ELECTRONIC COMMERCE FOR BUYERS AND SELLERS

*A Strategic Plan for
Electronic Federal
Purchasing and Payment*

President's Management Council's Electronic Processes Initiatives Committee
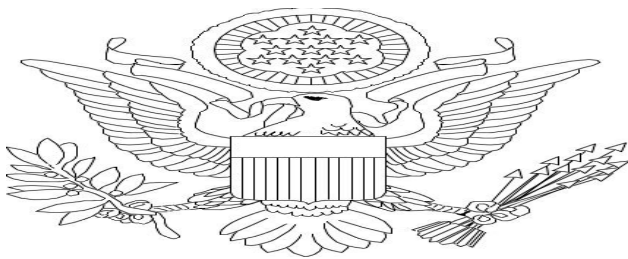**Washington, D.C.**
March 1998

FROM PAPER TO ELECTRONICS

Electronic Commerce

for

Buyers and Sellers

A Strategic Plan for
Electronic Federal
Purchasing and Payment

Report of the
Electronic Processes Initiatives Committee of the
President's Management Council

March 1998

http://policyworks.gov/epic

The Vice President
The White House
Washington, DC 20500

Dear Mr. Vice President:

As members of the President's Management Council's Electronic Processes Initiatives Committee (EPIC), we are pleased to present to you the report: *Electronic Commerce for Buyers and Sellers, A Strategic Plan for Electronic Federal Purchasing and Payment*. This report was submitted to the Congress in response to a requirement in Section 850 of the fiscal year 1998 Department of Defense Authorization Act. This report describes our vision that, by the year 2001, all Federal agencies will support their programs by making available customer-friendly electronic purchasing tools integrated with end-to-end commercial processing of payment, accounting and performance reporting information.

This vision is intended to capitalize on the common interests of buyers, sellers, and technology providers by rapidly pursuing the largest market segments of transactions. From this base of operations, work will proceed to expand the list of integrated buying and paying functions. In preparing this report, we consulted and received excellent input from the Federal Procurement Council, the CFO Council, and the CIO Council.

We echo your call for a government that works better and costs less and believe that a clearly defined plan for electronic commerce can create a solid and modern procurement and finance infrastructure to replace the multitude of systems and processes that exist today. We look forward to working with you across agencies and functional areas to find common solutions that accomplish the goals set forth in this report.

Sincerely,

G. Edward DeSeve   David J. Barram
Deputy Director for Management (Acting)   Administrator
Office of Management and Budget   General Services Administration

John D. Hawke, Jr.   William J. Lynn
Under Secretary for Domestic Finance   Under Secretary of Defense (Comptroller)
Department of the Treasury   Department of Defense

cc: President's Management Council

Contents

EXECUTIVE SUMMARY

All agencies will support programs by making available customer-friendly electronic purchasing tools integrated with end-to-end commercial electronic processing of payment, accounting and performance information by 2001.

The 22 million United States Government purchase transactions each year present a market opportunity within a new wave of technology enabled trade, broadly defined as "Electronic Commerce" (EC). Our vision is that, by the year 2001, all Federal agencies will support their programs by making available customer-friendly electronic purchasing tools integrated with end-to-end commercial electronic processing of payment, accounting and performance reporting information. In an electronic environment, selling to the government will be simpler. Sellers of products and services will enjoy easier access to market opportunities. Sellers will not have to disrupt existing and developing commercial relationships for purchasing and payment support services. Within the government, buyers should find buying simpler, faster and easier.

