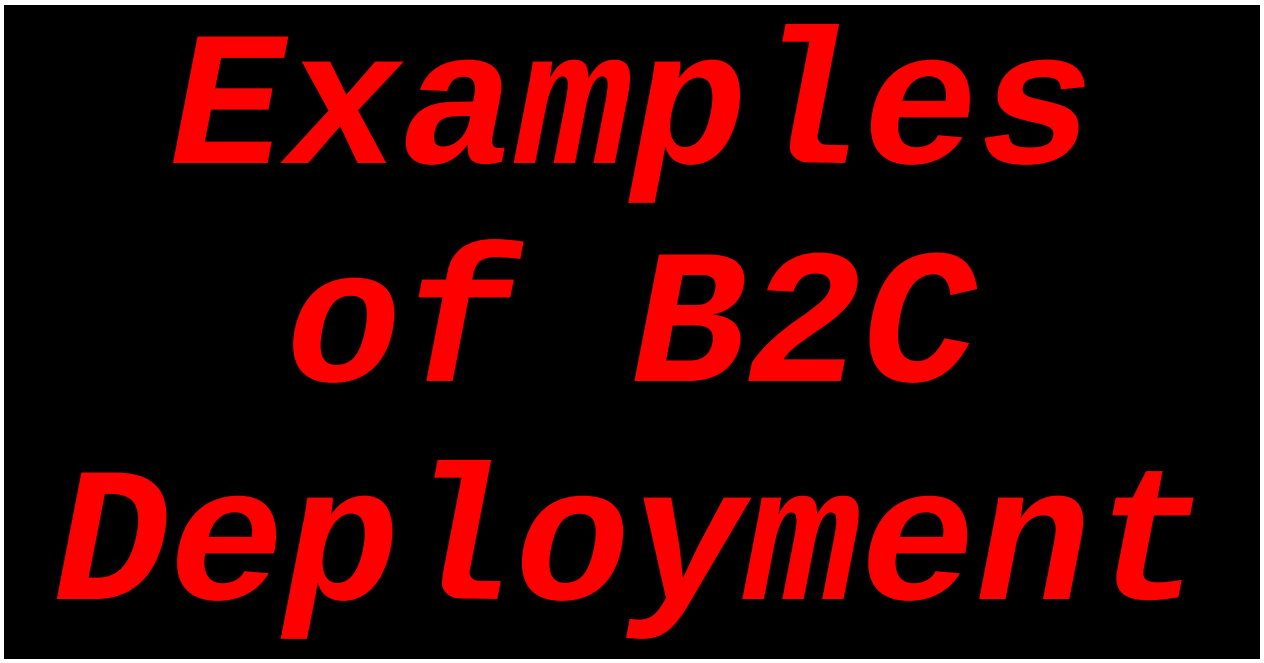
One of the earlier means of eCommerce involved the use of the Internet to market and sell goods and services to the consuming public. Today, B2C is described as the means of engaging in the business of selling to customers through the use of electronic means.

B2C eCommerce has enabled businesses to change their marketing and selling techniques in a number of ways. Much of this is being done through new marketing techniques that include customizing a mass produced product to meet the needs of a customer's individual needs; conducting market research to understand what the customer is really looking for; and obtaining a targeted audience through customer information. The use of sell-side eCommerce tools is especially important to achieve the degree of success at this.

Sell-side eCommerce generally refers to a class of customer focused packaged applications that enable an organization to promote and sell products using the Internet as a medium. Many organizations are making investments in sell-side applications to establish new sales channels for an increased market presence and to lower the cost of sales.

Those firms that are implementing sell-side eCommerce software strive to gain one or more of the following advantages:

- Provide an alternate sales channel.
- Automate order management process.
- Connect geographically dispersed customers.
- Reduce order placement and delivery cycle time.
- Improve understanding of buying behaviors.



The Grocery Cart Model

The most elementary form of B2C eCommerce is grocery cart type model. At these types of sites the online buying is done by filling up a “virtual cart” and taking it to the checkout. Amazon.com is most recognizable example of a private sector site using the shopping cart model.

Beginning as an online book retailer, it now sells videos and many other goods. In addition to providing a convenient site for simple transactions, it has also pioneered the delivery of value-added services. Among its most prominent features is its innovative third-party content - interviews with authors, reviews of books, pre-release information.

Amazon.com also uses e-mail extensively to inform customers of order status and send out book reviews and notices of new books. Amazon.com also allows the user to establish wish lists of their favorite books.

The Value Added Site

The next level of B2C eCommerce is the "value-added" site, which provides more than just the opportunity to purchase goods or services. Even if the user cannot directly purchase goods from the site, these companies offer the opportunity for some added value to be obtained from their websites. An effective strategy for many the largest established brick-and mortar firms who are using B2C eCommerce is to allow their customers to tailor a product to their specific needs and receive special services. For instance, Federal Express's customers can track their packages through the FedEx site or determine the location of the closest drop-off point and then obtain driving directions. Another example is Gateway Computers' site where customers may customize their computer systems with the exact types of software and hardware configuration that they desire.

Portal Sites

Another layer of B2C eCommerce is portal sites and aggregators. Sites like Yahoo, Netscape and Shop.Com are so-called "portals" because they bring together numerous vendors and content providers along with a vast amount of information and retailing opportunities. The goal is to provide one site to which users can go to obtain everything they need and want.

Yahoo and Netscape are considered general portals because they bring together news, the ability to track stock portfolios and other customized information, search engines, the ability to generate maps and driving directions, and more. Yahoo also provides yellow pages, the ability to search for new cars, jobs, and apartments, and connections to live audio broadcasts of sporting and other events. Through Netscape, users can listen to Internet radio, read movie reviews, and generate a customizable home page with weather, horoscopes, and stock information. Shop.com is a true eCommerce aggregator in that it is composed of retail sites organized into 13 different categories, including real estate and education.

These sites are excellent examples of how, in an amazingly short time, private sector companies have become extremely sophisticated in online marketing, branding, advertising, and retailing.

eSourcing

Generally, sourcing involves selecting the mix of suppliers, products and services that best meet the needs of the organization at the lowest total cost, including quality, delivery, payment terms and price. eSourcing involves the use of Internet technology, plus specialized methodologies and expertise to make the discovery, qualification and selection of business-to-business suppliers more efficient and competitive. The result should be better decisions about suppliers as well as lower overall costs for buyers.

In private industry, effective sourcing requires achieving three goals:

1. Selecting the mix of products services and suppliers that offer the lowest overall cost, which is the sum of price, and non-price factors, such as quality, delivery, brand and warrantee terms.

2. Ensuring that the sourcing decisions supports business structures, objectives and contingencies.

3. Identifying successful sourcing strategies that can be reported and standardized across the enterprise.

eSourcing has been brought about by the advent of the Internet and greatly improves and streamlines corporate sourcing activities, such as expenditure analysis, to aid with understanding the organization's total spend, selecting suppliers effectively and efficiently while optimizing vendor relationships.

In recent months, eSourcing solutions have emerged that support multiple parameter negotiations, complex evaluations and automated bid ranking. Companies such as eBreviate are offering suites of eSourcing technologies that include tools such as online negotiations, asset liquidation, electronic RFPs/RFQs, and other various sourcing management technologies to private industry as well as the government. One of eBreviate's government customers, the U. S. Navy's Fleet and Industrial Supply Center, recently saved nearly $900,000 by purchasing container-packing services using eBreviate's Internet negotiation technology to conduct a reverse auction.

Another example of eSourcing tools is Moai Technologies' CompleteSource. This tool provides a comprehensive approach to eSourcing by combining consulting services that include spend analysis, supplier qualification, supply-chain integration, and sourcing analytics and enterprise software that, according to Moai, can be adapted to meet any organization's strategic sourcing needs. The CompleteSource Enterprise software solution includes an automated eRFQ/eRFP wizard and allows multi-line parameters

and document management to associate file attachments, such as specification sheets or diagrams, with individual line items, and approval workflow. The software also includes a scalable negotiation and reverse auction engine that includes multi-parameter, multi-stage bidding, weighted scoring, document management, and reporting for e-sourcing analysis.

Solutions such as these are greatly enhancing a company's ability to determine total cost based on price and non-price factors. However, there are some limitations to the eSourcing products on the marketplace today. With few exceptions, these technologies offer little in the way of support for identifying potential suppliers, which is the single biggest time consuming factor for a company in the sourcing cycle.

Despite its importance, sourcing is an inefficient, labor intensive and under-leveraged process at most organizations. However, in a recent report issued by the Aberdeen Group[2], it has been found that eSourcing is one of the most effective ways a firm can employ the Internet to reduce costs and improve performance. However, sourcing is a complex process that technology alone cannot adequately address. The most efficient eSourcing solutions are those that can integrate advanced negotiation technologies with considerable sourcing methodologies and product-category intelligence.

Further, research by the Aberdeen Group indicates that industry can leverage Internet-based technologies to automate and manage the sourcing process. The resulting eSourcing solution can:

- help organizations create more competitive negotiation environments;
- reduce prices for goods and services;
- shorten purchasing cycles;
- lower administrative costs; and
- apply strategic sourcing to a broader range of products.

Exchanges

The purpose of exchanges is to do one or more of these business functions more efficiently: finding suppliers, finding pricing information, tracking products, logistics, product development, procurement, supply chain planning and collaboration and services management. There are essentially three B2B exchange models on the business landscape that are expected to become permanent fixtures. They are the public trading exchange; the industry sponsored marketplace and the private exchange

[2] E-Procurement: Finally Ready for Prime Time, Aberdeen Group, March 21, 2001

Public Independent Exchanges

Public independent trading exchanges were founded to serve a particular industry or product group and are owned by major manufacturers to leverage their purchasing power and serve their particular industry or product group. The value of these marketplaces to businesses that participated in them was to discover trading partners worldwide, a single venue for conducting business, virtual management of business relationships and visibility to prices around the globe.

Despite the significant investment into this model, success stories are hard to find. This is basically due to the business model misjudging how much and for what services customer firms were willing to pay for the services. Additionally, there are very low barriers for participants to enter the fray, which resulted in many competing marketplaces working on very low margins. The result, no single exchanges could capture a large enough share of the market, which forced them to redefine their business strategy, merge with competitors or go out of business. This form of an exchange is expected to continue to be important, but will not be the dominant model that the dotcoms had predicted.

Industry-sponsored Exchanges

With Industry-sponsored marketplaces, the emphasis here is on the opportunity for major industry leaders to capture online benefits and control the B2B services provided to participants in a some-to-many relationship. Founders of industry-sponsored exchanges typically represent a substantial portion of a given industry's competitors. These marketplaces are typified by an industry's trading partner's ability to combine trading volume to keep competitors' margins lower. An example is Quadrem, an electronics marketplace for mining, materials, and metals companies. It has 211 members that represent two-thirds of the industry's total market capitalization and over a quarter of its buying power. The major struggle faced by these marketplaces is to serve the needs of all of the constituents while being able to serve the individual member's needs equally as well.

Other examples of industry sponsored exchanges are The Worldwide Retail Exchange, which is an e-marketplace composed of more than 50 large retailers, including J.C. Penny Co., Safeway and Target. By being part of this exchange, the member retailers have seen about a 12% to 15% reduction in their purchasing costs through the use of reverse auctions and aggregate buying power. Others include Transra, a marketplace created in 2000 by 50 consumer-products companies, including Kraft Foods, Proctor & Gamble, and General Mills and Pantellos, a consortium of 21 energy and utility companies, including Entergy Corp. and PG&E Corp.

Private Exchanges

In some situations it makes sense for a company to build its own exchange. However, this can be done only where the company has a dominant position in their industry or has world-class supply chain capabilities of its own. With private exchanges, the benefit is the ability to leverage enterprise systems to enable supply chain collaboration and visibility through a one-to-many connection with their trading partners. Examples of firms using private exchanges to provide a more personal relationship with their suppliers are Dell, Cisco, Motorola and Wal-Mart.

One of the most important features of private exchanges is their ability to allow companies to tailor them to their specific needs. Another strength of the private exchange is their ability to support a company's unique strategy and requirements. While they provide access to the company's qualified supplier base or known customers, they do not enable companies to look beyond the trading partners they already know.

Most private exchanges are either buyer or seller based. The goal of buyer-based private exchanges is to make supply chain management more efficient and effective by allowing online ordering, confirmation shipping notification, and invoicing. They also have the capability to provide for collaboration with suppliers on forecasts, supply planning, product design, exception management and other functions.

With seller-based private exchanges, the aim is to remind customers it's time to replenish their inventory of a regularly purchased item, or even allow the seller to examine the customer's inventory and replenish it. Customers may also be empowered to collaborate on a seller's design, track orders, and otherwise join forces with the seller.

Future of Exchanges

As a result of huge capital infusions and guaranteed volumes from partners there were more than 60 public independent exchanges operating in the US at the latter half of 2000. Today businesses are rationalizing and selecting business models that work, and eliminating those that do not. This thinking is likely to result in approximately 200 major industry sponsored marketplaces, 500 public independent exchanges, and 2,000 private exchanges.

Given the missions and capabilities of the three types of exchanges, they are becoming increasingly dissimilar. To ensure their long-term survival, members of each exchange category are working to create differential value schemes that cannot be encroached upon by the other exchange types. This is why a single exchange marketplace is less and less likely to meet all of a large company 's buy and sell needs —and why the smart path forward is to work concurrently with several exchange types. Taking this approach enables companies to choose one or more partners with exceptional market strength and others with unique capabilities to serve specific needs. This strategy also creates a wider range of trading options and addresses companies varying privacy and information needs. Furthermore, participating in independent exchanges and public independent exchanges provides a benchmark for private exchange effectiveness.

One company using a diversity of exchanges to meet its needs is The Dow Chemical Company, which is actively involved with all three types of exchanges. Some of those exchanges help Dow gain efficiencies with acquiring materials, while other exchanges serve niche needs or help Dow synchronize its supply chain. For example, Dow uses ChemConnect to make spot purchases of commodities and to observe the industry's supply and demand activities. But it uses private, industry-sponsored and private exchanges to sell its products. Thus, customers can access Dow's private exchange (which offers the broadest functionality for trading), or purchase materials through Elemica or ChemConnect.

The notion of eProcurement is simple – the sales and purchases that would have been arranged by the phone, fax or face-to-face sales calls in the past are now accomplished via the Internet.

Since the beginning of the Internet, eCommerce has grown into a formidable force with many competitors designing systems that help companies maintain a tactical and strategic advantage over their competitors. To maintain their competitive advantage, businesses are employing eProcurement systems.

The benefits for private sector firms to rush to eCommerce, and more specifically to eProcurement are varied. However, the key proven benefits of eProcurement are:

- Lowered procurement administration costs;
- Improved data gathering and reporting capabilities;
- Improved contract compliance;
- Shortened requisition and order fulfillment cycles;
- Enhanced negotiation leverage with suppliers; and
- Enabling procurement professionals to focus on strategic tasks.

In addition, many organizations are expecting eProcurement automation to enable them to increase the number of purchase requests they can process each month. This in turn improves their ability to be more responsive to their customers' needs.

Buyers are not the only ones benefiting from eProcurement automation. In a March 2001 survey conducted by the Aberdeen Group, nearly 65% of survey respondents indicated that eProcurement has provided benefits to suppliers, including reduced transaction costs and cycle time, increased orders and inventory turns, and fewer errors and product returns.

Online Auctions

Online auction sites represent another major type of eCommerce site. Auction sites provide users the opportunity to interact and bargain with others interested in buying and selling. They take advantage of the worldwide communications available through the Internet to facilitate these processes.

Forward and reverse auctions are a feature of some B2B sites. A forward auction is one where multiple buyers gather online to bid competitively for products from individual suppliers. Auctions can be used to sell surplus inventory by item or lot, or excess fixed assets like automobiles. Since the seller can set a minimum price with prices moving up from the minimum, the sellers can usually get more than a liquidator would pay for the same items. Buyers also have the ability to pick up product and equipment well below list prices.

By contrast, reverse auctions allow buyers to post their requirements for a product or service and then allow vendors to bid against one another for the ability to fulfill the order. Some reverse auction sites aggregate demand from many smaller buyers providing economy of scale.

An example of an online auction site is eBay. After registering with eBay, users may bid on items available or may put up their own goods for possible bid and sale to others. The site contains specialty areas for automotive bids, special collections, and business equipment as well as provides the opportunity to bid on everything from toys to stamps

and fine art. eBay has also purchased and made available the goods on Half.com, a site that previously offered goods for half price.

A review of how eCommerce delivery is being made today reveals two new methods. One if the Application Service Provider (ASP) and the other is the Procurement Service Provider (PSP).

Application Service Providers

The Information Technology Association of America's Application Service Provider Committee defines ASPs as "any company that delivers and manages applications and computer services to subscribers or clients remotely via the Internet or a private network."

Simply put, the ASP owns the license and the hardware employ the information technology staff and delivers the software package as a service. The ASP's customers own the data that is generated by the software. The benefit of using an ASP instead of running the application in-house is the agency turns its systems over to a vendor so it can concentrate on its core business. This type of service provider also helps agencies deal with the IT worker shortage. Other benefits include guarantee system uptime and data security.

Procurement Service Providers

A PSP acts as a traditional ASP by hosting the eProcurement software and hardware, but integrates product, sourcing and supply base management services to provide solutions that address the unique requirements and constraints of an individual organization. Basically, the PSP model enables organizations of all sizes to maximize the benefits of eProcurement, while avoiding the associated burdens and risks by providing more comprehensive support for the complete procurement cycle.

The new PSP model integrates e-Procurement, reverse auctions, and other technologies with product, sourcing, and supply management expertise, to provide highly customizable procurement solutions that can be delivered as hosted, Web-based services. As a supply base manager for multiple buying organizations, the PSP is positioned to aggregate spending to negotiate volume discounts and improved service terms. In the future, the most advanced PSPs will be able to deliver such services on a global basis.

How Well is Private Industry Embracing eCommerce

One of the most respected research tools measuring eCommerce is a survey of a cross section of purchasing executives from manufacturing and non-manufacturing organizations to research industry's adoption of Internet-based procurement. The survey is conducted quarterly by a team of research experts from the Institute of Supply Management (ISM), a purchasing and materials management organization, and Forrester Research, a research firm that analyzes the future of technology change and its impact on businesses, consumers, and society. The survey's findings are issued in the ISM/Forrester Report On eBusiness. In its latest release in April 2002, the Report on eBusiness made some revealing discoveries. The primary finding in this Report is that the number of purchasing organizations reporting use of the Internet for buying indirect goods and services remained roughly constant at 78.1 percent, while the number of organizations using the Internet for purchasing direct goods and services fell slightly from 57.2 percent last quarter to 53.3 percent this quarter.

Respondents reported purchasing 8.3 percent of their indirect materials and 5.7 percent of their direct materials over the Internet -- a slight decrease from last quarter's levels of

9.5 percent and 6.2 percent, respectively. But the Report also revealed a significant increase by large-volume-buying organizations in the use of the Internet as part of an RFP process to 72.2 percent from 65 percent during the prior quarter. It appears that companies are using the Internet where ever they see value to their organizations -- in the most current survey, this value was shown to be in the RFP process.

The Report On eBusiness also revealed that organizations have reduced their participation in online auctions and marketplaces. Only 20.3 percent of organizations bought goods or services via online auctions -- a decrease from 23.1 percent in the previous quarter -- and only 22.2 percent bought via an online marketplace, versus 26.4 percent the prior quarter. The online marketplace decrease was the most dramatic for manufacturers, going from 26.7 percent to 18.2 percent.

When asked about obstacles that are inhibiting their Internet activities, organizations most often mentioned three items:

1. the impact of the slowing business environment,
2. integration issues with internal systems,
3. and the lack of capabilities of their suppliers.

Regardless of the survey results, there is evidence that today's businesses are plugged in and are beginning to take advantage of the promises that eCommerce offers.

Government Procurements

An audit issued on October 29, 2001, by the General Accounting Office (GAO-02-1) explored concerns that small businesses may be facing difficulties with participating in federal on-line procurement programs. The audit included ascertaining the share of procurement dollar awards made to small businesses in selected government eCommerce programs and identifying whether obstacles exist for small businesses in participating in electronic procurements. The three programs the GAO reviewed are shown in Table 2.1 below.

Table 2.1 Selected Federal On-line Procurement Programs:

Agency/ program	Services	Products	Acquisition process
DLA/DMLSS E-CAT	Primarily a Web-based catalog ordering system	Labware, dental and optical consumable products, and medical equipment	Customers browse, compare, select and order items electronically, and orders are shipped directly from the vendors.
GSA/ GSA Advantage!	Web-based catalog ordering system	Over 2 million commercial office supplies and information products and services, many of which are technology products and services	Customers browse, compare, select, and order items electronically, and orders are shipped directly from the vendors or a GSA warehouse.
GSA/ Information Technology Solutions Shop (ITSS) .	Web-based contracting services.	Information technology products and services, from computer monitors to complete network installations	Customers enter requirements on-line GSA staff solicit quotes, issue purchase orders, and authorize payment electronically.

These programs represent about 1 percent of the overall dollars spent government-wide in FY00 as reported by the Federal Procurement Data System.

The report found that for fiscal year 2000, the small business share awards under these programs was 61percent for the Defense Medical Logistics Standard Support E-CAT, 51 percent for GSA Advantage!, and 39 percent for GSA's Information Technology Solutions Shop as compared to the overall 22 percent government-wide small business share.

While the percentage of the dollars awarded to small businesses under the programs the GAO reviewed indicates that small businesses successfully participated in these three programs, officials from or organizations representing or working with small businesses, as well as related literature, still report that such businesses face obstacles in conducting electronic procurements with the government.

Obstacles for small businesses to do business with the government generally fall into two categories: 1) those relating to general readiness, i.e. the willingness and ability of small businesses to conduct business electronically and 2) those specific to conducting procurements.

The specific findings are presented in Table 2.2 below.

Table 2.2

1. Obstacles Related to General Electronic Commerce Readiness

Need to make a business case: Small businesses may be reluctant to make the investment to implement electronic commerce.

Limited technical expertise: Small businesses can lack the necessary technical skill sets.

Internet access issues: Small businesses may have difficulty obtaining affordable high speed Internet access.

Concerns about security and/or privacy: Small businesses are concerned about inappropriate disclosure of proprietary business information that governments collect from companies, consumer fraud, and the adequacy of security afforded a transaction on the Internet.

2. Obstacles Related to Conducting Electronic Procurements With the Government

Monitoring various federal procurement information Web sites for business opportunities: The government has multiple Web sites that list contracting opportunities.

Differing requirements for on-line purchasing programs: The government has multiple on-line purchasing Web sites that have different formats and procedures.

Lack of a single vendor registration system: Vendors must generally complete multiple registrations and profiles to do business with more than one government office.

Problems related to technical data and drawings: Businesses can have difficulty in locating, transmitting, downloading, and printing on-line specifications and drawings.

Difficulty in obtaining help with problems and marketing assistance: Vendors can have difficulty reaching someone at the buyer's or program office who is able and willing to help, particularly with technology-related problems and/or marketing questions.

Uncertainty about the government's electronic procurement strategy: Since government agencies are pursuing different approaches to implementing electronic purchasing, small businesses hesitate to make investments in any one electronic commerce system.

Chapter Three –Government Procurement & eCommerce

> Every minute of every business day, the Government purchases an average of **$1,917,972** in goods and services.

The wholesale transformation to eCommerce by the government has been slower than the private sector for many reasons. One of these reasons is the mission of government is different because it serves taxpayers as opposed to shareholders. Another is the government's rules, regulations and policies have hampered agencies' ability to deploy eCommerce more swiftly and with the same effect as private industry. For example, until the Federal Acquisition Regulation was amended in 1997 it was illegal to engage in the reverse auctions that government agencies are conducting today.

Despite the barriers there has been much progress made to employ eCommerce in the procurement and payment arenas within the Federal government. This chapter provides a macro view of those initiatives. It should be noted that the rollout of eCommerce by government has been sporadic and inconsistent among the agencies and departments which results in little information about those efforts from being made publicly available or easily obtainable.

Private Procurements

There are essentially three key differences between the public and private sectors that are impacting the rollout of eCommerce within government organizations.

- First, public sector organizations are not concerned about competitive advantage and profitability.
- Second, operational efficiency is defined differently.
- Third, public sector organizations are concerned with preserving their top line, which is the amount available for appropriation, rather than the bottom line.

EGov, a definition - "Government's use of technology, particularly web-based Internet applications, to enhance the access to and delivery of government information and services to citizens, business partners, employees, other agencies and government entities." (Source David McClure, "Electronic Government: Federal Initiatives are Evolving Rapidly but They Have Significant Challenges" (GAO/TAIMD/GGD-00-179 Testimony))

eCommerce in Government: For government, eCommerce could be defined as "any process or transaction conducted by a government organization over a computer-mediated network that transfers ownership of, or rights to use goods, services, or information." (Source: U.S. Department of Commerce, Economics and Statistics Administration)

There is also a fundamental difference in public and private sectors – their motivations.

Private sector businesses strive to achieve efficiency, competitive advantage and profitability. To accomplish these unified goals, authority is centralized, policy is unilateral and the enterprise is structured under a single, organizational philosophy.

Public sector organizations on the other hand strive to serve their constituents' interests and needs, manage budgets according to legislative and administrative orders, and maintain a system of checks and balances consistent with a policy of full disclosure and

public review. To achieve these disparate goals, authority is distributed, policy is developed multilaterally, often by entities organized in dynamic opposition to one another, and the enterprise is structured as an aggregated federation of semi-independent entities.

Governments also have additional constraints. These include the absolute need for confidentiality of client information, the need to be accountable to their citizenry, the duty to provide access to all (not just those with discretionary income), and the duty to provide public rather than private goods.

These restrictions have prevented the government from moving more swiftly toward eCommerce than the private sector. Most of the movement toward eCommerce in the public sector is in the areas where funds exchange hands such as taxes, licenses and permits and procurement. This is changing rapidly however.

Despite the differences between the private and public sectors, many eCommerce initiatives have been undertaken. Most of these are in the form of Government websites which have been developed to provide procurement related eCommerce solutions. Other initiatives are similar to those employed by the private sector. The remainder of this chapter explores both of these initiatives.

Engaging in eCommerce

Reverse Auctions

Billed as a means of driving product prices to the lowest possible threshold, reverse auctions have promised agencies tremendous savings compared to traditional procurements, and in many cases they've delivered.

Reverse auctions work in exactly the opposite manner from traditional auctions. Rather than one seller taking ever-increasing bids from a group of buyers, reverse auctions gather sellers and let them bid against one another in a competition for a single buyer's business. If you've purchased airline tickets on Priceline.com, you've participated in a reverse auction.

Federal agencies have cautiously ventured into reverse auction territory, determined to get the best value, not just the lowest price. Reverse auctions are designed to bring sellers down to the lowest price the market will allow. That's great for buyers, but many federal purchasers have expressed their concern that the government could end up with a stock of goods bought solely on the bottom line price, rather than for their overall quality.

> Reverse auctions combine the "dynamic pricing" aspect of traditional auctions with efficient desktop technology that is simple to use.

To combat the problem of subjugating value to price, an early government adopter of reverse auction technology, the Army Communications-Electronics Command (CECOM), designed a reverse auction model that allows bidders to be evaluated on a number of subjective quality factors, not just the bottom line. The program allows buyers to incorporate such variables as warranties, quality guarantees, discounts and other measures.

CECOM selected Frictionless Commerce to provide the software to test a reverse auction for a single secure fax machine in May of 2001. CECOM purchased the enabler's Web-based software because employees could use it with less than a half hour of training. The company licenses its software so that agencies can buy it and then set off on their own into the auctioning process via the Web, which eliminates the cost of building additional infrastructure.

The software performs two functions. First, it surveys the marketplace over the Web to help contracting agents pick products to buy. A second function conducts the reverse auction itself. The auction software also allows agencies to build in best-value elements and auditing features that document which bids came in and when. It also saves the information for further review at a later time.

The reverse auction tool also enables CECOM to search the General Services Administration's electronic catalogs from which it could already directly purchase products to determine which products were best suited for traditional purchases and which lent themselves to using the new technology. Most important to the Army is the ability to implement new business practices necessary for a wider range of eCommerce activities, such as reacting quickly to changing market conditions for products.

CECOM's Electronic Reverse Auction Project Team, which led the effort, included experts from CECOM as well as representatives from the Army Materiel Command and the department level. Bucking tradition, the project team let acquisition professionals, not technology developers, designed and led the reverse auction project from conception to the choice of software that was used.

The team merged the reverse auction pilot with the Army's business Web pages. This allowed the reverse auction software to be made available to all other Army contracting activities, which can set up and run their own reverse auctions. The Army picks up the licensing fee, which covers the entire service. The team has also brought the Air Force and Marine Corps into the reverse auction program as partners, a kind of collaboration that is rare among military services.

After its initial purchase through reverse auctioning, CECOM acquired laptops and personal computers. The agency then bought electronic components for the Patriot missile at a savings of more than 30 percent off the usual purchase price. According to CECOM, they conducted 10 reverse auctions in the pilot which saved them between 15 percent and 50 percent, or $2.2 million, from federal supply schedule prices. Subsequent to initiating the pilot, CECOM has conducted over 40 additional reverse auctions.

> CECOM has even used reverse auctions to buy goats. "There were guys in their barns logged onto AOL and bidding,"
>
> Frictionless' Vice President of Marketing, Eric Levin.

Other agencies have also experimented with reverse auctions. The Postal Service used the pricing tool to lease trucks, the Naval Supply Systems Command bought recovery

sequencers for aircraft seats, and the Marine Corps has tried reverse auctions to procure lumber.

The Department of the Treasury has also engaged in a limited number of reverse auctions as well. One was conducted via e-mail by the U.S. Mint's Office of Procurement to compete the acquisition of dry cleaning services for the Mint's police uniforms.

Upon learning various vendors were interested in and would agree to participate in the auction, the Mint's procurement office conducted market research and ascertained that the typical price for dry cleaning a police uniform was $7.35.

At the agreed to time, the Mint conducted the reverse auction via e-mail by initiating bidding using the $7.35 as the maximum starting bid price. Offerors received the Mint e-mail with the initial benchmark unit price and were encouraged to offer lower prices. After three successive rounds of reverse auctioning, the Mint received a unit price of $6.00, a 22.5% savings over the $7.35 unit price ascertained during its initial market research.

Another of Treasury's reverse auctions was conducted on May 14, 2001 by the IRS to price desktop and laptop computers, monitors, and installation services worth approximately $131 million at pre-auction prices. The auction began at 10 AM with the three bidders, who were: Presidio representing IBM, PlanetGov representing Dell, and Government Acquisitions representing Gateway Computers. By the time bidding concluded at 1:24 PM, the IRS had saved over $67.8 million!

An example of the savings that were achieved was the unit price of a top-end desktop computer was reduced from a pre-auction price of $1,434 to $625. That's a saving of 56%! Not bad for an investment of a few hours where the vendors did all the work and the IRS reaped the benefits.

Comparisons of pre-auction prices, the lowest priced bidder, their bid price and the percentage savings are shown in Table 3.1. It should be noted that when the lowest bid prices that were achieved through the auction process are compared against computer buys of similar quantities and specifications, the desktop and laptop savings are closer to 25% and 27%, respectively.

In addition to the IRS achieving significant savings, the evaluation of best and final offers was concluded the day the auction was conducted as

Table 3.1 Sample Savings Achieved

Description	Pre-Auction Price*	Lowest Bid Price	Percentage Savings	Lowest Price Bidder
Desktops	$1,434	$625	**56%**	PlanetGov
Laptops	$3,254	$1,475	**55%**	PlanetGov
Monitors	$268	$175	**35%**	PlanetGov
Installation Services	$245	$180	**27%**	PlanetGov

* Pre-Auction Prices are proposal prices submitted by PlanetGov in response to the solicitation for the IRS's requirements

opposed to this process taking several days.

Portals

Government portal sites are also another popular form of eCommerce that has been brought about recently. Government portal sites bring together many services and agency websites onto one site.

The premier government portal site is FirstGov. Today citizens can obtain government information and receive government services online from a variety of starting points and the website is a vital single portal that connects citizens to all government sites that collectively posses one of the largest and most useful collections of web pages in the world.

The effort to develop FirstGov was begun when the Clinton Administration challenged government and industry to create a site within 90 days that allows citizens to search government information faster and more efficiently than ever before and by topic rather than by agency. The FirstGov search engine was built as a gift to the government by Dr. Eric Brewer, a University of California, Berkeley researcher who is the co-founder and Chief Scientist of Inktomi Corp., a company that provides search engine technology to a number of Internet companies. The site launched on schedule in September of 2000.

FirstGov.gov Facts:

The site can search 22,000 Federal, state and local agencies' web sites that contain more than 31 million pages of information in a fraction of a second.

The search engine can search half a billion documents in less than one-quarter of a second, and handle millions of searches a day.

While the FirstGov site provides unprecedented search capabilities, it also provides access to the home pages of major local, state, federal and international agencies. There is also a section that provides research topics of interest to web users. For FirstGov also links to many government websites that provide access to government information organized not by agency, but by the type of service or topic.

On February 27, 2002 FirstGov got its first major facelift by receiving a newly organized front end. Information on the site was organized under one of the three categories- individual, business and government. The driving force behind the upgrade is the idea of "three clicks to service". Users can start their search by clicking on the appropriate category to bring them to the service offered under that heading. By clicking on the service they're interested in, they will be taken to the page within the Web site of the agency that provides that service. The final click will give them access to the service itself.

While the only technical changes to the FirstGov portal were made in the reorganization of the front-end, the General Services Administration (GSA), which runs FirstGov, has also contracted for a new search engine to bring faster access and more accurate

searches. On March 11, 2002, the GSA announced it had awarded a contract for the new search engine to AT&T Business Services and its Norwegian partner, Fast Search & Transfer for an estimated cost of $10.5 million over the next five years.

This new search engine will permit users to download documents in Adobe Acrobat Reader format, HTML, Extensible Markup Language, plain text and Microsoft Corp. PowerPoint, Excel and Word. In addition to this added functionality, citizens will be able to request search results to be displayed by category, subject and agency and the search engine will do a better job of sorting documents by relevance.

In a written statement, the GSA touted Fast Search's "scalability," saying the search engine can spider a fast-growing inventory of federal, state and local government Web sites. In addition, the Fast Search engine can search over 51 million HTML pages, PDF documents and other file formats in under a fraction of a second.

PRO-Net

Agencies are taking steps to assist small businesses (including small disadvantaged businesses and women owned small businesses) as they reengineer their processes to maintain their competitiveness in an electronic environment.

Efforts continue to increase the visibility of small businesses through the Small Business Administration's (SBA) Procurement Marketing and Access Network (PRO-Net), a free, Internet database of small business vendors. PRO-Net operates as an electronic gateway of procurement information for and about small businesses. It provides agencies with a source of information on more than 195,000 small businesses, including disadvantaged, 8(a) certified, historically underutilized business zone (HUBZone) certified and women-owned firms seeking Federal prime and subcontracting opportunities. It includes an online search engine providing access to the profiles. Using PRO-Net, contracting officers can search for profiles of small firms in a variety of ways, including NAICS codes; federal certifications; key words; location; business type; capability. Some agencies, such as the Department of the Interior (DOI), are using PRO-Net to generate "bidders lists."

Many agencies, in coordination with their Offices of Small Disadvantaged Business Utilization, also provide outreach through their home pages. Such assistance may include links to agency small business specialists, on-line handbooks describing how to sell effectively to the agency and agency forecasts of upcoming needs.

AcqNet

For several years, AcqNet, formerly ARNet, has served as a central location on the Internet for both government and industry for quick access to a wide variety of information relating to government contracting. AcqNet includes a reference library of government laws, regulations, policies, best practices and training packages. It also provides links to systems that provide information on Federal business opportunities. An interagency team including representatives from GSA, the Department of Transportation

(DOT), the Department of Energy (DOE), the Department of Veterans Affairs (VA), and the National Aeronautics and Space Administration (NASA) has worked to enhance the usefulness of AcqNet as a resource as well as its user-friendliness.

Electronic Buying Sites

There are two prominent government electronic buying sites -- *GSA Advantage!* and the DoD E-Mall.

GSA makes its offerings under the Federal Supply Schedule program available for searching on product specific information, reviewing delivery options, and placing orders from schedule contractors. *GSA Advantage!*, is available through the Internet to agency buyers across government and provides information on items in the GSA supply system while highlighting the mandatory products from Federal Prison Industries (UNICOR) and Javits-Wagner-O'Day (JWOD) Act, as well as environmentally friendly and energy-savings products.

To enable buyers to take full advantage of their purchase cards for micro-purchases, GSA began to phase in a requirement in March 1998 for schedule contractors to accept the government purchase card as payment for acquisitions up to the micro-purchase threshold (i.e., $2,500). As of January 1999, all GSA schedules include this requirement.

According to GSA, sales under the *GSA Advantage!* program totaled $85.7[3] million and $124.9[4] million in FYs 1999 and 2000, respectively and FY01 sales topped $157.2 million.

Today the database contains over a million products from more than 2,000 vendors and 70,000 registered users are using the system for comparative shopping (market research) and placing orders. GSA estimates that, on a daily basis, about 18,000 searches are performed on *GSA Advantage!* and 1,000 purchase orders are issued.

As of July 1, 2001 all vendors on the GSA schedule were required to electronically submit product descriptions and price information to GSA Advantage!. According to GSA, as of August 30, 2001, 82 percent of the vendors on the GSA schedule as of January 31, 2001 have electronically submitted product data to *GSA Advantage!.* Vendors that made a good faith effort to comply with the July 1 requirement were given an extension to provide their information electronically to GSA Advantage!. In addition, vendors being awarded contracts today are given 6 months after contract award to submit data electronically to GSA Advantage!.