Turning the potential of EC into reality requires that sellers, service providers, and government buyers see a strong business case for making investments in EC development, operations and continuous improvement. The Federal market can be viewed in segments organized by such attributes as size of purchase, frequency of purchase and buying technique employed. Viewing market segments this way can help both the government and private sector assess the business case and rank order investments in EC for each market segment.
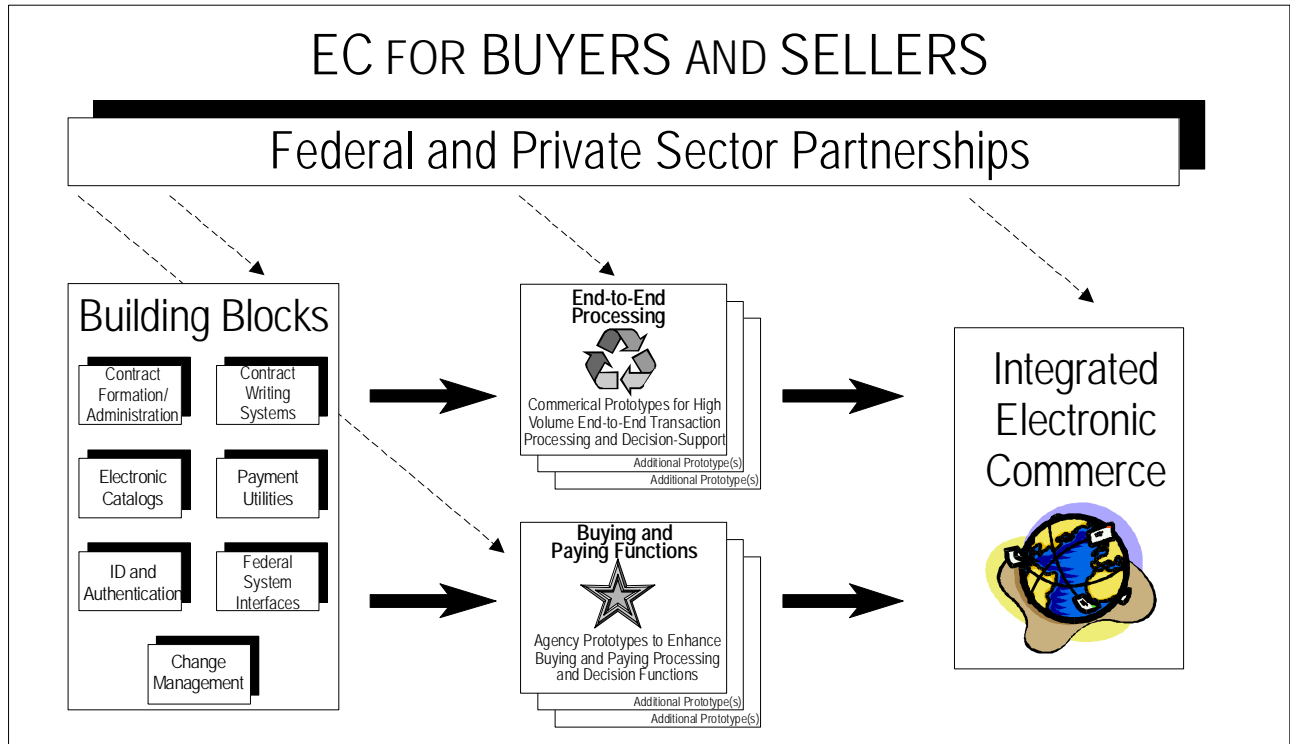
The combination of next-generation purchase cards and electronic catalogs provides immediate opportunity for migration to large-scale EC for up to 85% of Federal purchases.

This strategy -- based on building a business case for both buyers and sellers -- presumes program managers will rely upon cost effective commercial ordering and payment transaction processing services for high-volume activity. Government-unique EC systems will be developed only as a last resort for low transaction volume activity, where industry has not invested in platforms to provide commercial services.

EC can greatly enhance the government's ability to simplify key functions of the acquisition cycle for many different types of buys in different dollar ranges.

Seven policy principles -- based on stakeholder needs and driving forces in the environment -- will guide EC investment. These principles will be used to promote investment in EC projects that support commercial service, market-based EC development policies. In the transition to EC, Federal agencies should: (1) make the buying and paying process easier and more efficient; (2) facilitate best value buying and paying; (3) take advantage of proven commercial applications; (4) outsource transaction processing; (5) assign financial liability based on ability to manage risk; (6) monitor investments for return; and (7) manage the change process.

The Electronic Processes Initiatives Committee (EPIC) of the President's Management Council (PMC) will provide leadership across organizational boundaries so that coordinated Federal EC work activities can proceed along three related tracks: (1) fostering partnerships within the Federal Government, with states and with the private sector during 1998; (2) reengineering and integrating buying for high-volume purchases with

EC FOR BUYERS AND SELLERS

Federal and Private Sector Partnerships

Building Blocks

Contract Formation/ Administration	Contract Writing Systems
Electronic Catalogs	Payment Utilities
ID and Authentication	Federal System Interfaces
Change Management	

End-to-End Processing

Commerical Prototypes for High Volume End-to-End Transaction Processing and Decision-Support

Additional Prototype(s)
Additional Prototype(s)

Buying and Paying Functions

Agency Prototypes to Enhance Buying and Paying Processing and Decision Functions

Additional Prototype(s)
Additional Prototype(s)

Integrated Electronic Commerce

end-to end ordering and payment processing through the use of purchase cards tied to payment utilities and electronic catalogs by 2000; and (3) reengineering additional buying and paying functions by 2001. This vision is intended to capitalize on the common interests of buyers, sellers, information technology providers and financial service providers by rapidly pursuing the largest segment of transactions.   From this base of operations, work will proceed to expand the list of buying and related paying functions that can be performed by electronic means.

A number of building blocks will be required in order to achieve the EC goals and objectives in this plan.   The premise behind the building blocks is that the foundation of large-scale EC will be commercial services. The building blocks include: expanding use of electronic catalogs, payment utility services, services to authenticate buyers and sellers on the Internet, use of commercial software for contract formation and administration, contract writing systems, Federal systems interfaces, and a coordinated change management process.   As efforts progress, the change management process will include consideration to proposing additional legislation that would further facilitate the effective use of EC. A general time table and list of responsibilities is presented in the migration path from current operations to our future vision (see page 35).

1. SCOPE AND VISION

For much of the last decade, the United States Government and its trading partners have been simplifying their business practices. Reengineering efforts have focused on streamlining many of the steps involved in conducting competitions and processing transactions to support buying and paying activities, e.g., notifying, ordering, receiving, and reconciling. The advent of Internet communications, dramatic increases in the capability of commercial software, and the increasing availability of commercial transaction processing services have raised expectations for a new wave of technology-enabled trade, broadly defined as "Electronic Commerce" (EC). Few now doubt the potential of EC-related technology to improve government buying and paying on a large scale.

Today, some aspects of the buying and paying process can be completed in cyberspace, using the Internet. Over the next several years, the government should obtain the capacity to buy and pay for its goods and services electronically by taking advantage of the growing Internet and other technologies whenever a business case is made. **Our vision is that, by the year 2001, all Federal agencies will support their programs by making available customer friendly electronic purchasing tools integrated with end-to-end commercial electronic processing of payment, accounting and performance reporting information.**

The 22 million government purchases from the private sector each year (worth over $200 billion) is a sufficiently large business opportunity to attract the interest of sellers of products and services as well as technology and financial service providers. Another 10 million in transfers among Federal entities each year (worth $450 billion) adds to the market. To turn the potential of EC into reality requires that sellers, service providers, and government buyers see a strong business case for making investments into EC development, operations and continuous improvement.

In an electronic environment, sellers of products and services should have easier access to specific market opportunities. They should find selling to the government simpler, without the need to interrupt existing and developing commercial relationships for purchasing and payment support services. Within the government, buyers (i.e., contracting officers and end users with buying authority) should find buying simpler, faster and easier. EC systems should help buyers improve their assessment of market capabilities, increase their access to competition, better evaluate sellers, and more effectively administer contracts.

> **Federal activity will proceed along three related tracks: fostering partnerships; integrating high volume services; and reengineering key buying and paying functions.**

The Federal market can be viewed in segments organized by such attributes as size and frequency of purchase and buying technique employed. Looking at its market in these segments can help government assess the business case and rank order its EC investments. The pace of electronic commerce expansion then can be more finely tuned to the strength of the business case for each market segment. This strategy -- based on building a business case for both buyers and sellers -- presumes that program managers will rely upon cost-effective commercial ordering and payment transaction processing services for high-volume activity. Government-unique EC systems will be developed only as a last resort for low-volume activity, where industry has not invested in platforms to provide commercial services. Where government systems are required, commercial "off-the-shelf" software will be used wherever government processes can be accommodated by existing software.

EC Strategy Framework

TRACK	STRATEGIC POSITIONS	BUILDING BLOCKS
Foster Partnerships in 1998	· Foster Government EC Partnerships · Foster Commercial EC Partnerships	· Change Management
Integrate High-Volume Services End-to-End by 2000	· Enhance Purchase Card Use · Develop and Expand Streamlined Catalog Ordering	· Electronic Catalogs · Payment Utilities · Buyer/Seller Authentication · Federal System Interfaces
Reengineer Buying and Paying Functions by 2001	· Reengineer Key Functions of the Buying and Paying Process	· Electronic Catalogs · Contract Formation and Administration · Contract Writing Systems · Federal System Interfaces

Federal activity will proceed along three related tracks: (1) fostering partnerships; (2) reengineering and integrating buying with end-to-end ordering and payment processing for high volume buying techniques; and (3) reengineering additional buying and paying functions. This vision is intended to capitalize on the common interests of buyers, sellers, technology providers, and financial service providers by rapidly pursuing the largest segment of transactions. Simply put, the idea is to build a consistent structure for applications processing (both within the government and with industry), that leverages the Federal Government's economies of scale to take advantage of existing and emerging technologies.

From this base of operations, work will proceed to expand the list of buying and paying functions that can be performed through electronic means. Within each track, there are strategic positions toward which the Federal Government will move over the next three years by completing concrete building blocks.

Track 1: FOSTER PARTNERSHIPS

Strategic Positions

A. **Foster Government EC Partnerships -- *Organize Federal Activity Across Organizational Boundaries to Reengineer Business Processes for EC in 1998.***

B. **Foster Commercial EC Partnerships -- *Promote the Development of Integrated, End-to-End, Commercial Transaction Processing Service Capability in 1998.***

To launch this strategy, buyers need to collaborate on their business case development activity and keep abreast of commercial EC service offerings. Sellers need easy access to government market opportunities and the ability to transact more effectively and inexpensively. Information technology providers and financial service processors need to understand the parameters of their investment risk in EC systems and time their EC systems development activity appropriately.