The DoD E-Mall, initiated after passage of The Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 which called on DOD to develop a single, Defense-wide electronic mall system. Today, DOD's E-Mall provides the DoD and other

[3] This figure includes about $17 million in direct vendor sales and $69 million in GSA purchased stock items.
[4] This figure includes about $30 million in direct vendor sales and $95 million in GSA purchased stock items.

government customers with a single point of entry for one-stop Internet shopping across all DoD electronic catalogs. The enhanced visibility is further facilitating market research by making it easier to locate, learn about and compare products under contract based on quality and price. "Corridors" were constructed so that buyers can more rapidly identify similar types of products and vehicles that have been set up by their military service or defense agency. To date three corridors have been established:

Consolidated Contracting Initiative

NASA's Consolidated Contracting Initiative (CCI) enables NASA to make greater use of existing contracts to meet common needs. Key to the CCI is an Internet-based contract resource list that provides fast, accurate, and low cost information about shared contract opportunities. The CCI has substantially increased the use of existing contracts – lessening time spent on acquisition related tasks, minimizing contract duplication, reducing closeout backlogs and improving contract cooperation with other Federal agencies.

- a "training corridor" that allows on-line search, registration, and payment of a wide variety of course offerings and conferences;
- an "information Technology corridor " for IT supplies and services
- a "parts and supplies corridor" to help locate parts and supplies.

The DoD E-Mall is used to provide secure on-line ordering of more than two million items. These items represent a mix of DLA direct vendor and depot-managed national stock numbered items as well as a growing list of commercial catalogs. Additional features of the E-Mall include: on-line registration for government purchase card holders, information regarding product quantities or delivery timeframes, and on-line status of E-Mall orders. For buyer convenience, the E-Mall highlights products offered through the JWOD Program, environmentally-friendly products, and hazardous materials.

Accessing Government-wide Contracts

NASA's Consolidated Contract Initiative (CCI) represents perhaps the most extensive effort to date to heighten awareness and make use of existing agency and government wide contract vehicles. An Internet site lists existing NASA contracts and other government agency contracts that have a likelihood of meeting NASA's mission needs - including DOT's Information Technology Omnibus Procurement program and DOE's Energy Savings Performance Contract initiative. NASA procurement officers are required to satisfy their requirements through the use of existing or planned contracts before initiating any new contracts. A contract resource list permits users to identify possible contracts to meet their needs. Technical and procurement points of contact are provided for user follow-up. NASA's CCI database currently includes about 100 contracts available for use by NASA and other Federal agencies. CCI has enabled NASA to substantially increase the use of existing vehicles and save the costs to support duplicate contract efforts. The acquisition planning module of CCI allows buyers to aggregate requirements prior to solicitation to maximize procurement leverage.

Market Research

In FY 1998, ten agencies, including GSA, NASA, and DoD, working with CommerceNet, a non-profit industry consortium, undertook a pilot to create a search environment and demonstrate that Federal government buyers could search across multiple existing electronic catalogs for items available for order and obtain consistent result sets. The pilot included catalog ordering from GSA Advantage!, the NASA Scientific and Engineering Workstation Procurement (SEWP), and the DoD E-Mall. A commercial catalog was also used in the pilot. Currently, searching multiple catalogs involves accessing each catalog individually, performing a search on the items contained in the different catalogs, and manually comparing the answers.

Agencies worked with vendors to standardize the content and structure of information concerning a select group of items in five different catalogs for several vendors and used eXtensible Markup Language (XML – a non-proprietary, Internet standard) to organize and tag the information. The pilot demonstrated the ability to successfully search across multiple seller databases based on one set of parameters and return all available options to the users. For buyers, the pilot results point to greater potential efficiency in conducting market research. For vendors, it could point the way to easier marketing of prospective customers without the need to present their wares in a unique way to each customer.

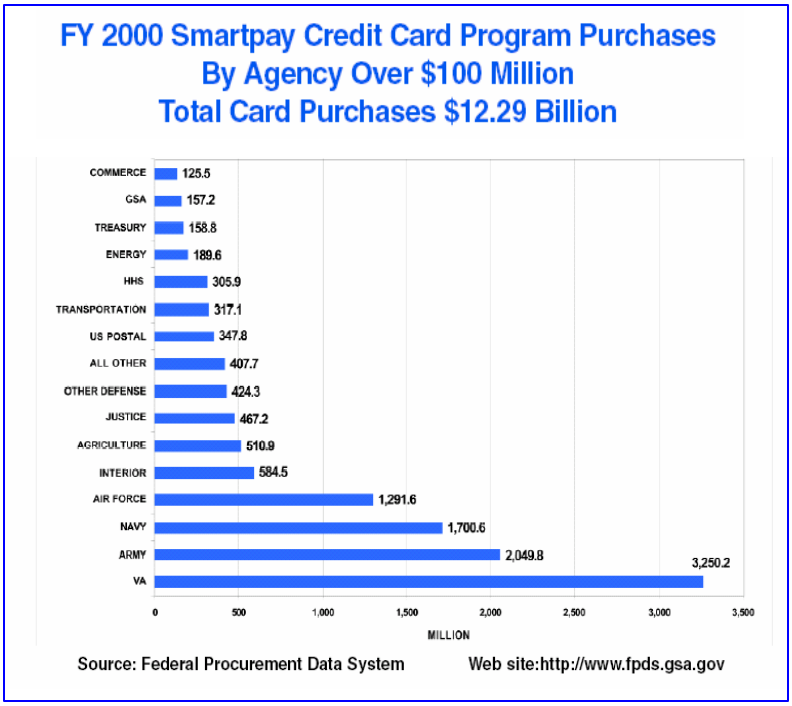
Although electronic searching of on-line catalogs can facilitate efficient market research, it remains an open question how much automation can be used to enhance the process for making the best value decision. In most instances, human intervention and business judgment will need to be applied in the best value process. However, once a source is selected and an order is ready to be placed, automation can again facilitate expeditious execution of the order and prompt payment. A follow-on pilot will aim to expand the universe of vendors to improve market research, taking advantage of ongoing voluntary efforts in industry to standardize product information and test on-line ordering and payment with both buyer and seller authentication using smart card generated digital signatures.

Purchase Card Program

Use of commercial purchase cards constitute the foundation of much of the government's strategy for implementing eCommerce. This is because they combine an easy means of buying and paying for goods and services with the ability to perform end-to-end electronic processing which results in significant administrative savings. In addition, they are extremely well suited to purchasing from electronic catalogs, a preferred eCommerce application. Because purchase cards can be issued to program offices to conduct micro-purchases, this tool helps to alleviate the burden placed on contracting offices, allowing them to focus their reduced staff resources on more complex high-value procurements where their expertise adds the greatest value to the buying process.

The use of purchase cards to improve the Federal procurement process began as a pilot program initiated by the Department of the Commerce in 1985. One of the impetuses that led to increasing the use of purchase cards was the National Partnership for Reinventing Government (NPR). The Federal Acquisition Streamlining Act (FASA) further increased purchase card usage by establishing a "micro-purchase threshold" of $2,500 and reduced or eliminated most of the restrictions for purchases valued below that threshold. Additionally, Executive Order 12931 was issued by the Clinton Administration to encourage agencies to delegate authority for program offices to use the card for micro-purchases. With enactment of the Debt Collection Improvement Act of 1996 impetus for card use was furthered by requiring, with limited exceptions, electronic funds transfer for most federal payments.

By FY 1998, a number of agencies reported using purchase cards for 90 percent or more of their micro-purchases. These agencies include the Department of Health and Human Services, Department of Transportation, VA, and the Environmental Protection Agency. DoD's reported FY 1998 usage of purchase cards to satisfy its micro-purchases was at just over 85 percent. The chart at the right is provided to show which agencies had the highest dollar volume of purchases in FY 2000. By FY 2001 over 350,000 Federal employees held purchase cards and used them in more than 24 million transactions to buy over $13.8 billion in goods and services.



Agencies can acquire the cards and associated services from among five competing banks via GSA's SmartPay contract. For core card services, the contract permits agencies to choose:

1. separate cards from different providers for purchase, travel-related payment services, and fleet services,

2. separate cards from a single provider to simplify business relationship, administration, and systems interfaces, or

3. integrated cards provided by one provider.

In addition to the core services of providing purchase, travel, and fleet cards, the GSA SmartPay contract includes a number of value-added options, available at each agency's request. These options include such services as the Prime Vendor arrangement (discussed in detail below), ATM access, stored value cards, hybrid cards that contain both a magnetic stripe and a computer chip, photo identification cards, smart cards for identity authentication, and other options. In addition to these options data generated by purchase card usage helps provide greater insight into buying trends and the impact of card usage on, for example, small businesses.

As eluded to earlier in this section, the use of purchase cards has resulted in reducing administrative costs and procurement processing times. These savings are derived by eliminating the need for purchasing offices to process as much as eighty-five percent of the total procurement actions. This increases organizational efficiencies by permitting contracting offices to focus on the remaining fifteen percent of purchasing actions which represent the bulk of the dollars and mission critical actions. By simply eliminating the need to expend resources on micro-purchases, the Department of Commerce estimates in FY 2001 alone it saved approximately $22 million. Further, in an analysis of benefits derived from purchase card usage, it has been estimated that the savings generated by using purchase cards to make micro-purchase ranges from $54 to $92 per transaction. Thus, with over 24 million purchase card transactions taking place in FY 2001, the government-wide administrative savings exceed $1 billion.

Congress has recently taken a keen interest in purchase card usage by federal employees. The General Accounting Office (GAO), Congress' auditing arm, has uncovered some isolated but disturbing cases of purchase card abuses by federal employees. Some of the abuses that have been reported include paying for breast augmentation surgery, escort services, strippers at gentlemen's' clubs and a host of other assorted misuses. In addition to pointing out millions of dollars of inappropriate purchases, the GAO has reported that agencies have lax internal controls to guard against abuse. Congressional hearings on the GAO's findings have been held and resulted in demands for federal agencies to better control the card's use by trusted federal employees. To illustrate just how serious Congress is about limiting card abuses, the Senate voted on July 31, 2002 to limit the number of cards being held by DoD employees to 1.5 million purchase and travel cards in fiscal year 2003, roughly the current level. The purpose of the legislation was not to reduce the number of cards but to limit a wider issuance of the cards to DoD personnel.

Abusive activity related to card usage according to the GAO is estimated to be $5 million. While seeming to be a lot of money, when compared with administrative savings of $1 billion, the net savings generated by purchase card holders are still $995 million! Someone once said: "Safeguards are put in place to keep honest people honest. No set of safeguards can prevent dishonest people from being dishonest." The solution to reducing or eliminating the potential for purchase card misuse is to institute proper controls. To help combat purchase card misuse and address Congressional concerns, the Office of Management and Budget (OMB) has expressed concern over the number cards that the agencies have issued and is considering establishing ratios of how many

cardholders should be monitored by each manager and what percentage of employees should be issued cards. To this end, in early 2002 the OMB tasked twenty six agencies with devising reform plans for their purchase card programs. The plans were to address the steps that would be taken to punish abusers and exert control over card use. OMB is also considering establishing a task force that will be responsible for ensuring that agencies adhere to their plans.

What direction will be taken to stem the misuses of the purchase card will most certainly depend on how responsibly federal employees continue to use them. However, if the administrative savings associated with the purchase card are not exceeded it seems unlikely that they will be eliminated from use for making federal government purchases.

Purchase Card Alternatives

Where large value transactions and an ongoing relationship are involved, it may be more advantageous to negotiate alternative mechanisms to purchase cards to avoid the percentage-based charges imposed by the card associations on merchants. In response, agencies are pioneering new payment mechanisms in the Federal government.

For example, the VA has developed an EC payment mechanism for its multi-billion dollar Prime Vendor procurement program. The Prime Vendor program is designed to provide VA Medical Centers with an efficient means of placing recurring orders for goods and supplies, like pharmaceuticals, subsistence, and medical/surgical needs from numerous manufacturers, at low, negotiated contract prices. Since these transactions are typically high-value, vendors are reluctant to accept credit cards because the related fees would be significant. Moreover, this transaction cost would inevitably be passed on to the VA in the form of higher prices.

The payment mechanism in VA's Prime Vendor program is based on VA's successful Credit Card System (CCS). The Prime Vendor payment program utilizes a credit card style account, established at the VA's SmartPay contract bank by the VA facility. Prime vendor orders, placed electronically by VA, are then processed against this account through an electronic interface between the Prime Vendor and VA's bank. Specific data elements are transmitted with this transaction, including a VA-generated purchase order number. The bank accepts these transactions each day and settles with the Prime Vendor daily for the full amount of each transaction.

After settlement, the contract bank transmits an electronic file to VA detailing the posted transactions, including VA-specific data elements. VA then remits to the contract bank a daily electronic payment. All transactions remitted to VA are automatically posted to VA's accounting system through CCS. The bank also electronically sends specific reports to the VA for distribution to participating facilities.

This payment program provides a number of substantial benefits to all participants. The Prime Vendor is assured of immediate payment by VA's bank and is charged a small,

transaction-based fee. The bank gains the opportunity to process business not normally captured in its credit card market. VA quickly initiates a full electronic business cycle, dramatically reducing processing time. This payment mechanism also helps to keep the vendors' processing costs to a minimum, allowing greater savings to be passed on in lower prices. During FY 98, more than $838 million in Prime Vendor payment transactions were successfully processed.

Other Means of Electronic Payment

Agencies other than the VA are in the vanguard of adopting commercial payment mechanisms to effect transactions, only at the other end of the spectrum-for non-recurring, small-dollar transactions.

While these payments are also generally unsuitable for credit card payments, the GSA SmartPay contract also affords agencies the opportunity to utilize "convenience checks" to make these small payments that would otherwise be made from an imprest fund, also known as "petty cash."

Imprest funds have been a traditional means of making small-value disbursements. However, the physical security of these funds is a concern because of the possibility of theft. For this reason alone, many agencies have converted to convenience checks. Convenience checks require that a paper check to be written and are not fully electronic. However, convenience checks are processed by the same mechanisms as purchase card transactions, and the data from the processor (the card-issuing bank), including payee information, enters the agency's financial accounting system through the same interface as ordinary card transactions. Therefore, management controls are improved while reducing manually accounting for these expenses.

Under the GSA SmartPay program, DOI used convenience checks in a Bureau of Land Management (BLM) pilot as a means of purchasing and paying for goods and services in instances where vendors do not accept charge cards. This approach provides increased assurance that goods and services required for programs such as emergency fire fighting will be available when needed. It also helps make the payment process easier and facilitates bureau finance offices' moving to "best value paying" (i.e., minimizing the cost of making payments), through a consolidated payments process. That is, since a single payment made to the GSA SmartPay card vendor covers many purchase transactions, including those made using convenience checks, this approach reduces administrative burden and simplifies the payment process. For example, the convenience check transactions, like all GSA SmartPay transactions, are entered into the accounting system through a single automated interface.

In sum, the DOI convenience check program:

(1) Makes the buying and paying process easier and more efficient by making better information available more quickly. The back-end (payment) process will reduce unnecessary paperwork and attendant administrative cost and delay.

(2) Takes advantage of a commercial information processing application, the GSA SmartPay vendor's electronic access system.

(3) Utilizes an existing, proven commercial mechanism, the credit card payment infrastructure, consistent with the Administration's policy of preferring commercial systems wherever appropriate.

DOI has expanded the BLM pilot to all appropriate bureaus as part of its overall effort to eliminate imprest funds at 1400 field locations. DOI believes that in a properly controlled environment and for a specific, small universe of payment types, convenience checks offer a cost-effective alternative to cash disbursements, where electronic payment mechanisms are not otherwise possible or practicable. Moreover, the cost of such transactions (in DOI's case, a net of .9 percent of the transaction amount after a 1 per cent refund) is low relative to the total cost of making a cash disbursement from an imprest fund account.

Collection of Seller Information

Federal contractors are required to provide data to the government about themselves and their businesses and agencies have at least three options for managing this data:

(1) through a central registry, in which sellers could centrally provide information for multiple contracts;
(2) through financial intermediaries (networks), which collect and maintain information on network members; and
(3) on a contract-by-contract basis.

In response to the need to collect repetitive data, the DoD developed the Central Contractor Registration (CCR) database to collect and manage this information. The CCR is designed to simplify and streamline processes relating to the collection and use of vendor information both for sellers and buyers by eliminating duplicate requirements and processes. Today sellers are able to reduce the number of times they provide information and procurement officials can go to a single location to check a seller's registration status and obtain pertinent information prior to awarding a contract.

The CCR includes taxpayer identification numbers (TINs) and electronic funds transfer (EFT) information required by the Debt Collection Improvement Act of 1996 (Public Law 104-134). It also contains data identifying the type of equipment, supplies and services that a potential supplier may be interested in offering, along with other information previously collected manually in the Solicitation Mailing List Application (Standard Form 129), e.g., size status, eligibility status, business type. In this way, the CCR helps increase the visibility of vendor sources for specific supplies and services.

The Contractor is responsible for the accuracy and completeness of the data within the CCR, and for any liability resulting from the government's reliance on inaccurate or

incomplete data. Accordingly, following a one-time initial registration, the contractor is required to confirm on an annual basis that its information in the CCR database is accurate and complete.

As of June 1, 1998, all contractors wishing to do business with DoD were required to be registered in the CCR in order to receive contract awards from the DoD for solicitations issued after May 31, 1998. DoD has established a goal of registering an applicant in the CCR database within 48 hours after receipt of a complete and accurate application via the Internet. As of April 2002 there were over 196,000 active CCR registrants.

On June 8, 2001 the Director of the Office of Management and Budget, Mitch Daniels, issued a memorandum to Department and Agency Heads requiring that all civilian agencies begin using the CCR system by October 1, 2002. Further, this memorandum states that beginning October 1, 2003, agencies will no longer be permitted to use the SF 129 to collect information.

FedBizOpps

In 1998, GSA, NASA, DOT, the Air Force, Treasury, and Commerce formed a team to pilot a multi-agency posting system, the Electronic Posting System (EPS). In late 1999 the project was renamed Federal Business Opportunities (FedBizOpps).

FedBizOpps was modeled after NASA's Acquisition Internet Service (NAIS), a system NASA created in 1997 to permit procurement staff anywhere in the agency to make notices and solicitation files accessible on the Internet. NAIS served as a simple, effective, and user-friendly central electronic source of procurement information to NASA's many decentralized facilities. In addition to improving access to NASA contracting opportunities, NAIS had also enabled NASA to streamline the process for preparing and issuing notices and solicitations. Among other things, NAIS automatically formatted notices, performed edit checks, automatically posts notices on the Internet, and makes solicitation files available for immediate review and retrieval

The FedBizOpps project was designed to enable agency buyers to make notices of requirements, solicitations, awards and other acquisition-related documentation accessible to vendors via the Internet. Access is easy and convenient through a variety of search and downloading tools through this single entry point. Each of the initial participating agencies agreed that at least one of its procurement activities would post all applicable solicitations on FedBizOpps. For Treasury the BEP and, shortly thereafter, the US Secret Service took the initial lead.