To foster Federal EC partnerships, the PMC -- comprised of cabinet agency chief operating officers -- provides a forum for coordinating EC development activity across the Federal acquisition, finance and information technology communities.

To foster Federal EC partnerships with States, starting immediately, Federal Chief Financial Officers (CFOs), Chief Information Officers (CIOs), and Senior Procurement Executives involved in Federal EC projects will work with their State counterparts to identify and capitalize on areas of common interest.

To foster commercial EC partnerships, senior Federal staff will participate actively in public forums with the broad range of private sector associations involved in EC services, in order to build and maintain open communications on EC development topics.

Track 2: REENGINEER AND INTEGRATE HIGH-VOLUME SERVICES END-TO END

Strategic Positions

A. **Enhance Purchase Card Use** *-- Enable Buyers in All Agencies to use Purchase Cards for 90% of Internet and other High-Volume, Low-Dollar Purchasing with Transparent End-to-End Back Room Processing by the Year 2000.*

B. **Develop and Expand Streamlined Catalog Ordering** *-- Provide EC tools in All Agencies so that (a) Buyers have Easy, Internet Access to Catalogs with Transparent End-to-End Back-Room Processing and (b) Indefinite-Delivery, Indefinite Quantity (IDIQ) Contracts are Available On-line to All who Qualify to Order by the Year 2000.*

Micro-purchases and orders under $25,000 from IDIQ contracts or schedules could account for up to 85 percent of the total number of Federal transactions. These market segments, micro-purchases and orders under $25,000 from IDIQ contracts or schedules, appear poised for rapid EC roll-out. Purchase cards can be used for micro-purchases, i.e., those transactions under $2,500, which account for more than 60 percent of the Federal Government's annual purchase transaction volume. Buyers can use their accounts, in many cases tied to a purchase card, for electronic catalog shopping on virtual malls to obtain best value for micro-purchases as well as higher cost goods and services at pre-negotiated prices and conditions. The business case to industry for these technologies may include transactions from other markets, e.g., travel, other-than-Federal customers, training, etc.

Beginning in 1998, all agencies will be able to choose from among several card issuers and aquirers offering purchase, travel, fleet and related services supporting, integrated electronic commerce, e.g., intra-governmental transfers, multi-application smart cards and electronic catalogs. These card issuers are part of consortia -- or payment utilities -- that can provide end-to-end, ordering and payment transaction processing.

The structure and array of EC support service choices provided through payment utilities allows agencies to migrate to EC based on the readiness of their legacy systems and their current organizational capacity to manage change. Central buying agencies and other agencies which host electronic malls, agencies with large transaction volumes, and small agencies will be encouraged to move most aggressively toward integrated commercial EC services using advanced technology.

Track 3: REENGINEER ADDITIONAL BUYING AND PAYING FUNCTIONS

Strategic Position

Reengineer Key Functions of the Buying and Paying Process (e.g., strengthen market research capabilities and facilitate more effective negotiations) by 2001.

EC can greatly enhance the government's ability to simplify key functions of the acquisition cycle for many different types of buys in different dollar ranges, even where "end-to-end" use of commercial EC services is not yet possible or is otherwise impractical.   For example, EC can be used to improve market research; provide notice of contract opportunities; exchange data with vendors; and collect, use and exchange data across functional offices within the government. Additional challenges remain to implement end-to-end EC applications for new contracts over the micro-purchase threshold.

The government's current approach is to watch how the market is developing in these areas and adopt best practices as they emerge.   Beginning in fiscal year 1998 (FY 1998), the President's Management Council has begun to coordinate, on an interagency basis, reengineering efforts and EC applications development for these functions of the buying and paying process. This will promote the quicker development, for lower volume EC transactions, of applications that are modular in nature, interoperable and replaceable without substantial investment loss.

Subsequent sections of this plan present the transaction market, the needs of stakeholders and driving forces in the environment that will facilitate movement toward the strategic positions identified in this document. The plan also identifies policy principles and building blocks of activities that need to be accomplished to address these needs and driving forces in order to reach the strategic positions. The principles should serve as investment decision-making criteria to help ensure that new EC-related projects are pointed toward the strategic positions. Finally, a migration path lays out a general time table of event milestones for the building block activities.

2. TRANSACTION MARKET

EC technologies can connect the government's market of procurement transactions with its market of related finance transactions. To make a business case for these EC technologies, the government must present its market in segments to potential investors. Some market segments will present a business case for end-to-end transaction processing using EC. Others will attract investment into EC projects that provide returns only for some parts of the buying and paying process. The chart "Transaction Market and Electronic Commerce Applications" illustrates how EC applications can bring these market segments together.