Today FedBizOpps offers vendors the ability to:

- search and identify, at one location, notices of and solicitations for competitive business opportunities and awards over $25,000 from all pilot participants;

- search for business opportunities by, in any combination, type of product and/or service, location (e.g., agencies, offices), or posting date;

- receive an automatic e-mail notification about contracting opportunities in specific categories or locations of interest;

- receive an automatic e-mail notification of changes and amendments to solicitations;

- locate and download documents related to a specific procurement;

- view summaries of contract awards (with contractor name, value, obligations, and description); and perform searches (by agency, office or region, type of product, date of award, or award number).

> On March 9, 2001, Sean O'Keefe, the Deputy Director of the Office of Management and Budget, directed that beginning in fiscal year 2002, all agencies must post to the FedBizOpps site:
>
> 1. All acquisitions with a value exceeding $25,000 that are required to be synopsized in the Commerce Business Daily and
>
> 2. All associated solicitations, except those specifically exempted by the Federal Acquisition Regulation.

FedBizOpps also allows interconnection with agency posting systems and other eCommerce applications, such as contract writing systems. Because FedBizOpps is based on a distributed architecture that allows centralized access with decentralized maintenance, FedBizOpps provides government-wide information to vendors without disrupting, eliminating or otherwise requiring the replacement of current individual agency FedBizOpps applications. For example, FedBizOpps interconnects with DoD's "Business Opportunities System," DoD's system that facilitates access to business opportunities from a single point. Vendors wishing to learn about opportunities at DoD and at other agencies may simply go to FedBizOpps. They do not need to go both to FedBizOpps and the Business Opportunities System.

Today a Federal FedBizOpps users group meets monthly to identify and correct software weaknesses, evaluate progress, and share ideas for enhancing FedBizOpps functionality. With respect to enhanced functionality, for example, the user group is working to provide secure vendor upload using public key infrastructure (PKI) so that offerors can send authenticated offers to buyers over the Internet.

Since its inception, in July 1998, over 280,000 postings (e.g., synopses, solicitations, amendments to solicitations and other information, award notices) from over 19,000 registered users on the system have been made on FedBizOpps and close to 150,000 vendors have signed up for electronic notification of posted opportunities.

Today the FedBizOpps web site also links to FirstGov.gov, Federal Asset Sales, Federal Commons, Department of Defense Business Opportunities, and the Minority

Business Development Agency.

On May 16, 2001 an interim Federal Acquisition Regulation was published in the Federal Register to designate FedBizOpps as the single source for federal government procurement opportunities that exceed $25,000. The interim rule gave Federal agencies until October 1, 2001 to complete their transition to, or integration with, FedBizOpps. After October 1, all agencies must use FedBizOpps to provide the public with access to notice of procurement actions over $25,000. To give the public a period to adjust to the change, notices will be posted on FedBizOpps and published in the Commerce Business Daily from October 1, 2001 to January 1, 2002. During the first week in January 2002 the Commerce Business Daily ceased to exist and FedBizOpps became the sole source for obtaining acquisition related information and documentation.

Contract Formation & Administration Processes

Individual agencies are taking advantage of eCommerce to improve the efficiency of proposal receipt, communications with interested offerors, proposal evaluation, and contract award. For example:

- NASA completed a forms-based pilot to demonstrate the ability to receive quotes electronically using existing desktop and commercial-off-the-shelf (COTS) software over the Internet for commercial item buys between $25,000 and $100,000. The vendor community, primarily small businesses, gave supportive feedback

- The NIH National Institute for Allergy and Infectious Diseases has developed an Electronic Proposal and Review System for use in both the contract and grant environment. The solicitations and applications are posted on a web site and proposals and applications are received electronically. When submissions are complete, reviewers complete their evaluations and discuss each others' comments on line through a "chat room." As a result, complete and detailed evaluation reports can be submitted more quickly. This results in assisting contracting personnel with conducting earlier and more effective negotiations.

- Some agencies use FACNET as a tool to facilitate small dollar commodity purchases electronically where widespread notice is desirable. FACNET provides for the offeror to receive a request for proposal, submit an offer, and receive an order electronically, thus completing the contract formation process electronically.

With respect to contract administration, agencies continue to find utility in using eCommerce tools to submit and obtain contractor past performance information. For this reason, agencies are increasingly using eCommerce to collect and retrieve past performance information. Today, for example, for a nominal fee, approximately 10,700 users nationwide from seventeen Federal agencies are using the National Institute of

Health (NIH) Contractor Performance System (CPS) to collect and maintain their contractor evaluations.

The CPS was designed, developed, and implemented in 1996 by the NIH Center for Information Technology (CIT) under the guidance and sponsorship of the Office of Contracts Management. CPS supports past performance activities on the agencies' contractors located in all fifty states and 127 foreign countries using web technology.

The system:

1. Collects numeric ratings and supporting narratives on:
    - Quality of Product or Service
    - Cost Control
    - Timeliness of Performance and
    - Business Practices
2. Collects Comments on:
    - Subcontracts/Socioeconomic Goals
    - Prime Contractor's Oversight of Subcontractors
    - Key Personnel
    - Contractor's Commitment to Customer Service

Federal Departments/Agencies Using CPS:

Department of Health and Human Services,
Department of Agriculture,
Department of Treasury,
Department of Commerce,
Department of Justice,
Department of Energy,
Department of Interior,
Department of Labor,
Department of Veterans Affairs,
Social Security Administration,
Agency for International Development,
Environmental Protection Agency,
Federal Emergency Management Agency,
General Services Administration,
Department of Transportation,
Department of Education, and
Department of State

Currently Treasury is paying $18,000 per year to NIH for access to the CPS.

Agencies continue to demonstrate an interest in working towards electronically enhanced contract formation and administration processes. For example, the Army Communications Electronics Command (CECOM) has fielded an interactive web-based application, the Interagency Interactive Business Opportunities Page (IBOP) which replaced the CECOM Acquisition Center's Business Opportunities Page on May 14, 1999 which replaced the CECOM Electronic Bulletin Board (EBB) in Oct 97 to take advantage of the Internet in creating and administering contracts.

Among other things, IBOP:

- enables electronic release of market surveys and investigations, draft solicitations and final solicitations;
- allows interested offerors to submit bids or proposals back to the contracting officer directly on the Internet without having to re-key responses;
- allows secure access to proposals, including proprietary and business sensitive information, using commercially available groupware and secure socket layer security; and
- enables issuance of electronic contract modifications and delivery orders.

The State Department has been working with CECOM to take advantage of IBOP's functionality to improve the efficiency of its own processes. State is finding a solid return for its investment in IBOP. It has found start-up and maintenance costs to be low and administrative savings to be high (e.g., in producing and publishing solicitations, in giving government evaluators access to proposals without having to travel). More than 20 of State's posts abroad now take advantage of IBOP. Other entities using IBOP include DOE, United States Special Operations Command, and the Space and Naval Warfare Systems Command. IBOP users have formed an interagency EC collaboration working group to share lessons learned and discuss enhancements of potential mutual benefit.

The collaboration between the Army and the entities identified above is but one example of the type of cooperation that is necessary if the government is to leverage its EC investments.

Small Business Administration Initiatives

The SBA is planning to help small businesses to sell to the government over the Internet through several of its many programs. These programs include:

- BusinessLaw.gov – on December 5, 2001, SBA rolled out an Internet gateway to help small businesses find, understand and comply with laws and regulations. The Web site offers several innovative, interactive features that allow businesses to complete online transactions with federal, state and local governments. BusinessLaw.gov is aimed at improving customer service by serving as the platform for an intergovernmental and interagency compliance one-stop for businesses. This project has become one of the twenty-four eGov initiatives and has received $740,000 in Fiscal Year 2002 funding.

Success of the BusinessLaw.gov site will be measured in terms of SBA's ability to answer five questions for the businesses. These are:

- What laws pertain to where I live?
- Where do I find these laws and how do I understand them?
- Do I comply with these laws in my state?
- If not, how do I learn to comply?
- If complying requires some action such as a registration, license or permit, how do I do it on line?

- US Business Advisor – SBA is building a portal for placement at the US Business Advisor cite (http://www.business.gov/busadv/maincat.cfm?catid=24). The US Business Advisor was created by the Small Business Administration (SBA), the National Partnership for Reinventing Government (NPR), and the *U.S. Business Advisor* interagency task force to be a one-stop electronic link to all the information and services government provides for the business community.

- Online Classroom – offering centralized eCommerce training programs by all of SBA's resource partners.

- Procurement Marketplace – This site promises to take advantage of the best of all Government sites to create a one-step vendor registration, certification and procurement opportunities site that offers small businesses one place to take advantage of the major Government procurement systems. The Marketplace should reduce duplication of effort and link the potential vendors more cost effectively. The goal is to create a true electronic marketplace.

Integrated Electronic Acquisition Systems

Functionally integrated electronic acquisition systems are beginning to be developed to help agencies cope with greater demands falling on a smaller workforce operating under tighter budgets. Contract writing systems and the functionality they provide are an integral part of many agencies' eCommerce buying and paying efforts. Initiatives undertaken to date suggest that thorough and early coordination across procurement, financial, information technology, and program offices throughout the agency is critical to the successful implementation of a fully integrated contract writing system.

The Department of the Interior was among the first of many agencies to roll-out a commercial off-the-shelf (COTS), windows-base automation/contract writing system. The Interior Department Electronic Acquisition System (IDEAS) enables major field sites at DOI to:

- automate the processing of requisitioning, document generation (both for simplified acquisitions and larger dollar contracts),
- interface with financial systems, and
- report statistical information to the Federal Procurement Data System (FPDS).

A model example of a government procurement organization developing a full fledged eProcurement system is the Naval Sea Systems Command (Navsea) which acquires about $500 million in professional services annually in support of the Navy's ships and shipboard systems each year.

Dubbed SeaPort, this system, which was just a one-page workflow diagram in December 2000, was built and the personal services contracts that are made available through it were awarded in a matter of months. The system is centered on several

premises. First, the system would completely eradicate paper from the process, including the time-honored required handwritten signature. Second, contractors bidding for work would be given just five days to provide concise proposals, as opposed to the usual one or two months that they previously had gotten - and needed - to produce the verbose works that more often resembled novels than business proposals.

Since becoming operational, it has become a big hit by helping to save money, slashing procurement cycle times, in some cases from months to as few as two weeks, and allowing the Navy and the contractors to build a new level of cooperation that benefits everyone. Among its many other benefits are its ability to provide for the routing of RFPs and the receipt and review of bids entirely electronically. This translates into significant savings in personnel time, although officials haven't quantified them yet. Also, by using SeaPort, the Navy saves the fee the General Services Administration charges when the Navy procures similar services via GSA's services contract.

Another key to SeaPort's success is its operational intuitiveness. The system was, intentionally built to be user friendly so that any program manager with access to a Web browser could go online and order services. New users can use software wizards that walk them through the process of ordering the services, while veteran users can skip ahead and customize their orders more quickly. As it turned out, instead of Navy personnel needing training to use the SeaPort portal, the Web site actually helped train them about the new procurement contract, an unintended benefit. The Web site is now a way for them to understand how the new multiple-award contracts are structured.

The SeaPort project was built at a cost of $1.4 million using commercial procurement software from Aquilent Inc., a spin-off from Commerce One Inc. along with integration assistance provided by Computer Sciences Corporation. Software license maintenance, system support and third-party application hosting runs an additional $460,000 per year.

Today, despite SeaPort being an optional system and having to compete with other procurement methods, such as the GSA schedules and the Navy's traditional paper-based systems, it is handling about a third of Navsea's professional services task orders, a figure well beyond initial expectations.

> "If it was a mandated solution, then we wouldn't have the pressure to provide that high level of customer service and work with people to deliver a system that meets or exceeds their expectations,"
>
> Claire Grady, SeaPort Branch Head.

Bureau Procurement Systems

There are numerous COTS contract-writing systems on the market today with differing levels of capabilities and sophistication to handle the requisition process electronically.

Treasury has deployed a wide assortment of these systems. A quick glance of the contract writing systems being employed in Treasury's bureaus is provided below in Table 3.2.

Table 3.2

Application Provider	American Management Systems (AMS)	SAP Public Services, Inc.	Distributed Solutions	Bureau of Public Debt	Internal Revenue Service
Application Name	Procurement Desktop	IPRO	ProDoc & ProTrac	Acquire	Integrated Procurement System
Bureau(s) using the Application	ATF*, FLETC, FMS, USSS	OCC, Mint	ATF*, OTS, DO, USCS	BPD	IRS

*ATF uses AMS for simplified acquisitions ProDoc for its contracts. Note: at this time, BEP, FinCen and the Office of the Inspector General do not have automated contract writing systems.

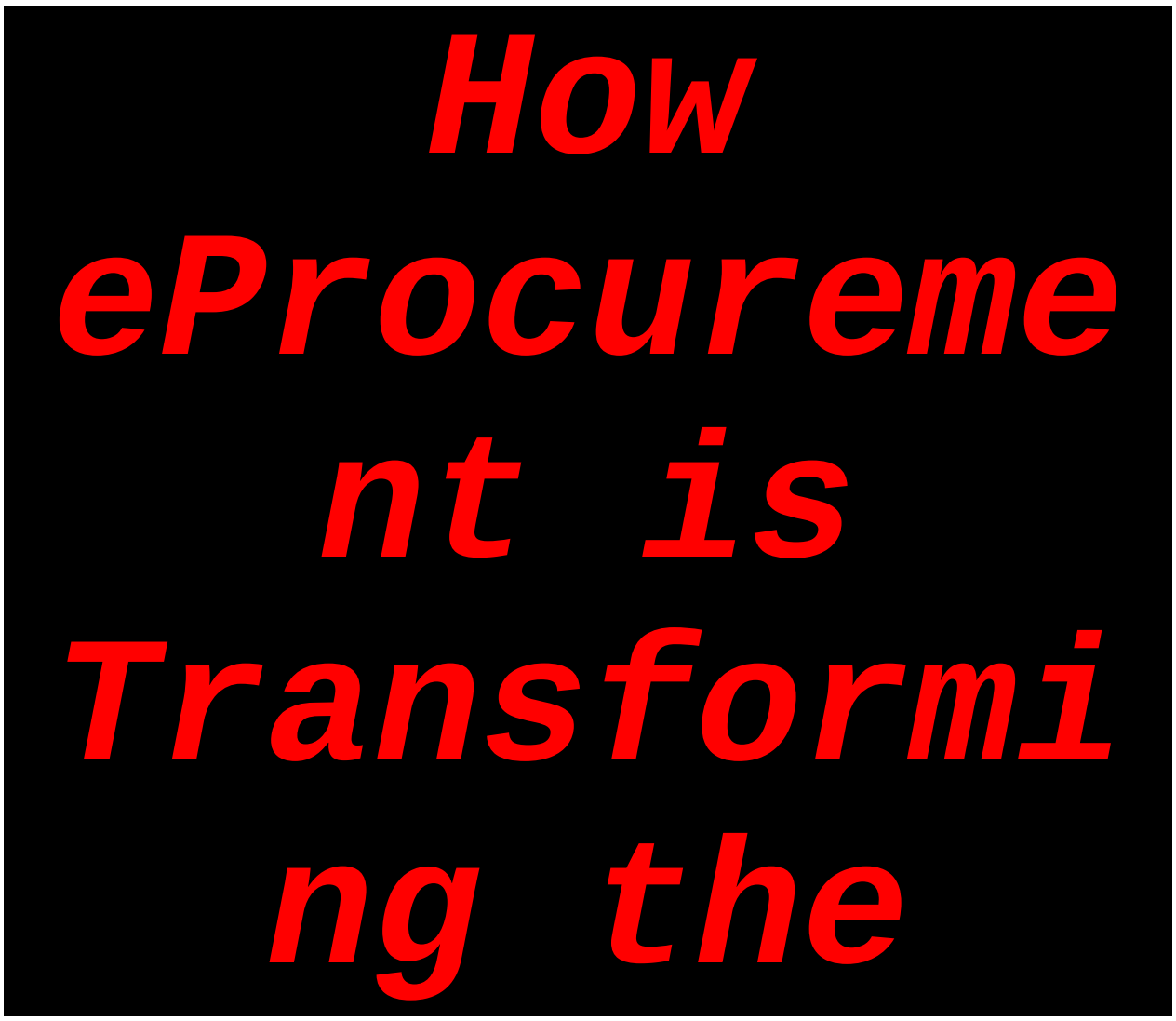
The AMS Procurement Desktop product brings all the procurement processes together - from requirements definition and receipt to acquisition planning, solicitation, offer evaluation, award, administration, and closeout. It's an intuitive desktop interface that provides document management, electronic routing and approval, on-line acquisition regulations, workload management, and powerful ad-hoc reporting.

The combination of Distributed Solutions products offers another contract writing system solution. The Professional Document System (ProDoc) is a document generation package that automates the production of any large or small solicitation or award document and guarantees compliance with the FAR policies. The Professional Tracking System (ProTrac) system, on the other hand, is an automated acquisition tool which provides electronic policy recommendations and procurement data collection to enable procurement professionals to conform to federal law and agency policy guidelines. It contains Federal procurement laws, court decisions which interpret and clarify these laws, congressional reporting mandates and local agency policy requirements insure a changing contracting environment. ProTrac is also a tool which provides a seamless means of educating, informing and implementing procedural changes throughout the contracting and small purchase departments, collecting necessary data and ancillary information while insuring the free flow of this information as necessary to other agency information systems.

Currently The Office of the Comptroller of the Currency and the US Mint are employing SAP's IPRO contract writing system. The system delivers advanced client-specific software tools that support their organization's procurement policies and procedures.

Some of the features of this product include knowledge bases, document generation, and electronic document routing. The US Customs Service has also purchased, but not yet implemented, an eProcurement system from SAP called MySAP. One of the components of MySAP is IPRO. To date, Customs is continuing to use ProDoc & ProTrac solutions.

The Bureau of Public Debt's (BPD) contract writing system, Acquire, is an internally developed system which was designed primarily for simplified acquisitions. However, BPD is in the process of implementing Compusearch's Prism product to replace the Acquire system. This will permit the BPD's contract writing system to be fully integrated with Oracle Financials, which BPD uses as its core financial system. The IRS's Integrated Procurement System is also an internally developed application that is based on CACI Sacons-Federal contract writing systems code.



Government's Procurement Cycle

One aspect of eCommerce is to facilitate online buying functions. The resulting technology is commonly referred to as eProcurement. As more and more companies and government entities realize that the move to performing more procurement activities online is inescapable, eProcurement is slowly but surely gaining momentum.

The Internet has greatly facilitated this movement and the resulting introduction of web-based tools has greatly aided in ensuring eProcurement's acceptance by a wide variety of organizations. This acceptance has been realized by eProcurement's ability to automate every aspect of the procurement process.

There are a number of factors fueling the need for eProcurement. Among them is the downsizing of government that has taken place over the last few years that has significantly reduced the contracting workforce. Many of those who have remained in the contracting workforce are expected to do a wider variety of tasks than ever before. To overcome the added responsibilities and expectations of the remaining workforce requires new ways of accomplishing the procurement process. It stands to reason that doing more with less requires automation. The procurement workforce in particular is being faced with incredible challenges to retool itself to become a 21st century electronic reliant workforce.

Market analysis:

- *Old Way* – Text report, manually developed spreadsheets, obtaining after the fact information.
- *New Way*- Web Pages, use of charts and graphs, ability to obtain current and historical trends.

Solicitations:

- *Old Way* – expensive paper duplications and mailings, pre-bid and bid opening meetings, lots of phone calls.
- *New Way* – Buyers use FedBizOpps as a Government to Business (G2B) website to issue a solicitation, notify vendors by e-mail of pending requirements, and respond electronically to questions related to the solicitations that have been posted.

Vendor Registration:

- *Old Way* – phone call, forms and faxes.
- *New Way* – online registration, vendor inputs information and information is captured in a database, vendor can change information as events dictate.

Requisitions:

- *Old Way* – forms, mailings, price books, phone & fax quotes.
- *New Way* – requisitions complete requisition electronically, automated workflow approvals via e-mail, POs are automatically issued from blanket agreements.

However, most of the eProcurement tools available for use in the government's acquisition cycle are systems that are slightly modified versions of those used in private industry. Many of the systems that have been converted for use by government agencies are very useful and can be applied to government procurement activities. However, the unique set of challenges posed by public sector purchasing, such as socio economic programs, maintaining a level playing field for market participants and ensuring full and open competition, end-to-end eProcurement systems have not been fully developed for use in the public sector. This is creating systems that address the ability to convert only a single or multiple steps in the acquisition cycle.

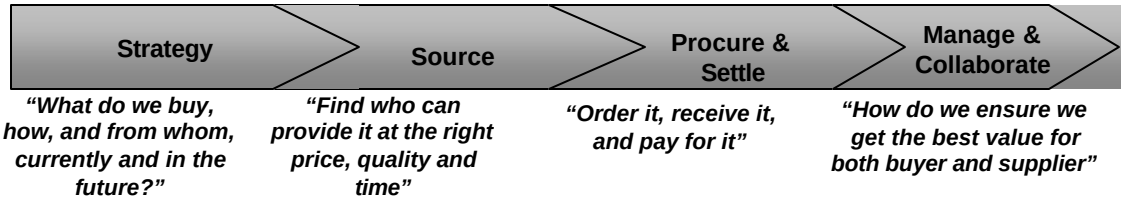
Agencies are increasingly leveraging electronic commerce technologies to streamline acquisitions, reduce costs, and to manage their supply chains. However, as more and more agencies have undertaken initiatives, similar projects have sprung up throughout the Federal government, creating the same redundancies the initiatives are designed to eliminate. Many initiatives, such as electronic catalogs, also require certain size and scale in order to accrue many of the benefits. For those initiatives, smaller agencies find it increasingly difficult to justify the level of investment required to deliver a positive Return on Investment (ROI).

The Acquisitions Lifecycle and the Need For Unified

Acquisitions Systems

The Acquisition Lifecycle (Figure 3.1) is comprised of four primary steps: Strategy; Source; Procure and Settle; and Manage and Collaborate. Each one of the steps is critical in deriving value out of the entire acquisitioning process.

Figure 3.1: The Acquisition Lifecycle



Acquisitioning strategy ensures developing an overarching acquisitioning strategy based on detailed understanding of organization spend, future direction, and constraints and opportunities. The sourcing process requires developing sourcing strategies for each type of good or service purchased and then implementing those strategies. This process is also referred to as Strategic Sourcing. The procure and settle step is the actually ordering and processing of an order. Finally, manage and collaborate ensures that contracts are managed and monitored, while at the same time, both suppliers and buyers look for opportunities to collaborate.

The acquisitions lifecycle "touches" many functions beyond procurement. For example, the finance function has linkages throughout the lifecycle, from planning and budgeting to closeout of individual transactions. Similarly, human resource applications feed important data into procurement applications regarding procurement authority, etc. Because of this linkage with other functions, it is important to view each step of the lifecycle from an overall organizational perspective, not just procurement.

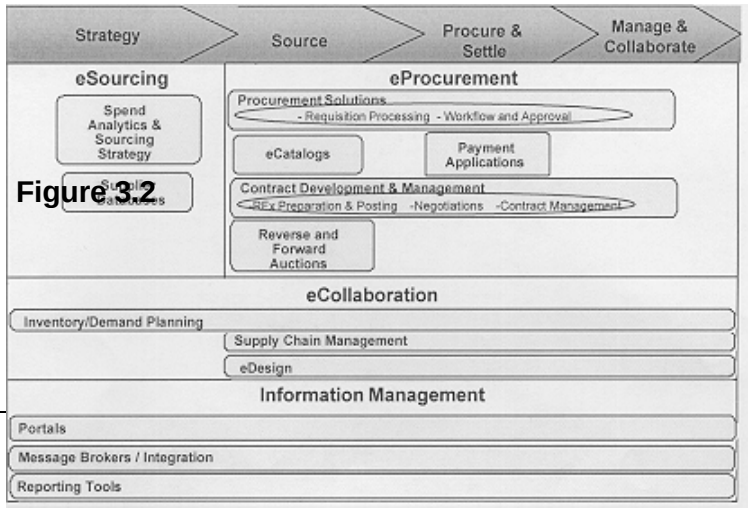


Figure 3.2

Inefficiencies in the Current Environment

As depicted in Figure 3.2, a multitude of solutions, from eSourcing spend analysis tools to eProcurement tools such as eCatalogs, are required to address each of the four steps of the acquisitioning lifecycle. In an effort to streamline the acquisitioning process, agencies across the government have begun implementing many of these solutions, with little or no coordination.

This lack of coordination has led to many inefficiencies including:

Figure 3.2

- Duplication of effort – In order to meet their individual needs, various initiatives have been undertaken, with no coordination across agencies. This has resulted in many redundant initiatives with no standards across the government. Also, many of these initiatives require expertise to be properly developed and managed, expertise that is often not available or too expensive to justify for each agency.

- Stove-piped information systems – Since many initiatives are being implemented without coordination, these systems are unable to "talk" to each other or exchange information due to different data/messaging standards. This has resulted in multiple handoffs and manual data transfers, and an inability to exchange critical information.

- No data/messaging standards – As described above, different data/messaging standards are utilized making it impossible for systems to share information. eCommerce at its core implies communication and exchange of information among business partners. Lack of standards means that supply/service chain partners are unable to exchange documents electronically, communicate real time and access critical information such as inventory levels.

- Lack of understanding of purchasing activity across the government – While the Federal Procurement Data System does capture a subset of procurement transactions across the government, many more transactions are not captured. This lack of consolidated spend information makes it difficult for the government to completely leverage its buying power to reduce prices and improve quality.

- Lack of scale – Some initiatives, such as eCatalogs, require a minimum level of size and scale in order to deliver a positive ROI. Since many agencies do not generate enough purchasing activity to reach the required size, they either can not invest in these initiatives or invest and incur losses. While it makes sense for agencies to continue to invest in some solutions such as back office Contract Development and Management to manage internal processes, other solutions can be more efficiently managed on a government-wide basis. Once in place, agencies can continue to use internal solutions while leverage government-wide solutions to address other needs.

Treasury's Payment-side eCommerce

The Department of Treasury runs one of the largest payment collection systems in the world and collects electronically more than $1.3 trillion of U.S. government revenue, approximately two out of every three dollars. In 1999, the first year for which detailed information is available, the Federal government paid 78 percent of its 959 million payments electronically. That includes 96 percent of salary payments, 81 percent of vendor payments, and 73 percent of benefit payments. To achieve these successes, the Department of Treasury has implemented a number of initiatives.

Electronic Transfer Account

The Electronic Transfer Account (ETA) Program enables recipients of Federal benefit, salary, or retirement payments who do not have traditional bank accounts to receive their payments by Direct Deposit through a low cost account with the same consumer protections available to other account holders. With the ETA, all benefit recipients can enjoy the safety and convenience of receiving their Federal payments by electronic funds transfer. Users can access an Internet site to search by ZIP code, city, or state for financial institutions certified to offer the ETA.

Pay.gov

In July 2000, the Department of Treasury launched a program to create a secure government-wide payment and collection portal. When fully operational in 2002,

Pay.gov will be a one-stop shop for making government payments over the Internet. Corporations and citizens will be able to use the site to pay electronically government fees, fines, sales, leases, donations, and certain taxes - everything from camping licenses to corporate fines. Many of these transactions are currently processed through paper lockbox collections and over-the-counter.

The Pay.gov site also could be used for direct electronic processing of government forms, such as direct deposit enrollment forms or order forms for government products like U.S. Mint coins and maps from the National Park Service. Individuals will be able to view agency bills, while agencies will be able to immediately view and share information about bills paid, forms completed or purchases made. This program has the potential to process 80 million transactions, totaling $125 billion each year.

A year after its launch in July 2000, Pay.gov has collected nearly $1.5 billion, been implemented at several Federal agencies, and designed nearly 40 systems architectures for agencies.

The Bureau of Alcohol, Tobacco and Firearms' tobacco excise tax form was the first prototype architecture. In this B2B model, Pay.gov tested and confirmed how Automated Clearing House debits would be transacted and secured over the Internet. The Department of Veterans Affairs' Lending Loan Fee Program was the next prototype, but this model tested an agency outsourcing an entire program to Pay.gov. This implementation tested the rigors of the reporting engine and frequency of transactions. The last prototype is ongoing and involves electronic bill presentment with the Department of Commerce.

Combining all tests, modeling, and prototyping, nearly $900 million has been collected as of July 2001. A hallmark is that digital cash has settled nearly $200 million in transactions, making the Federal Government its largest domestic user of digital cash.

Electronic Federal Tax Payment System (EFTPS)

The Department of Treasury also expanded a pilot program in 2000 that lets vendors accept taxpayers' credit card payments of federal taxes and send them to the Treasury through EFTPS. The program was expanded to include estimated taxes and tax payments with filing extensions. The Department of Treasury also launched a pilot Internet application in early 2001 to encourage small businesses to enroll in the program and begin paying taxes through EFTPS. The web application also will allow small businesses and other taxpayers to enroll, view their account history, and obtain customer service over the web.

Today more than 3.5 million taxpayers are currently using EFTPS for its convenience and flexibility of making tax payments through the Internet, PC software, or phone.

eCash and eChecks

The Department of Treasury also is developing or testing a variety of new payment systems, including digital cash (eCash) and digital checks (eChecks) for vendors.

eCash is a digital value that is withdrawn from an account at a financial institution, and stored on an internal hardware device installed in a PC. With a click of the mouse, digital cash is sent over the Internet guaranteeing a secure party-to-party transaction to its destination. It's just like real money, only digital. Digital cash is a secure transaction that can be used to make payments to purchase goods and services over the Internet. A secure exchange is made between a customer and a vendor without the need of an intermediary. The real-time payment coordinated with real-time delivery of electronic merchandise provides digitally signed transaction receipts and ensures delivery of goods. eCash has collected over $200 million in digital cash transactions this calendar year alone.

eChecks, designed specifically for the Internet, are created on a computer, digitally signed, and e-mailed with payment related information to a payee. The payee then verifies the identity of the payor, endorses the check with his or her own digital signature, and e-mails the e-check to a financial institution for deposit. The Department of Treasury's Financial Management Service (FMS) first began testing eChecks in 1998. Since that time, over $10 million dollars in e-checks have been processed. Electronic checks have the potential to substantially reduce agency administrative costs, and may serve as a model for private sector efforts.

Stored Value Cards

The Departments of Treasury and Defense have expanded the use of stored value cards to replace cash and paper payroll systems for military personnel. In fact, the Department of Treasury is now the world's largest issuer of smart cards. Its stored value card programs are the largest in the United States with over $80 million in transfers, representing 3 million transactions and 375,000 cards. The program, which is still expanding in the United States, also is used at several peacekeeping bases in Bosnia and at facilities in Hungary. All soldiers, civilians, and contractors stationed at these camps use stored value cards to receive their salary and make payments to merchants on the base. Use of the card in Bosnia has significantly reduced cash requirements and the support costs related to holding and securing cash.

Other Government Services and Information

Available Online

The Department of Treasury also has been a leader in accepting electronic payments for its own services and products. Auctions of Treasury securities, for example, are now entirely electronic, and consumers holding Treasury securities through the Treasury Direct program can make purchases or reinvest on line or through an automated phone system. Savings bonds also can be purchased over the Internet 24 hours a day, 7 days a week, using one of several major charge cards. In fact, the Savings Bond Connection is one of the most popular Department of Treasury websites and its success has far exceeded initial expectations. The Department of Treasury 's State and Local Government Securities program also enables state and local governments to invest in special-purpose Treasury securities, access their accounts and conduct transactions electronically. Transactions often total several million dollars and are secured by digital certificates and paid by electronic funds transfers.

Employers and employees can learn how to comply with numerous employment laws enforced by the Department of Labor by going to Elaws (http://www.fdol.gov/elaws/). This interactive site contains electronic "Elaws Advisors" that give advice and provide information on a specific law or regulation based on the user's particular situation.

Agricultural exporters can now use the Department of Agriculture's, Foreign Agriculture Service (FAS) website to apply for export credits. FAS has combined a number of programs and cumbersome paper processes into a single streamlined online application process. Over 90 percent of all applications that FAS receives are now submitted through the FASOnline website (http://www.fas.usda.gov/).

Importers of fruits and vegetables, animal products, organisms, and other vectors can now submit applications to the Department of Agriculture Animal and Plant Health Inspection Service on its new Import Authorization System. Customers also can check the status of and submit revisions to an existing application (https://Web01.aphis.usda.gov/IAE.nsf/Mainform?OpenForm).

Consumers in inner-city Baltimore, Maryland and outside Tallahassee, Florida can now use no-fee ATMs in six post offices. As a pilot project to test the demand for and economic viability of ATM transactions among residents of communities that lack

access to conventional banking services, the Department of Treasury, in cooperation with the U.S. Postal Service, unveiled no-fee ATMs in November 1999.

To help the public prepare for natural disasters and reduce disruption and loss, the Federal Emergency Management Agency (FEMA) has placed electronic maps on the Web that chart the history of tornadoes, hurricanes, hailstorms, earthquakes, windstorms and floods in any area in the United States. The electronic mapping project will enable local governments and the public to make decisions about whether to buy certain types of disaster insurance, how much local revenue to devote to disaster preparation, and whether to develop land that might be highly susceptible to flooding (http://www.esri.com/hazards/).

State agencies, local governments, and private non-profit organizations will be able to request public assistance via the Internet after a disaster through the Federal Emergency Management Agency's Electronic Service Project. This project will eliminate time-consuming paper-based procedures and processes without special telecommunications or computer equipment. FEMA's claims staff can now identify and respond to troubled claims before they are closed, using FEMA's new Quick Claims reporting system that began operating during the 2000 flooding season. The Quick Claims system also has given mitigation experts early access to claims data when flooding occurs.

Summary

Today's procurement professional is arriving at an intersection in history that requires careful, thoughtful deliberation on how to proceed. At this intersection one can chose to stay the same course by doing business the way they have always done or they could lead themselves and their organizations into the future by adapting to the new environment and utilizing the eCommerce tools that are becoming available. To create a future, as opposed to having one thus upon them, leading others into the future world of procurement will require applying both business acumen and the skillful use of available tools.

Business acumen involves areas such as understanding the factors that are affecting the marketplace in which one is buying or selling, strategic planning to meet future organizational missions, and understanding the supplier's needs and wants. For many, applying business acumen requires obtaining new skills or training to understand how to apply it. The future will also require that procurement professionals be freed from the manual processing of procurement actions. The conversion of an organization's processes from pushing paper to a digital organization requires many skills, like

managing change, knowledge of information technologies, and an understanding of and ability to use new tools.

The new way of conducting business in the eCommerce environment will aid the transformation of procurement professionals to becoming the business leaders of tomorrow. The tools are plentiful and varied, and leaders must continually consider them individually and their totality as they are forging ahead with converting to a digital organization. Not doing so may result in employing tools that are obsolete before they are deployed, don't work with other tools or simply don't work at all.

Chapter Four –Government Influences on eCommerce

The Federal government has and will continue to have a great impact on the development of eCommerce. The Executive Branch agencies are beginning to work with one other without regard to agency boundaries to help bring about, deploy and administer a wide array of eCommerce initiatives. Additionally, past and present presidential administrations have been instrumental in developing various eCommerce initiatives to more fully employ the power of the Internet to deliver government services and products to the American people and its businesses. The Congress has also contributed in helping to shape the future of eCommerce by tackling national and international issues related to the Internet and undertaking the debates that surround eCommerce's development.

More than half of surveyed adults with access to the Internet visited federal, state or local government Web sites in 2001. One half of those surveyed had visited federal Web sites. Twenty-one percent of adults online not only visited, but conducted some type of transaction with local, state or federal governments, slightly higher than the percentage of adults who conducted transactions with private businesses online.

Source: 2001 National Readiness Survey

This chapter explores each of their roles and the activities they have undertaken or will undertake to help nurture eCommerce, currently in an infantile stage, into a healthy adolescence stage of development.

Initiatives

There have been a number of recent initiatives taken by Executive Branch agencies to help ensure that issues related to the employment of eCommerce is facilitated across the government. They are described below.

Cross-functional Interagency Groups

Ongoing coordination of eCommerce development activity across the Federal finance, acquisition, and information technology communities includes the Procurement Executives Council (PEC), the Chief Financial Officers Council (CFO Council), and the Chief Information Officers Council (CIO Council).

The PEC

The PEC, chartered in 1998, is an interagency council consisting of procurement executives in the Executive Branch that was established to provide a senior level forum to monitor and improve the Federal Acquisition System. Its purpose is to make the vision of the Federal Acquisition System a reality. To undertake this role, the PEC established two types of committees:

1. Standing committees, headed by a Council member or their permanent designated representative, which address particular functional areas that are of on-going interest to the entire Council or of interest and applicability to a set of Council members.

2. Working groups (ad hoc or other) which will address particular areas of concern that normally last for a limited time.

The PEC's vision for the Federal Acquisition System –

A model for business excellence which:

- Features innovative business practices leading to timely delivery of best value products and services to the customer to achieve agency missions;
- Fulfills public policy objectives; and
- Builds on a foundation of integrity, fairness, and openness.

Source: FY01-05 PEC Strategic Plan

To bring better focus to the activities of stakeholders within the procurement community in particular, the PEC established a standing committee on EC. The PEC EC Committee supports its Council's goal of promoting effective use of EC to enhance the government's ability to support mission accomplishment.

Procurement Executives Council

Mission: The PEC is the principal forum for the Procurement Executives to use their collective influence and knowledge to achieve the vision for the Federal Acquisition System and the Federal Acquisition Workforce. The scope of the Council's activities embraces the full range of Procurement Executive business responsibilities including procurement, acquisition and, as appropriate, grants.