Procurement Market of Transactions

Size of Procurement	Millions of Actions	%	Billions of Dollars	%
Under $2,500	13.2	60	5.3	3
$2,500 to $25,000	8.3	38	16.6	9
Over $25,000	0.4	2	178.6	89
TOTAL	22.0	100	200.5	100

Note: Numbers may not add due to rounding
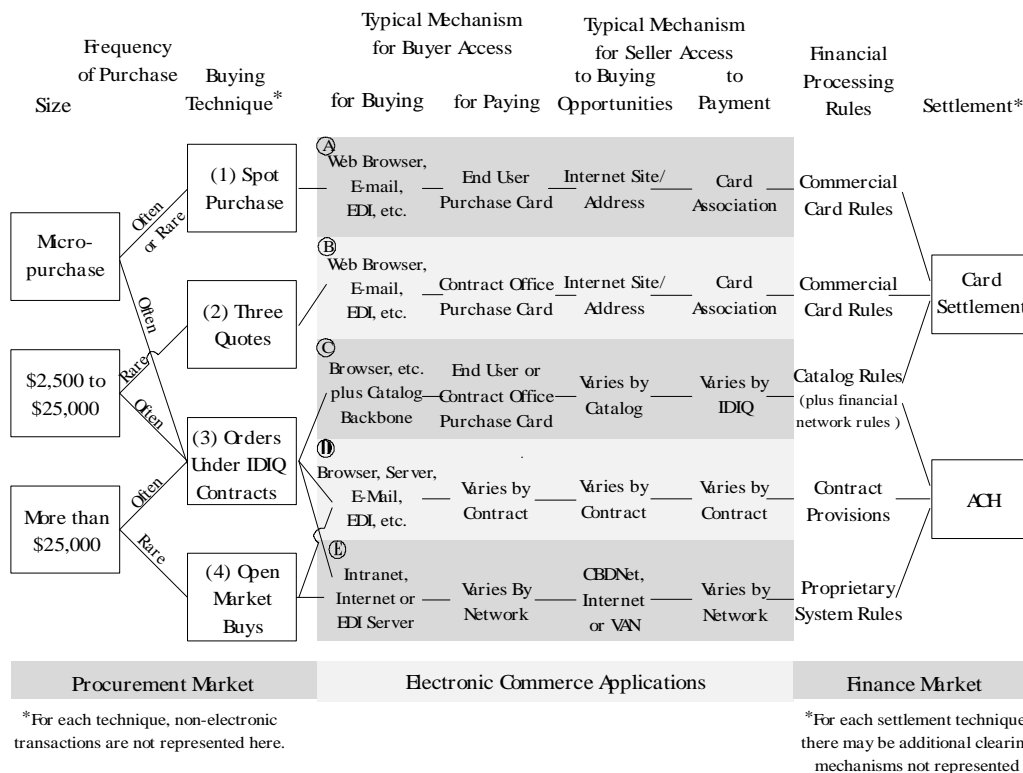**Source**: FPDS data for Fiscal Year 1996

Market of Procurement Transactions

Buying techniques form a basis for defining Federal buying and paying market segments. Procurement transactions typically are conducted using one of four buying techniques, generally defined by the size and frequency of the purchase, competition strategy and legal requirements.   [1] For items that cost under $2,500, purchases can be made from local sources offering a reasonably priced product or service. [2] For individual purchases between $2,500 and $25,000, buyers must contact at least three sources (i.e., obtain three quotes). [3] For high volume buys, rather than make individual purchases on the open market, buyers may establish a single- or multiple-award indefinite-delivery, indefinite quantity (IDIQ) contract   (or a blanket purchase agreement (BPA) under a contract awarded by the General Services Administration) to leverage buying power.   Orders then may be made under these contracts through simplified techniques that vary based on the size of the purchase and legal considerations. [4] For individual purchases above $25,000, buyers must issue widespread notices of solicitation.

The nature of the purchase will shape further the buying technique. For purchases of products under IDIQ contracts, a buyer may need only the seller's electronic description and price/delivery terms before placing an order. For services, though, buyers may need to develop (often with input from sellers) statements of work before they can reach agreement with sellers on the contracted task and performance requirements. For example, some pricing arrangements, e.g., fixed price or cost reimbursable, may be easier than others to accommodate using EC. Understanding differences in buying techniques is critical to determining how EC can improve the efficiency and effectiveness of the buying and paying processes associated with those techniques. These differences also can help technology and financial service providers to determine what applications of EC will likely hold the most promise within high volume market segments.