Strategic Priorities: The PEC's strategic priorities for Fiscal Years 2001 - 2005 are:

- Create a Workforce of Mission-Focused Business Leaders
- Optimize Technology as a Key Business Enabler
- Lead Collaboration to Achieve Desired Business Results
- Effectively integrate socio-economic programs in the Federal Acquisition System
- Transform the Acquisition System for Better Business Results

This includes:

- sharing technology that works,
- partnering with the financial and information technology communities,
- building a tool to open business information to all Government agencies and business enterprises,
- working to ensure that acquisition systems, databases, web sites, and related information technologies meet the accessibility requirements of Section 508 of The Rehabilitation Act of 1973, and
- defining an open information system through a re-engineered Federal Procurement Data System (FPDS).

The PEC also recognizes the importance of forming strategic alliances with diverse communities of shared interests and provides representatives to serve as liaisons with the Chief Information Officers Council, the Chief Financial Officers Council, President's Council on Integrity and Efficiency, the Office of Small Disadvantaged Business Utilization Director's Interagency Council and, as appropriate, other councils or groups.

CIO Council

The CIO Council has its origins in Executive Order 13011, Federal Information Technology which established the CIO Council as the principal interagency forum to improve agency practices for the management of information technology. The CIO Council is an element of an interagency support structure that was established to achieve IT objectives set forth in the Government Performance and Results Act, the Paperwork Reduction Act, and the Information Technology Management Reform Act.

The CIO Council is a forum assembled to improve agency practices on such matters as the design, modernization, use, sharing, and performance of agency information

resources. The CIO Council communicates its findings to the Office of Management and Budget and to other executive agencies.

The purpose of the CIO Council is to:

- develop recommendations for overall federal information technology management policy, procedures, and standards;
- share experiences, ideas, and promising practices, including work process redesign and the development of performance measures, to improve the management of information resources;
- identify opportunities, make recommendations for, and enhance cooperation in using information resources;
- assess and address the hiring, training, classification, and professional development needs of the Federal Government with respect to information resources management;
- make recommendations and provide advice to appropriate executive agencies and organizations, including advice to OMB on the Government-wide strategic plan required by the Paperwork Reduction Act; and
- seek the views of the Chief Financial Officers Council, the Government Information Technology Services Board, the Information Technology Resources Board, Procurement Executive Council, industry, academia, and Federal, Tribal, and State and local governments on matters of concern to the Council as appropriate.

The vision of the council is to be a helpful resource to make the Government work better and cost less by promoting the efficient and effective use of agency information resources. IT accomplishes this through supporting business process reengineering, continuous process improvement, and measurable increases in employee productivity.

CFO Council

The CFO Council is comprised of the CFOs and Deputy CFOs of the largest federal agencies and senior officials of OMB and Treasury who work collaboratively to improve financial management in the U.S. Government. The Council was established under the provisions of the CFO Act of 1990 to advise and coordinate the activities of the agencies of its members on such matters as consolidation and modernization of financial systems, improved quality of financial information, financial data and information standards, internal controls, legislation affecting financial operations and organizations, and any other financial management matter.

The CFO Council has seven committees established to tackle a variety of government-wide financial related issues.

The mission of the CFO Council is to influence the future of the federal government through ethical and effective leadership; serve as a catalyst for constructive change to ensure the integrity of financial information needed for decision making; and measure program and financial performance to achieve desirable results.

To carry out its mission, the council plans to:

- Provide leadership to promote the efficient management of government resources and assets;
- Provide quality financial services to customers based on their needs;
- Provide high quality financial information on federal government operations which fully supports financial and performance reporting;
- Enhance the government-wide framework that provides sound financial policies and services, and facilitates effective communication; and
- To continually enhance financial management through the use of modern technology and business practices

Other Interagency Bodies

Other interagency bodies are helping with efforts to explore promising cross-agency opportunities and enable agencies to capitalize on areas of common interest.

The CIO Council's Committees

- Human Capital
- Systems/eGov
- Budget & performance
- Erroneous Payments
- Financial Statement Acceleration
- Financial Asset Management
- Best Practices

One is the Interagency Acquisition Internet Council (IAIC) that seeks to promote ways to optimize the use of the Internet in streamlining the Federal acquisition process and increasing communication of Federal acquisition-related information. IAIC has been instrumental in helping to exploit emerging technologies to improve use, access, and dissemination of procurement related information over the Internet. Its members were at the forefront of developing FedBizOpps.

Another is the Federal Public Key Infrastructure Steering Committee which is helping to foster public confidence so that eCommerce processes may be used securely. Created by the Government Information Technology Services (GITS) Board, the Committee coordinates Federal activities to develop and promote a public key infrastructure (PKI).

PKI is designed to be used to authenticate users and data, protect the integrity of transmitted data, and ensure the non-repudiation and confidentiality of data for

interactions on open networks such as the Internet. The Steering Committee promotes use of commercially available technology and products, encourages industry to build products which are interoperable, making sure that Federal programs can take advantage of marketplace changes and improvements. Equally important, the Committee seeks to demonstrate aspects of the evolving PKI through pilot programs and projects.

Another entity designed to provide ongoing support and assistance to carry out the various government-wide eCommerce activities is the Access Certificates for Electronic Signature (ACES) which is a joint effort between the GSA's Federal Technology Service and its Office of Government-wide Policy to provide for a means for both citizens and businesses to obtain digital certificates. These certificates will be used to authenticate their identity in conducting transactions with government agencies. It is a key initiative in facilitating the response of Federal agencies to the Government Paperwork Elimination Act (GPEA). On September 19, 2000, the General Services Administration (GSA) awarded its first multi-agency task order to AT&T Corporation to provide services under the ACES program. This will be used to implement common digital signature processes for multiple federal agencies through the initiative called "Access America for Students". Under the "Access America for Students" initiative, post-secondary students, schools, and lending communities would have electronic access to government information and services via the Internet.

The following are the agencies are planning or are engaging in trial programs using ACES:

- **US Department of Education:** Free Application for Student Aid:

  Historically, the financial aid process started with a thick packet of papers called the Free Application for Student Aid, or the FAFSA. Loan applicants filled out the complicated forms and sent them to the Education Department's Office of Student Financial Assistance (SFA). The agency processed the forms and then sent the applicant a promissory note. After signing those loan papers, students received their money and got on with the vagaries of college life. When they finished college, they began to repay their loans.

  This entire process was paper-based until 1996. That year, SFA introduced the application online, a move that is increasingly popular with a generation of students accustomed to surfing the World Wide Web. The process improved even more in June 2001, when SFA introduced a system enabling students to electronically sign their loan documents without ever touching a sheet of paper. The entire process is cheaper, quicker and easier, Education officials say. And electronic signatures have made the entire revolution possible.

where the student makes first contact, applies, registers at a university, gets their loan package, goes through school and repays their loan with never ever having touched a piece of paper,"

Loan applications on the Web have proved exceedingly popular. In 2000, 690,000 applications were filed online compared with 1.3 million in just the first six months of 2001.

The SFA is also developing a system that will allow graduates to make their monthly loan payments online.

- **US Department of Labor:** America's Learning Exchange (ALX) Career Management Account:

  The Department of Labor Education and Training Administration (ETA) administers America's Career Kit - the most comprehensive employment resource on the Internet. America's Career Kit includes America's Job Bank, America's Talent Bank, America's Career InfoNet, and ALX.

  As part of the ALX, the Labor Department's ETA is creating individual career management accounts to provide workers and students with a lifelong learning portfolio and a suite of on-line career management tools. The Department of Labor ETA projects an initial pilot program of 10,000 accounts requiring authenticated access and disclosure information. Each account holder will be issued an ACES certificate for digital signature access to and disclosure from their account.

- **US Department of Veteran Affairs:** WAVE, NetCert & VONAPP

  Web Automated Verification of Enrollment (WAVE) will allow a student to electronically verify his or her enrollment every month over the Internet. The information the student provides will be used to electronically process the transfer of benefits due. Each veteran in the pilot program will be issued an ACES certificate to provide for digital signature of the monthly certification.

  NetCert: The VA NetCert project will provide educational institutions the ability to electronically submit student enrollment information to VA.

  Veterans On Line Applications (VONAPP): This initiative will create an electronic application for VA education benefits to replace the paper applications now being filed by veterans.

- **US Postal Service**: Electronic Change of Address.

  The US Postal Service National Customer Support Center plans to pilot test electronic change of address using multiple methods of authentication, including ACES certificates for authentication and digital signature. When

implemented, students will be able to submit digitally signed notices of address change directly to the US Postal Service web site.

Clinton Administration

At the beginning of the Clinton Administration in 1993 the Internet was just a vision and the Internet was a tool for a relatively small number of scientists, researchers and hobbyists. Further, there was no appreciable online business activity. By 1995 an estimated $435 million in sales were generated by the World Wide Web. By the time the Clinton Administration ended, B2C eCommerce reached an estimated $61 Billion and B2B sales exceeded $200 Billion in addition to 3 in 5 companies using eCommerce to some extent to help fuel the digital economy.

These achievements were made possible in part to the policy principles the administration put in place in July of 1997. These principles are:

- The private sector should lead;
- Governments should avoid undue restrictions on eCommerce;

- Where government involvement is needed, its aim should be to support and enforce a predictable, minimalist, consistent and simple legislation;

- Governments should recognize the unique qualities of the Internet; and

- eCommerce over the Internet should be fabricated on a global basis.

During the Clinton Administration a wide range of policy direction was provided to encourage eCommerce growth. These included

- calling on the World Trade Organization (WTO) to declare the Internet to be a tax-free environment for delivering both goods and services;

- recommending that no new tax policies be imposed on Internet commerce;

- stating that nations develop a "uniform commercial code" for electronic commerce;

- requesting that intellectual property protection— patents, trademarks, and copyrights—be consistent and enforceable;

- that nations adhere to international agreements to protect the security and privacy of Internet commercial transactions;

- that governments and businesses cooperate to more fully develop and expand the Internet infrastructure; and

- that businesses self-regulate eCommerce content.

The Clinton Administration's "The Emerging Digital Economy" (April 1998), "The Emerging Digital Economy II" (June 1999), "Digital Economy 2000" (June 2000), and "Leadership for the New Millennium, Delivering on Digital Progress and Prosperity" (January 2001) provided overarching views on domestic and global eCommerce. These reports provide data on the explosive growth of eCommerce, its role in global trade and national Gross Domestic Product (GDP), and contributions that computer and telecommunications technology convergence is making to productivity gains in the United States and worldwide. The Administration also argued that its policies contributed to the effects that information technologies have had on raising national productivity, lowering inflation, creating high wage jobs, and contributing up to one-third of all domestic growth in the 1990s.

Bush Administration

The Bush administration is also pursuing eCommerce, especially by government agencies. At the core of the President's Management Agenda is a focus on bringing the government to the people electronically, commonly referred to as eGov.

The goals for eGov initiative are to:

- Make it easy for citizens to obtain service and interact with the federal government;
- Improve government efficiency and effectiveness; and
- Improve government's responsiveness to citizens.

eGov is an evolving concept, meaning different things to different people. However, the focus is on four citizen-centered groups, each providing opportunities to transform delivery of services.

- **Individuals/Citizens**: Government-to-Citizens (G2C); Build easy to find, easy to use, one-stop points-of-service that make it easy for citizens to access high-quality government services.
- **Businesses**: Government-to-Business (G2B); Reduce government's burden on businesses by eliminating redundant collection of data and better leveraging E-business technologies for communication.
- **Intergovernmental**: Government-to-Government (G2G); Make it easier for states and localities to meet reporting requirements and participate as full partners with the federal government in citizen services, while enabling better performance measurement, especially for grants. Other levels of government will see significant administrative savings and will be able to improve program delivery because more accurate data is available in a timely fashion.
- **Intra-governmental**: Internal Efficiency and Effectiveness (IEE); Make better use of modern technology to reduce costs and improve quality of federal government agency administration, by using industry best practices in areas such as supply-chain management, financial management and knowledge management. Agencies will be able to improve effectiveness and efficiency, eliminating delays in processing and improving employee satisfaction and retention.

However, the movement to put government online raises as many issues as it provides new opportunities. Some of these issues include, but are not limited to: security, privacy, management of governmental technology resources, accessibility of government services (including “digital divide” concerns as a result of a lack of skills or access to computers), and preservation of public information (maintaining comparable freedom of information procedures for digital documents as exist for paper documents). Although these issues are neither new nor unique to governments, they present the challenge of performing government functions online without sacrificing the accountability of or public access to government that citizens have grown to expect. Some industry groups have also raised concerns about the U.S. government becoming a publicly funded market competitor through the provision of fee-for-services such as the U.S. Postal Service’s eBillPay, which allows consumers to schedule and make payments to creditors online.

The eGov Initiatives

eGov is at the core of the President's management agenda. To help facilitate a citizen centric government for the American taxpayer, he created the position of Associate Director for Information Technology and e-Government within the Office of Management and Budget (OMB) (AD for IT &eGov). On August 9, 2001, the campaign to create an EGov, dubbed "Quicksilver", was kicked off by an interagency Egov taskforce headed by Mark Forman, the newly appointed AD for IT & eGov. The main objective of this task force, which was composed of 81 experienced, knowledgeable, and high-level individuals from 49 agencies, was to develop an action plan for improving service to citizens through information technology.

> The 24 E-Government initiatives were selected using two rounds of prioritization. Overlaying the 250 plus projects that the taskforce gathered from the interviews and e-mails against the architecture assessment yielded 30 potential E-Government initiatives. The most promising initiatives were selected on the basis of value to citizens, potential improvement in agency efficiency and likelihood of deploying within 18 to 24 months.

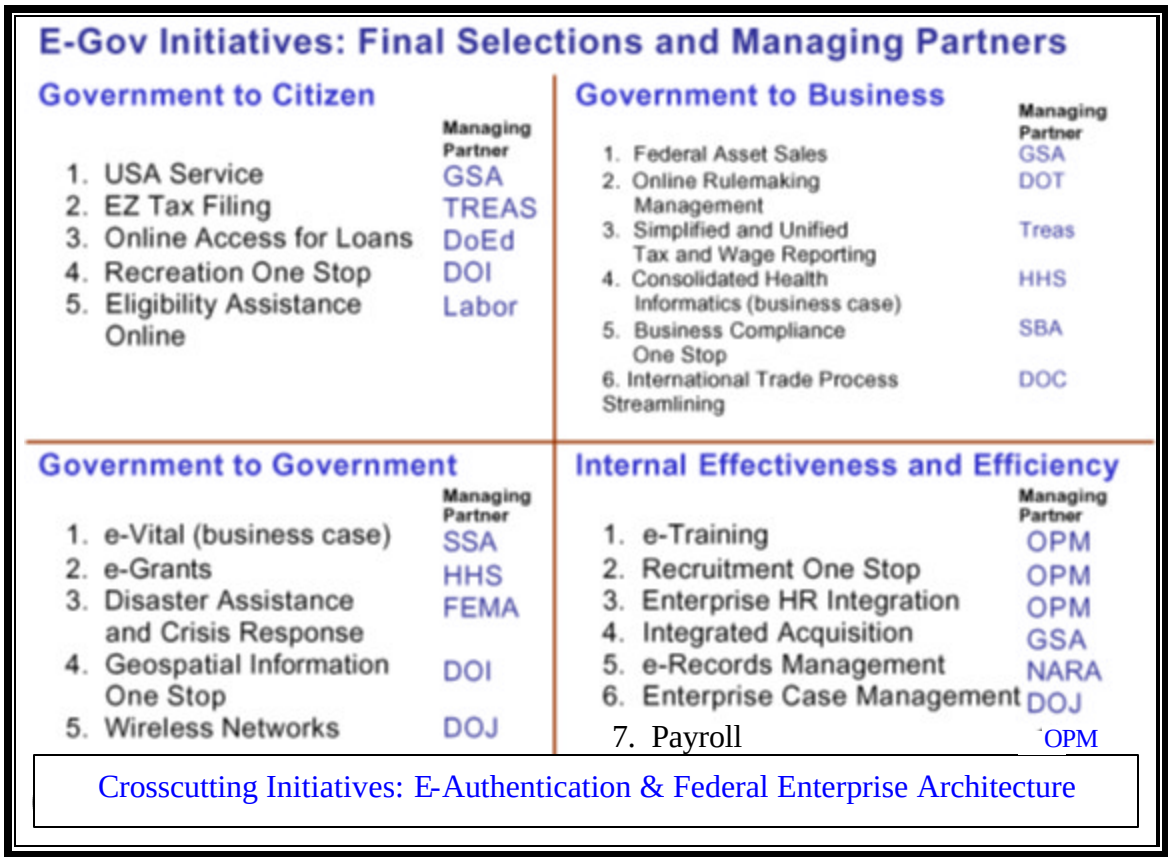
The first phase in the process was to identify initiatives that would provide one-stop services to individuals, make it easier to interface with businesses and other levels of government, and improve agency operational efficiency and effectiveness. Over the course of six weeks, the Task Force conducted 71 interviews with 150 senior federal and state officials, including political appointees and career civil officials, to identify high payoff initiatives that can be rapidly deployed. In addition to the interviews, the Quicksilver project received more than 200 e-mails that were sent primarily by federal employees that identified nearly 200 projects. By the end of the initial "discovery" phase, more than 269 information technology "projects" were uncovered. These projects were then complied for the President's Management Council (PMC) to select the projects that represent the best ways of improving service to the citizens and improve agency missions or program performance.

On October 25, 2001 Mitchell E. Daniels Jr., the Director Office of Management and Budget, outlined the plan of eGov initiatives that had been identified by the task force and had been endorsed by the PMC on October 3, 2001. The plan creates multi-agency teams to develop and deploy 24 major eGov initiatives. These measures will use Internet-related technologies to accelerate and streamline service delivery to citizens, reduce paperwork burdens on business, improve management and responsiveness of joint federal-state-local programs, and apply commercial best practices to improve government operating efficiency. Another initiative will focus on computer security, disaster response, and intergovernmental communications for public safety.

On November 15, 2002, the House and Senate passed the Electronic Government Act that, among other things, established an Office of Electronic Government within the Office of Management and Budget. The new office is to be headed by an administrator who is appointed by the president and reports to the OMB director and deputy director. The President has nominated Mark Forman to head this office and Congressional confirmation is expected soon.

The 24 eGov initiatives cut across many federal agencies and reflect partnership with state and local governments. The initiatives were chosen because of their ability to maximize federal government productivity gains from technology, eliminate redundant systems, and significantly improve government's quality of service for citizens and businesses. Figure 4.1 below list the 24 recommendations adopted for action by the PMC.

Figure 4.1 Egov Initiatives



The task force also identified five key areas that require executive attention to enable federal eGov success: agency participation; lack of architecture decisions; security and privacy concerns; resource availability; and resistance from key stakeholders. The PMC agreed to provide the executive leadership and management attention needed to overcome these barriers. In addition, the PMC endorsed the task force's federal computer security and architecture recommendations.

Agencies have developed detailed business cases and formed partnerships for investment and implementation of the initiatives. Additionally, the results of the business cases were incorporated into the Fiscal Year 2003 budget.