> Orders under $2,500 may be placed with any contract holder offering products and services at reasonable prices. For orders above $2,500 on multiple-award IDIQ contracts, buyers generally must conduct commercial-style competitions that give contract holders a fair opportunity to be considered for each order. For orders above $25,000 on schedule contracts, buyers should consider three or more schedule contractors, depending on the size of the order.

Different mixes of technology can be brought to bear to each market segment. At this time, five clusters of EC applications appear to hold promise. As the chart below illustrates, purchase cards can be used by [A] end users and [B] contracting officers for face-to-face and computer-to-computer spot

Size	Frequency of Purchase	Buying Technique*		Typical Mechanism for Buyer Access		Typical Mechanism for Seller Access		Financial Processing Rules	Settlement*
				for Buying	for Paying	to Buying Opportunities	to Payment		
Micro-purchase	Often or Rare	(1) Spot Purchase	Ⓐ	Web Browser, E-mail, EDI, etc.	End User Purchase Card	Internet Site/ Address	Card Association	Commercial Card Rules	Card Settlement
	Often	(2) Three Quotes	Ⓑ	Web Browser, E-mail, EDI, etc.	Contract Office Purchase Card	Internet Site/ Address	Card Association	Commercial Card Rules	
$2,500 to $25,000	Rare / Often	(3) Orders Under IDIQ Contracts	Ⓒ	Browser, etc. plus Catalog Backbone	End User or Contract Office Purchase Card	Varies by Catalog	Varies by IDIQ	Catalog Rules (plus financial network rules)	
More than $25,000	Often / Rare		Ⓓ	Browser, Server, E-Mail, EDI, etc.	Varies by Contract	Varies by Contract	Varies by Contract	Contract Provisions	ACH
		(4) Open Market Buys	Ⓔ	Intranet, Internet or EDI Server	Varies By Network	CBDNet, Internet or VAN	Varies by Network	Proprietary/ System Rules	

Procurement Market	Electronic Commerce Applications	Finance Market

*For each technique, non-electronic transactions are not represented here.

*For each settlement technique, there may be additional clearing mechanisms not represented

purchases and orders. In FY 1997, purchase cards were used for over 10 million transactions, worth about $5 billion. This represents 55 percent of all micropurchases.

Two sets of EC applications hold promise for contracting officer and end-user orders under existing contracts. [C] For contracts involving a wide range of buyers, electronic catalogs established on the Internet can connect multiple sets of buyers and sellers for purchases under multiple contracts. [D] For contracts involving a narrower set of buyers, contract-specific electronic links may be established using dial-up, Internet or other communications links. Such a system could be active (e.g., directing notification to sellers) or passive (e.g., allowing buyers to browse). [E] Open market purchases above $25,000 will be supported by a variety of interoperable contract office systems and network systems as appropriate.

Market of Financial Transactions

For the financial processing market, the vast majority of payments will settle through the Automated Clearing House, either directly, through a financial network clearing arrangement, or through emerging and developing EC clearing mechanisms. Very large payments and many international payments will settle through other means.

For the market of procurement and related financial transactions, the growth of these clusters of EC applications will depend upon the business case to agencies and industry for investment in their implementation. Over time, new applications are expected to supplement and replace those represented above. Business will continue to be conducted using paper methods for a portion of each segment of the market, i.e., where paper means are more convenient or cost effective.

3. STAKEHOLDERS

Agencies do not engage in commerce -- buying and paying -- alone. Partnerships among buyers, sellers, service providers, and reviewing authorities are needed to make the transition from paper to electronics. State and local governments -- faced with the same opportunities and challenges -- also should be included in discussions on this transition.   The needs of each stakeholder must be identified and addressed in order to make a compelling business case to incent investment.

Buyers

Despite shrinking agency budgets and decreasing workforces, taxpayers demand improved performance from our procurement workforce. To meet this demand, buyers of the products and services needed to support agency missions continually must streamline processes, reduce burden, and improve productivity.

- *Program Offices* ultimately are responsible for the projects that carry out agency missions. They are the end users of the products and services acquired by contracting offices. Program offices increasingly are being authorized to make purchases up to $2,500 ("micro-purchases") directly from sellers using purchase cards, oftentimes under contracts with pre-established business arrangements and prices. This trend enables program offices to satisfy their needs more expeditiously and allows contracting office personnel to focus their attention on more complex, higher dollar procurements, where their expertise adds the greatest value to the buying process. For this reason, agencies need continued management commitment to a strong purchase card program and program offices need mechanisms for easily accessing information about the goods and services that might suit their needs. For other purchases (especially higher dollar purchases), program offices need to collaborate with contracting and legal offices in defining requirements, evaluating offers, and assessing contractor performance. This integrated team approach helps to ensure use of effective acquisition strategies, effective use of competition and financial incentives, and the best possible match between agency needs and marketplace capabilities.