Integrated Acquisition System

The Integrated Acquisitions System (IAE) is the focal point where Government, vendors, and other constituencies come together to conduct commerce and to collaborate. The initiative proposes to migrate current systems toward an environment where business information can be shared freely among acquisition systems within and among agencies. The project is also expected to address the technology, value-added services, and operational capabilities as they relate to the acquisition lifecycle in a unified and fully integrated environment. IAE will allow agencies to continue use of their procurement systems while leveraging capabilities provided by the IAE.

The vision for the IAE is to provide a secure business environment, one that facilitates and supports cost-effective acquisition of goods and services in support of mission performance. The IAE Team responsible for bringing this about has set up some goals for the project which include:

- Creating a simpler, common, integrated business process for buyers and sellers that promotes competition, transparency and integrity.
- Increasing data sharing to enable better business decisions in procurement, logistics, payment and performance assessment.
- Taking a unified approach to obtain modern tools to leverage investment costs for business related processes.

Integrated Acquisition Environment eGov Initiative Summary

It will permit agencies to share common data elements that will lead to better informed procurement, logistical, payment and performance assessment decisions. It will also allow agencies to make maximum use of E-market approaches.

Value to Citizen: Cost savings to the taxpayer based on a more effective process that leverages scale with more supplier opportunities.

Value to the Government: Will make the purchase of goods and services faster and less expensive, while providing more access to small business.

To achieve these goals, the IAE Team will:

- Deploy a single point of registration and validation of supplier data accessed by all agencies. Implement a central point for consolidated collection and access of statistical and management information related to government acquisitions Implement a directory of GWAC and MAC contracts to simplify selection and facilitate leverage of Government buying.
- Develop a standard glossary and vocabulary to facilitate exchange of data between and within agencies
- Transform intra-governmental ordering & billing to enable universal electronic processes, reduce payment & collection problems, & enable swift & accurate revenue & expense elimination processes for preparing consolidated financial statements

Today the IAE Team is developing five modules that provide to begin the basic framework or foundation that will allow the vision of simplifying and unifying the business environment. These modules are:

1. eCatalogs will provide a common on-line access to GWACS /MACS contracts to simplify selection and facilitate leverage of Government buying. Long-term, it will provide consolidated eCatalogs for all federal customers and establish a common framework for consolidated viewing and Government purchasing.

2. Business Partner Network (BPN) will provide a single point of registration and validation of supplier data accessed by all agencies using the current Central Contractor Registration (CCR) as the foundation.

3. Federal Procurement Data System - Next Generation (FPDS-NG) redesigns the existing Federal Procurement Data System (FPDS) and provides a central point for consolidated collection and access of statistical and management information related to government acquisitions.

4. Intra-Governmental Transactions (IGT) will transform intra-governmental ordering and billing to enable universal electronic processes, reduce payment and collection problems, and enable swift and accurate revenue and expense elimination processes for preparing consolidated financial statements.

5. Standard eTransactions establishes standard glossary and vocabulary to facilitate exchange of data between and within agencies.

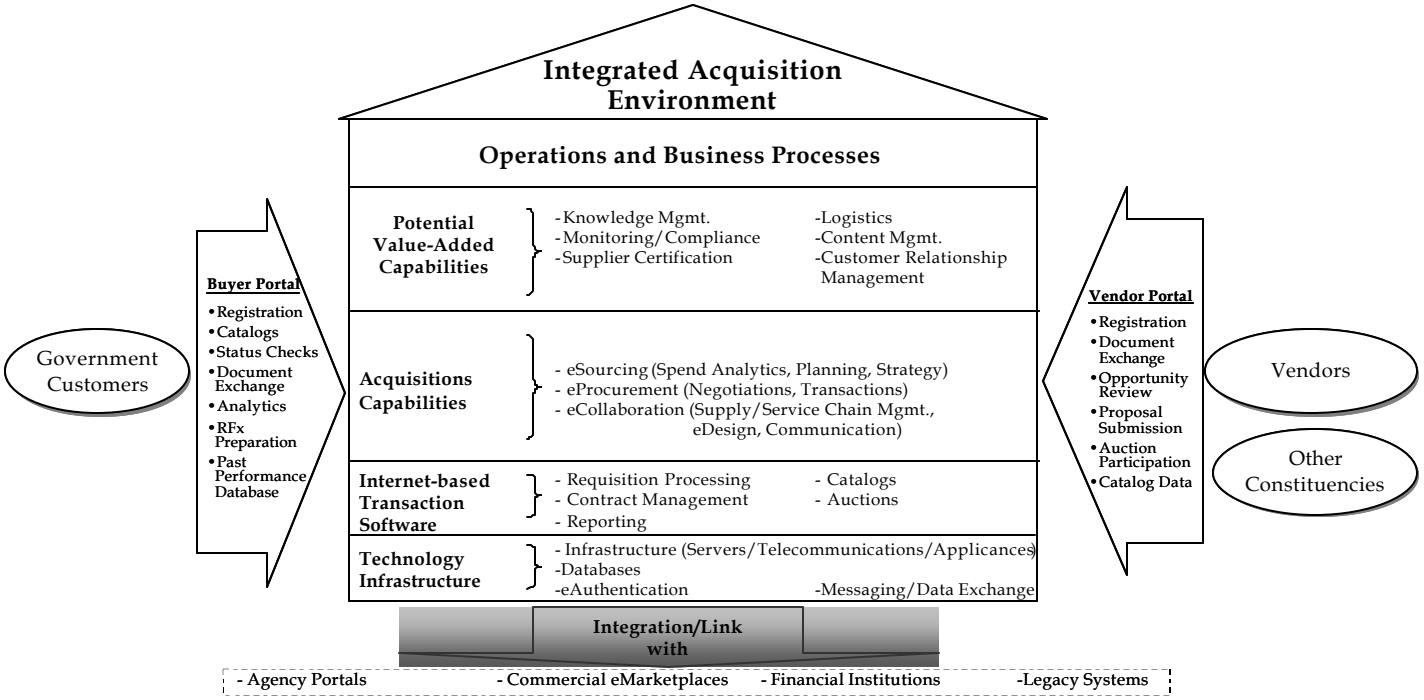
Progress date toward making the IAE a reality has included:

1. Briefing Mark Forman, eGov Portfolio Managers, CIO's and CFO's to confirm consensus on vision and goals.
2. Assembling a team with volunteers from 18 agencies.
3. Drafting a charter and a balanced scorecard for IAE.
4. The IAE Team joining the GSA Joint Program Management Office.

Ultimately the IAE will become a federal eMarketplace that serves as a resource the agency-specific eMarketplaces will leverage to improve acquisition processes and reduce costs. The IAE will provide an access point where Government, vendors, and other constituencies come together to conduct commerce and to collaborate.

As presented in the conceptual model in Figure 4.2 on the next page, the IAE will be comprised of technology, value-added services, and operational capabilities required to address the entire acquisitions lifecycle in a unified and fully integrated manner. Government customers will be able to access IAE either through the buyer portal or through direct integration of their procurement systems with IAE. Vendors will use IAE as the primary point for conducting business with the government. Standalone initiatives will be “tied” together under the IAE, resulting in maximum benefit. For example, common standards across applications will ensure that various systems can share information.

Figure 4.2 The IAE Conceptual Model



On December 10, 2001 the IAE program manger, Teresa Sorrenti, Director, Acquisition Operations & Electronic Commerce Center, GSA, issued a draft business case and capital plan. The purpose of the Business Case and Capital Plan is to provide the justification and costs for an Integrated Acquisition System (IAE). Based on the analysis conducted to date, the expected total investment cost associated with the full roll-out of the IAE is $178 million with total life-cycle cost (FY02– FY11) of $263 million.

The characteristics of this new environment are required to be:

- Internet based – Accessible anytime, anywhere by anyone
- Available 24x7 – Maximum availability to support business world wide
- Configurable – Workflow and other Agency-specific requirements are accommodated through a set configuration tools
- Interoperable – Legacy system integration are provided through a series of connectors imbedded in the applications providing users
- Secure – Appropriate levels of security are provided to deliver fully secure online electronic transactions
- Transparent to the user – Application ownership is transparent to the user
- Collaborative – Communities of practice will be encouraged and nurtured
- Evolutionary – Capabilities of the environment must be continuously enhanced to meet the needs of the stakeholders
- Appliance independent—ability to be used by any type of hardware and hardware platforms (computer, PDA, etc.)

- Maximize use of existing capacity – build on successful databases and systems that are in place

IAE Strategic Management

Roles and Responsibilities for managing the IAE initiative involve many individuals and groups. Here is a synopsis of each entity's roles and responsibilities.

IEEB & the PEC

The Internal Efficiency and Effectiveness Board (IEEB), along with the Procurement Executive Council's (PEC) Electronic Commerce (EC) Chair who is acting as champion for IAE, provide enterprise-wide perspective, guidance, direction, and policy for the IAE program. Together, they ensure that members of the IEEB and PEC agree on the IAE vision and that all programs related to enabling that vision are discussed and agreed upon in the IEEB forum. The IEEB may also call upon advisors with specialized skills as needs dictate. Bottom-line, the IEEB is a forum to ensure buy-in is created before any major initiatives are undertaken.

IAE Program Manager

The IAE Program Manager provides leadership for the IAE's specific projects and is responsible for managing the IAE and overseeing the implementation activities. While managing the implementation and providing supporting resources to the individual agencies, the program manager also makes recommendations to the IEEB for resolution and is responsible for implementing the IEEB's recommendations or decisions.

Support contractors will provide the Program Manager with ongoing support as well as in analysis and review of plans and work products. This structure provides the program manager, along with the IAE JPMO, with an independent source of analysis and support and will enable them to maintain a high-level focus.

The Core Partner Team

The Core Partner Team (CPT) plays a critical role in the design, testing, and implementation of IAE Web services. The CPT provides hands-on support to the various IAE projects, while serving as the primary liaison and communication channel between the designated government agencies and the IAE JPMO. The CPT consists of representatives from various government agencies. The CPT lead and an IAE JPMO representative are responsible for driving recommendations from the CPT through the IAE JPMO to the IEEB.

The CPT's overriding objective is to ensure that stakeholder agencies' interests are represented throughout the acquisition and implementation of an IAE.

Consulting Partners

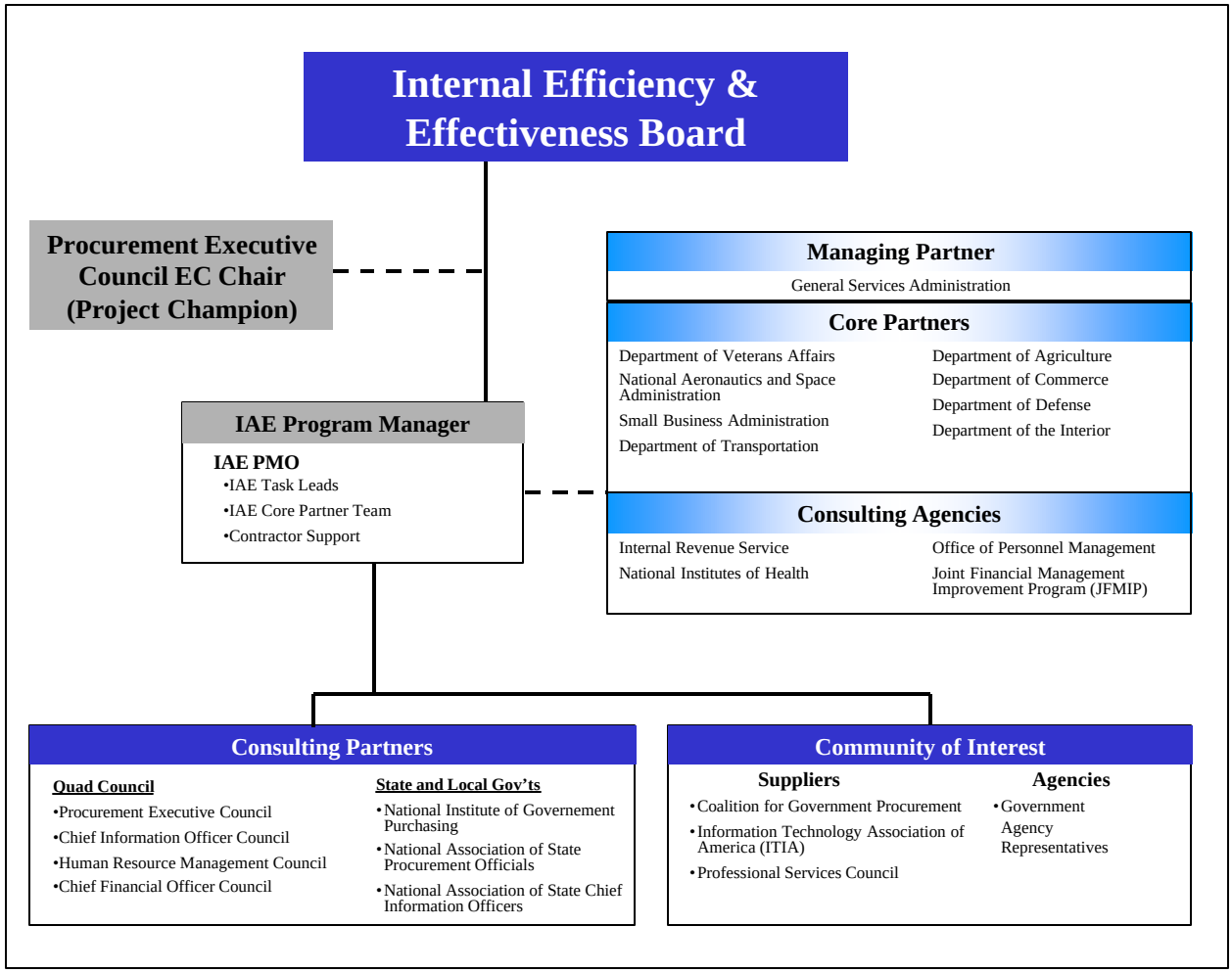
Consulting Partners (CP) will be brought in to the IAE program and IEEB meetings to provide subject matter expertise on emerging government initiatives, policy, privacy and other administrative issues needed to steer IAE to a successful implementation.

Communities of Interest

Community of interest groups such as the Coalition for Government Procurement, Information Technology Association of America (ITAA) and Professional Services Council are invited to attend IEEB meetings as observers as a means of enabling these groups to communicate the IAE initiatives to their constituents and to solicit feed back. Another community of interest is the agency users.

The composition and relationships between the IEEB, the IAE JPMO, the Core Partner Team, the Consulting Partner Team and Community of Interest group, and contractor support are demonstrated in Figure 4.5

Figure 4.3 IAE Leadership



Congressional Initiatives

A series of complex questions concerning eCommerce are facing Congress. They include:

- How viable is the continuation of the Internet tax moratorium;
- Can a consensus be reached on an eCommerce tax policy;
- What are the appropriate roles of government and industry in U.S. policies on encryption, digital signatures, and data storage and protection for eCommerce;
- What is the best mechanism for achieving standard and consistent eCommerce policies between the United States and other nations;
- Will the United States, by virtue of its large proportion of Internet use and eCommerce development, try to dominate global eCommerce policy?

Internet use erases national boundaries, and the growth of eCommerce on the Internet and the complexity of these issues may mean that domestic and global eCommerce policies become increasingly intertwined.

Congressional Acts

Advances in the use of information technology and the Internet are transforming the way federal agencies communicate, use information, deliver services, and conduct business. To increase the ability of citizens to interact with the federal government electronically, several pieces of legislation have been enacted. Below is a description of several of these Acts.

Electronic Government Act

On November 15, 2002, the House and Senate passed the Electronic Government Act that, among other things, will push federal agencies to make wider use of the Internet to provide information and services to citizens. For instance, the legislation would require regulatory agencies to conduct rule-making on the Internet by publishing proposed rules on their Web sites and accepting comments from the public via e-mail. The bill also funds e-government initiatives during FY03 to the tune of $45 million and provides for an additional $345 million over the next five years to spend on projects that promote e-government efforts.

Agencies also would be required to post on their Web sites all of the information they now are required to publish in the Federal Register. Federal courts also would have to provide more information to citizens over the Internet. The bill requires them to post rulings on cases and other information on their Web sites.

A key aim of the bill is to improve the federal Internet portal, FirstGov, to make it easier for users to find the information and services they are seeking. As one step, the bill calls for creating a directory of all government Web sites. Rather than simply a list, the directory is to be built on a detailed taxonomy that enables users to search for information based on subject rather than on the agency that possess it.

The E-Government Act of 2002 also strengths protections on privacy to prevent inappropriate disclosure of personally identifiable information that is maintained by federal agencies.

Senator Lieberman, the bill's sponsor, said the intent of his legislation is to get the federal government to take "full advantage of the Internet and other information technologies to maximize efficiency and provide the public with seamless, secure online information and services."

The bill also calls for better recruiting and training for federal information technology professionals.

Government Paperwork Elimination Act (GPEA)

The act requires that by October 21, 2003, federal agencies provide the public, when practicable, the option of submitting, maintaining, and disclosing required information—

such as employment records, tax forms, and loan applications—electronically, instead of on paper.

Issues with respect to fully implementing GPEA have emerged and must be overcome. The first major issue is that security assurances provided through the use of PKI technology will be needed to enable sensitive electronic transactions to take place. Second is the need to plan for and implement computer network and telecommunications infrastructures to provide the capacity and connectivity needed to support the electronic traffic generated by new or enhanced electronic offerings. In some cases, this will require the support of new enterprise-wide infrastructure. Third, agencies will need to have the capacity to store, retrieve, and dispose of electronic records. This issue is of particular concern because many electronic systems are already being developed and implemented which may end up incompatible with Government-wide electronic record keeping standards which have not yet been finalized.

OMB has issued guidance which lays out a process and principles for agencies to employ in evaluating the use and acceptance of electronic documents and signatures. The guidance calls for agencies to examine business processes that might be revamped to employ electronic documents, forms, or transactions; identify customer needs and demands; consider the costs, benefits, and risks associated with making the transition to electronic environments; and develop plans and strategies for record keeping and security. In October 2000, agencies submitted plans that outlined their strategies for paperwork elimination in accordance with GPEA requirements.

In a GAO report issued recently (GAO-01-100), it was reported that many agencies are making progress toward providing useful information to the citizenry. However, because agencies were inconsistent in what they reported, the GAO found it impossible to truly assess the government's progress in complying with the law. As a result, the Office of Management and Budget (OMB), which is responsible for monitoring compliance, will be hard pressed to successfully determine whether agencies are making progress toward meeting their 2003 deadline. The report suggested that the OMB collect more detailed information from the agencies, including agency strategies for complying with the Paperwork Reduction Act and their priorities for doing so. The GAO also recommended that OMB "hold agencies accountable for achieving results by linking GPEA activities to agency-wide and program-specific performance measures and outcomes." This report seems to suggest that there will be more emphasis on meeting the spirit of the GEPA in the coming months.

What does GPEA mean for the procurement profession?