- *Contracting Offices* enter into and administer contracts for the goods and services needed to support the missions of executive agencies. To secure best value for the taxpayer, contracting offices must conduct effective market research, encourage and take advantage of marketplace competition, and negotiate effectively with sellers. They also must properly administer contracts and conduct contractor performance assessments to ensure that contractors meet contract requirements. Contracting offices find that use of performance information to support future source selections is desirable, as it motivates contractors to excel in their performance.

- *Contracting offices in mixed ownership or quasi-governmental corporations* typically are afforded greater flexibility in their buying practices than that granted to contracting offices in most executive agencies. This notwithstanding, contracting offices in mixed ownership or quasi-governmental corporations still face the prospect of having to "do more with less" and remain accountable to the taxpayer for good performance. As a result, they too need processes that can help them reduce costs, get goods deals, and increase their productivity.

Sellers

Sellers -- small and large, selling domestically and from abroad -- want easy, effective, and inexpensive ways to find customers and market their products. The same holds true for the more than 300,000 sellers currently doing business with the Federal Government. Lower transaction costs mean greater returns on investments.

- *Business Concerns,* as a group, hold a significant amount of resources to invest in technological solutions that improve their competitive position in the marketplace.   To conduct business as efficiently and effectively as possible, businesses must know the marketplace in which they operate and the way in which their trading partners do business. This knowledge enables them to gear investments towards solutions that will help them maintain a competitive edge.   For the relatively small number of large established government contractors that account for a significant percentage of all the government's procurement dollars, streamlined processes and decreased administrative burden will reduce their overhead costs and, accordingly, save the government money.

- *Small businesses concerns* are entities that are independently owned and operated, not dominant in the field of operation in which they are bidding, and qualified as small businesses under criteria and size standards prescribed by the Small Business Administration.   Small businesses are a key player in Federal procurement, receiving more than 20 percent of the total value of all prime contract awards each fiscal year. To remain integral players in government contracting and key contributors to the economy, small businesses must strive to stay competitive as technologies and business practices evolve.   They need easy and inexpensive ways of learning about contracting opportunities, a low   cost, user-friendly operating environment, and access to training and technical assistance to   reengineer their business strategies and processes to accommodate change.

- *Statutorily required sources* are organizations that the government, in accordance with statutory requirements, must use to fulfill needs for certain products or services. In order for required sources (which include the Federal Prison Industries (UNICOR) and the Javits-Wagner-O'Day program (JWOD) for nonprofit agencies employing people who are blind or severely disabled) to be viable players over time, they must be able to continue offering quality supplies and services at reasonable prices. As a result, they must take advantage of technological advances to enhance marketing, minimize transaction costs and maximize efficiency.

- *Businesses operating in foreign countries* covered by international trade agreements, whether foreign or U.S.-owned, compete without restriction and on the same basis as firms located in the United States. Sellers competing from abroad need to be able to learn quickly about contracting opportunities and communicate efficiently using internationally recognized standards that enable easy electronic interchange of information.

Service Providers

Four sets of entities add value to the EC processing chain: finance offices, financial service providers, information technology offices and information technology providers. Each has an important role to play in the end-to-end buying and paying process.

- *Finance (CFO) Offices* typically are responsible for providing front-end funds control as well as accounting for and reporting on buying and paying activity. Together with support and program offices, finance offices ensure that there are proper management controls in place throughout the processing environment. Finance offices need convenient tools to make the right payments, on-time, in the right amount. Finally, they need easy, accurate

and reliable means to collect the requisite data for accounting and reporting and to structure and transmit this information. Finance office needs can be met through a combination of commercial and in-house systems and services.

· *Financial Service Providers* offer commercial transaction processing services, many of which can be used for Federal transactions. Financial service providers must be able to make a business case for investing in and adjusting their commercial systems to accommodate   Federal transactions.

· *Information Technolgy (CIO) Offices* typically provide assistance in the acquisition and management of information systems, develop and maintain agency information architectures, and promote the effective design of information resource management processes.   CIO offices need software and services that couple with and operate effectively in concert with existing agency systems, provide adequate security over government operations, and support sound capital planning and investment practices.

· *Information Technology (IT) Providers* offer information processing services and/or software to support Federal operations. (Financial service providers also may be IT providers.)   Like financial service providers, IT providers need a business case to support software and/or system development. The strength of this business case will rely heavily on how similar Federal transactions are to commercial transactions.

Reviewing Authorities

Reviewing authorities are individuals and organizations that oversee Federal EC operations and respond or pass judgment. Reviewing authorities can be divided into four groups that illustrate a variety of ways in which review may occur: Taxpayers, the Congress, Regulators and Auditors.