For the procurement profession, this will mean taking strategic actions, such as examining business processes that might be revamped to employ electronic documents, forms, or transactions. Transforming manual processes where it makes sense to do so is an integral part of complying with the GPEA.

Digital Signature Legislation

The main congressional interests in electronic signatures focus on enabling electronic signatures to carry legal weight in place of written signatures, removing the inconsistencies among state policies that some fear may retard the growth of eCommerce, and establishing federal government requirements for use of electronic signatures when filing information electronically. In a related area, in 2000 Congress considered and passed legislation establishing standards for transmission and verification of electronic transmissions.

The Electronic Signatures in Global and National Commerce Act ("E-SIGN") (Public Law 106-229) enacted on June 30, 2000. E-SIGN eliminates legal barriers to the use of electronic technology to form and sign contracts, collect and store documents, and send and receive notices and disclosures. E-SIGN also eliminates barriers to electronic commerce, while providing consumers with protections equivalent to those available in the world of paper-based transactions.

Under E-SIGN, companies can contract online to buy and sell a broad array of products and services without waiting for physical documents to be mailed back and forth. E-SIGN also applies broadly to Federal and state statutes and regulations governing private sector (including business-to-business and business-to-consumer) activities.

Agency activities and requirements that involve information, but do not relate to business, commercial, or consumer transactions, are not within the scope of this legislation. Instead they are addressed by the Government Paperwork Elimination Act (GPEA). Certain laws and regulations involve both GPEA and E-SIGN, especially with respect to record retention requirements in agency regulations that relate to business, consumer and commercial transactions.

When the E-Sign Act was signed, it was hailed as clearing the way for multimillion-dollar transactions to be completed online with confidence that parties to the deal would be legally bound dozens of agencies. Since this time government agencies, such as the Army, the U.S. Mint, the Kansas Department of Transportation and the district attorney for Stanislaus County, California have begun using e-signatures, but cautiously. In most cases, eSignatures remains mostly limited to administrative matters within the agency.

> *Electronic signatures* are a means of verifying the identity of a user of a computer system to control access to, or to authorize, a transaction.

Unfortunately the value of eSignatures, reducing organizational costs and saving time has not been the resounding success they were once thought they would be. According to Ari Schwartz, a policy analyst at the Center for Democracy and Technology part of the problem is that no single type of e-signature has emerged as the standard. Another reason for the slow adoption of eSignatures is "the fear factor." Basically, people are often reluctant to adopt unfamiliar technologies.

One widely used eSignature software application ApproveIt produced by the Canadian company Silanis Technology Inc.. ApproveIt runs on Microsoft Windows 9x, NT 3.51, NT 4.1 and 2000, and PC users run the application with the default encryption in their browsers and can digitally sign documents in Microsoft Word and Excel, Adobe Acrobat, JetForm FormFlow, Extensible Markup Language and Hypertext Markup Language formats. Each time a user signs, a field pops up for entering a password and personal identification number and once signed, the eDocument can not be changed without the use of original signer's password and PIN.

> ***Encryption*** is the encoding of electronic messages to transfer important information and data, in which "keys" are needed to unlock or decode the message.

Protection and Security Issues

There are a variety of protection and security issues that affect eCommerce growth and development. Encryption is an important element of eCommerce security, with the issue of who holds the keys at the core of the debate.

Until 1998, the Clinton Administration promoted the use of strong (greater than 56 bits) encryption domestically and abroad only if the encryption product had "key recovery" features in which a "key recovery agent" holds a "spare key" to decrypt the information. Under this policy, the Clinton Administration tried to use export control policy to influence companies to develop key recovery encryption products. There was no control over domestic use of encrypted products, but the Clinton Administration hoped that companies would not want to develop two sets of encryption products, one for the United States and another for the rest of the world. However, businesses and consumer groups opposed this approach. For many U.S. businesses, the Clinton Administration's export policy had the potential to impede their efforts to become part of the growing eCommerce global phenomena by forcing them to create two versions of the same product. Consumer groups opposed government policies determining who would have access to spare keys.

In September 1999, United States announced plans to further relax its encryption export policy by allowing export of unlimited key length encryption products, with some exceptions. It also advocated reduced reporting requirements for those firms that export encrypted products. The rules for implementing this policy were issued in September 2000 by the Bureau of Export Administration in the Department of Commerce. While this new policy appears to have addressed both industry and consumer concerns, many in Congress will likely maintain a key interest in this issue, both in the way it affects eCommerce and how the government may use its encryption policy as a form of government surveillance.

ECommerce Taxation

On October 21, 1998, Congress passed the Internet Tax Freedom Act, as Titles XI and XII of the Omnibus Consolidated and Emergency Supplemental Appropriations Act of 1999 (P.L. 105-277, 112 Stat 2681).

Among its provisions, the Act:

(1) Imposed a 3-year moratorium on the ability of state and local governments to levy certain taxes on the Internet;

(2) Prohibits taxes on Internet access, unless such a tax was generally imposed and actually enforced prior to October 1, 1998;

(3) Creates an Advisory Commission on Electronic Commerce (ACEC), which may make recommendations to Congress on eCommerce taxation in the United States and abroad; and

(4) It opposes regulatory, tariff, and tax barriers to international eCommerce and asks the President to pursue international agreements to ban them.

The ACEC made its policy recommendations, after much debate and some divisiveness, to Congress on April 3, 2000. The ACEC called for, among its recommendations, extending the domestic Internet tax moratorium for five more years, through 2006; prohibiting the taxation of digitized goods over the Internet, regardless of national source; and a continued moratorium on any international tariffs on electronic transmissions over the Internet.

Congressional interest in Internet taxation has weighed concerns about impeding the growth of eCommerce by taxing revenues; enforcement and compliance of an Internet tax; and policies outside of the United States which do not impose an Internet tax.

On November 28, 2001 President Bush signed the Internet Tax Non-Discrimination Act, H.R. 1552, which extends the moratorium on new, special, and discriminatory Internet through November 1, 2003.

Issues for Congress

The continued growth of the Internet for personal, government, and business purposes may be affected by a number of issues being debated by Congress. Among them are Internet privacy, computer security, access to broadband (high-speed) services, the European Union, and the role of a Federal CIO.

Internet privacy

Individuals and businesses are increasingly concerned about, particularly the privacy of personally identifiable information collected by Web site operators. Congress is

debating whether industry self-regulation will solve these problems, or if legislation is needed.

Internet privacy issues encompass a range of concerns that the Internet makes it easier for governmental and private sector entities to obtain information about consumers and possibly use that information to the consumers' detriment.

The two major issues today are the extent to which Web site operators collect personally identifiable information and share that information with third parties, and whether law enforcement entities or employers are monitoring electronic mail (e-mail) and Web surfing activities. Although not an Internet privacy issue per se, consumer identity theft often arises in the Internet privacy context because of the perception that Social Security numbers and credit card numbers are more readily accessible because of the Internet.

More than 30 bills in the 106th Congress addressed such Internet privacy issues in whole or in part. The only legislation that cleared Congress and was signed into law, however, were amendments to the FY2001 Transportation Appropriations Act (P.L. 106-346) and the FY2001 Treasury-General Government Appropriations (including in the Consolidated Appropriations Act, P.L. 106-554) addressing the use of "cookies" on certain federal agency Web sites.

Computer Security

Computer security issues for the Congress include oversight and improvement of the protection of federal computer systems and cooperation with and between the private sectors.

As use of the Internet grows, so has concern about security of information and on the Internet. Widespread media attention to recent security-related incidents (the most recent being the Code Red and Code Red II worms, which disrupt Windows-based Internet servers) represents the tip of the iceberg. Every day, persons gain access, or try to gain access, to someone else's computer without authorization to read, copy, modify, or destroy the information contained within. These persons range from juveniles to disgruntled (ex)employees, to criminals, to competitors, to politically or socially motivated groups, to agents of foreign governments.

There is some evidence to suggest, however, that the number of incidents is increasing. According to the Computer Emergency Response Team (CERT) at Carnegie-Mellon University, the number of incidents reported to it has grown just about every year since the team's establishment—from 132 incidents in 1989 to almost 23,000 incidents in 2000. In just the first half of 2001, over 15,000 incidents have been reported. Additionally, the Computer Security Institute (CSI), in cooperation with the Federal Bureau of Investigation (FBI), has conducted an annual survey since 1996 to measure the extent to which computers are "hacked" into. (Hacking refers to the unauthorized entry of a computer system.) For those responding to the question of whether they have

experienced unauthorized use of their computer systems in the last 12 months, the percentage answering yes has risen from 42% in 1996 to 85% in 2001.

Aside from losses of information and data, there is also growing concern that unauthorized access to computer systems could pose an overall national security risk should it result in the disruption of the nation's critical infrastructures (e.g., transportation systems, banking and finance, electric power generation and distribution). These infrastructures rely increasingly on computer networks to operate, and are themselves linked by computer and communication networks.

To address this concern, President Clinton issued a Presidential Decision Directive (PDD-63) in May 1998. PDD-63 set as a national goal the ability to protect critical infrastructures from intentional attacks (both physical and cyber) by 2003. It set up organizational and operational structures within the federal government to help achieve this goal and called for a coordinated effort to engage the private sector.

The security of private-sector computer systems varies. Some industries have been at the forefront of security (e.g. banking and finance), while others are just now appreciating the threat to and vulnerabilities of their systems. In response to PDD-63, some of the sectors that operate critical infrastructures have formed Information Sharing and Analysis Centers (ISACs) and across sectors they have formed the Partnership for Critical Infrastructure Security. The goal of these associations is to learn from each other's experiences and to quickly respond to new attacks and vulnerabilities.

Congress continues to oversee agencies' performance in meeting their obligations under the Computer Security Act, OMB Circular A-130 and now the Federal Information Security Reform Act. Also, Congress may revisit procedures and penalties associated with investigating and prosecuting computer crimes in the next Congressional session. Additionally, Congress may face questions about how to strike a balance between its efforts to promote Internet privacy and Internet security. While one cannot protect privacy without security, there are some who fear that without proper checks, efforts to promote security could come at the expense of privacy. On the other hand, as the health care industry and the financial industry prepare to meet new privacy regulations and guidelines, the costs associated with ensuring privacy (via greater access controls, etc.) may become an issue.

Broadband Internet Access

Broadband Internet gives users the ability to send and receive data at speeds far greater than current Internet access over traditional telephone lines. With deployment of broadband technologies beginning to accelerate, Congress is seeking to ensure fair competition and timely broadband deployment to all sectors and geographical locations of American society.

Broadband Internet access gives users the ability to send and receive data at speeds far greater than conventional "dial up" Internet access over existing telephone lines.

New broadband technologies—cable modem, digital subscriber line (DSL), satellite, and fixed wireless Internet—are currently being deployed nationwide by the private sector. Concerns in Congress have arisen that while the number of new broadband subscribers continues to grow, the rate of broadband deployment in urban and high income areas appears to be outpacing deployment in rural and low-income areas, thereby creating a potential "digital divide" in broadband access.

The Telecommunications Act of 1996 authorizes the Federal Communications Commission (FCC) to intervene in the telecommunications market if it determines that broadband is not being deployed to all Americans in a "reasonable and timely fashion." At issue is what, if anything should be done at the federal level to ensure that broadband deployment is timely, that industry competes on a level playing field, and that service is provided to all sectors of American society.

Currently, the debate in Congress centers on three approaches. Those are:

1) Easing certain legal restrictions and requirements (imposed by the Telecommunications Act of 1996) on incumbent telephone companies that provide high-speed data (broadband) access;
2) Compelling cable companies to provide "open access" to competing Internet Service Providers (ISPs); and
3) Providing federal financial assistance for broadband deployment in rural and economically disadvantaged areas.

The European Union

While much of the debate on the government's role in eCommerce has focused on domestic issues in the United States, another important player—the European Union (EU)--will likely have an important impact on global eCommerce policy development.

The EU is very active in eCommerce issues. In some areas there is agreement with U.S. policies, and in some areas there are still tensions. While the EU as an entity represents a sizable portion of global Internet commerce, across national boundaries, Internet use and eCommerce potential varies widely. Supporters state that eCommerce policy should not be set by EU bureaucrats in Brussels. Therefore, the EU has approached eCommerce with what one observer has called a "light regulatory touch." Among contentious issues, the EU has supported the temporary moratorium on global eCommerce taxes, and supports making the moratorium permanent.

But the EU has taken a different approach than U.S. policy by treating electronic transmissions (including those that deliver electronic goods such as software) as services. This position would allow EU countries more flexibility in imposing trade restrictions, and would allow treating electronic transmissions—including eCommerce—as services, making them subject to the EU's value-added tax. The EU also has taken a different approach to data protection and privacy, key components for strengthening eCommerce security and maintaining consumer confidence. The EU actions prohibit the

transfer of data in and out of the EU, unless the outside country provides sufficient privacy safeguards. The U.S. position is to permit industry self-regulation of data protection and privacy safeguards.

Spam

One aspect of increased use of the Internet for electronic mail (e-mail) has been the advent of unsolicited commercial e-mail (UCE), also called junk e-mail, spam, or unsolicited bulk e-mail.

Opponents of junk e-mail such as the Coalition Against Unsolicited Commercial Email (CAUCE) argue that not only is junk e-mail annoying, but its cost is borne by consumers, not marketers. Consumers are charged higher fees by ISPs that must invest resources to upgrade equipment to manage the high volume of e-mail, deal with customer complaints, and mount legal challenges to junk e-mailers. CAUCE's founder, Ray Everett-Church, is cited in the January 31, 2001 edition of *Newsday* as saying that some ISPs estimate that spam costs consumers about $2-3 per month. Some want to prevent bulk e-mailers from sending messages to anyone with whom they do not have an established business relationship, treating junk e-mail the same way as junk fax.

Proponents of unsolicited commercial e-mail argue that it is a valid method of advertising. The Direct Marketing Association (DMA), for example, argues that instead of banning unsolicited commercial e-mail, individuals should be given the opportunity to notify the sender of the message that they want to be removed from its mailing list—or "opt-out." In January 2000, the DMA launched a new service, the E-mail Preference Service, where any of its members that send UCE must do so through a special Web site where consumers who wish to "opt out" of receiving such mail can register themselves [http://www.e-mps.org]. Each DMA member is required to check its list of intended recipients and to delete those consumers who have opted out. While acknowledging that the service will not stop all spam, the DMA considers it "part of the overall solution". Critics argue that most spam does not come from DMA members, so the DMA plan is insufficient.

To date, the issue of restraining junk e-mail has been fought primarily over the Internet or in the courts.

Congress remains interested in the issue at the federal level and has introduced several bills in both the 105th and 106th Congresses. However, there has been no legislation that has cleared Congress but some states have passed their own legislation. According to the National Conference of State Legislatures, as of March 2000, 15 states had enacted such laws and 16 introduced spam bills during their 2000 legislative sessions.

Appendix 1 How the Web Was Spun: A Historical Perspective

In the United States, the Internet began as a need for a military command and control system that could continue to operate in the event of nuclear war.

In 1964, a researcher for the Rand Corporation, Paul Baran, designed a computer communications network under a contract with the Department of Defense's Defense (DOD) Advanced Research Projects Agency (DARPA). To travel over the system, a message was cut into strips and stuffed into "electronic envelopes," called packets, each marked with the addresses of the sender and the intended receiver. The packets were then released like confetti into a web of interconnected computers, where they were tossed around over high-speed wires in the general direction of their destination and reassembled when they arrived. This packet-switching network began the technological revolution brought about by the Internet.

Shortly after this network was created, ARPANET came into being. Created in the late 1960s, ARPANET allowed DOD's contractors and staff and universities that were working on defense projects to communicate electronically and to share the computing resources available from only a few powerful geographically dispersed computers. In the latter part of the 1970's, many of the universities and research facilities that were using the ARPANET began connecting their local area networks to the ARPANET, which eventually became a core network of the ARPA Internet. The ARPA Internet was an inter-network of many networks using the Transmission Control Protocol/Internet Protocol (TCP/IP) communication language as its underlying architecture.

In 1984, ARPANET was officially split into two networks: ARPANET and the Defense Data Network (DDN). The DDN remains in use today as one of the Internet's component networks and continues to be run by DOD as the military's network.

In 1985, the National Science Foundation (NSF) began funding several national supercomputer centers and made them available for researchers in universities across the country. Also by this time many state and regional universities had developed their own local and regional networks. Also by this time, NSF had funded a 56 kilobits per second (Kbps) network linking the five original supercomputer centers and offered to let any state and regional university computer centers gain remote access to the supercomputer centers. (By comparison, networks today can speed messages through a network at a rate up to 622 megabits per second (Mbps), with the possibility of increasing the performance to 2.4 gigabits (Gbps) in the future.)

One Kilobit = a thousand (10^3) bits.

One Megabit = a million (10^6) bits.

One Gigabit = is one billion bits (10^9)

A bit is the smallest unit of data in computing, with a value of either 0 or 1

In addition to research, the universities connecting to the NSF's supercomputers found that the network was useful for electronic mail, electronic file transfers, and newsgroups.

As a result traffic on the network rose dramatically and thus began the basic Internet infrastructure, as we know it today.

In November 1987, the NSF awarded a contract to Merit Network, Inc., in partnership with IBM, MCI, and the state of Michigan, to upgrade and operate the NSFnet backbone. (Backbones are the first level of connection to the Internet.) The purpose of the NSFnet backbone by this time was to link the growing "regional" networks created by various university systems.

In May 1993, the NSF radically altered the architecture of the Internet as the government desired to get out of the backbone business. In its place, NSF designated a series of Network Access Points (NAPs) where private commercial backbone operators could "interconnect." In 1994, NSF announced that NAPs would be built in San Francisco, New York, Chicago, and Washington, D.C. The four NSF-awarded Network Access Points were provided by Ameritech, PacBell, Sprint, and MFS Datanet. An additional interconnection point, known as MAE-West, was provisioned by MFS Datanet on the West Coast.

On April 30, 1995, the NSFnet backbone was essentially shut down, and the NAP architecture became the Internet.

By 1996, Internet traffic, including eCommerce, was doubling every 100 days. By mid-1997, the U.S. Department of Commerce reported that just over 4 million people were using the Internet; by the end of 1997, that figure had grown to over 10 million.

Today the Internet is an international, cooperative computer "network of networks" that links many types of users, such as governments, schools, libraries, corporations, hospitals, and individuals, among others. At the end of 2000 there were approximately 200 million Internet users worldwide. Of the Worldwide Internet users, the United States and Canada represented the largest percentage (56.6%), followed by Europe in a distant second place (23.4%), followed by the Asian Pacific region (15.8%), Latin America (3.1%), the Middle East (0.5%) and Africa (0.6%). As a point of interest, the Asian Pacific region is said to have an Internet use growth rate nearly double that of the United States and Canada. If this growth rate is sustained, the U.S. and Canada share of Internet use may decline to 36% by 2005.

As of April 2001, the number of Internet service providers (ISPs) totaled some 9,600, more than six times the 1,500 ISPs that existed in mid-1996. ISPs purchase access to the Internet from the companies running the NAPs and then provide access to their customers.