· *Taxpayers* contribute the capital for Federal operations. As a matter of public trust, the Federal Government is responsible to taxpayers for efficient and effective operations. EC presents a vast opportunity; taxpayers should be able to see their government realizing the potential inherent in EC through wise, sound management investments and practices that yield solid returns over time.

· *The Congress* authorizes and appropriates funding for, and provides oversight over, Federal programs. The Congress also is responsible for the laws that underpin the regulatory framework in which EC operates. In these roles, the Congress has an interest in good government, social policy, and equitable treatment of the public.   To perform these duties for electronic commerce, the Congress needs reliable information about investment choices and information on the results of operations insofar as they effect compliance, efficiency, effectiveness and equity.

· *Regulators* are responsible for administering laws and regulations in a variety of areas, including procurement policy, financial management and information technology management. In each area, regulators conduct planning and set standards, issue guidance, offer technical assistance, review results of operations, and work to modernize policy and operations. Regulators need to effectively manage risk, assess the result of operations, and understand changes in the marketplace.

- *Auditors* assure independent accountability to public officials, legislators and the public. Auditors validate whether funds are handled properly and in compliance with law and regulation, and determine the extent to which programs and services are achieving the purposes for which they were authorized and funded in an efficient manner. Auditors need a clear understanding of applicable requirements and objectives against which to audit as well as good working relationships with program managers that quickly and accurately identify, assess and correct deficiencies.

State and Local Governments

Buying and paying offices in state and local governments perform functions similar to those of their federal counterparts and face many similar constraints and challenges. Like the Federal Government, states and localities are striving to obtain the capacity to buy and pay for their goods and services by taking advantage of the growing Internet and other technologies whenever business cases are made. They have both an interest and a desire to support development of uniform operating environments for their market segments that are similar to those in the Federal marketplace, especially with respect to transaction processing for payments. In short, states and local governments are looking for active Federal coordination to ensure EC services are compatible and to time EC implementation so as to better leverage EC investments.

4. DRIVING FORCES

Driving forces are environmental factors that affect an organization's ability to conduct operations. While an organization's response to a driving force may be "business as usual," generally a more forceful reaction is needed to achieve benefits or avoid adverse consequences. The first four driving forces cited below represent stakeholder constraints on the domain of available options. The last two represent opportunities that are difficult to ignore.

Need to Improve Performance in a Balanced Budget World

The President, the Congress and the American people share the goal of balancing the budget in the immediate future. Even as these fiscal realities hit home in agencies, there are rising expectations for service. Citizens now hold their government to the high standards they have come to expect from world class leaders in the private sector. The government has responded in some areas. For example, calls to the Social Security Administration (SSA) are answered more quickly. Hundreds of thousands of tax forms and instructions are downloaded over the Internet from the Internal Revenue Service (IRS) each year. Recipients of Food Stamps can access benefits electronically with an Electronic Benefits Transfer (EBT) card in the grocery check-out line -- eliminating paper coupons.

For Federal acquisition functions, doing more with less means ensuring offerors have better, easier access to Federal buying opportunities. It means using commercially-proven best practices, like ensuring employees have ready access to pre-negotiated, lower, priced contracts. It means eliminating manual reconciliation between procurement and finance documents. Without simplifying processes, incremental gains from moving to EC will not bridge the gap between available resources and public expectations.

Buyer and Seller Demand for Easier Access and Better Service

Buyers and sellers want convenient ways to conduct business that help sellers communicate about their products and services and help buyers make informed choices. For example, with the advent of electronic catalogs a few years ago, many buyers shifted their shopping patterns because they found electronic catalogs to be convenient and to carry vast, robust information. This behavior change is indicative of the magnitude of demand for service and the speed in which large portions of the market will move to superior ways of doing business. Conversely, some government initiatives have seen slow growth because sellers have been reluctant to adopt government-only purchasing mechanisms.

With such strong demand, there exists a risk that buyers will choose convenience at the expense of richer market data. While such an anomaly would be short-lived, the consequences of uninformed buying could be substantial. The Internet can provide for short development times and broad exchange of detailed information, somewhat mitigating this risk.

Congressional Interest in Performance and Accountability

Over the past four years, legislation such as the Government Performance and Results Act (GPRA), the Government Management Reform Act (GMRA), and the Federal Acquisition Streamlining Act (FASA) all have called for increased performance reporting. These reports, such as government-wide audited financial statements, required by the GMRA, in turn will increase public interest in accountability and performance. Accurate entry of low level transaction data into systems can allow for automated account reconciliation and is the key to opening the door that provides timely financial and performance reporting. Also, this richer transaction data can be stored in repositories and aggregated for decision-support analysis. The Congress has recognized that EC can generate the fine-grained, rich transaction data needed for these purposes. As such, Congressional mandates are spurring significant EC activity in some areas. Notable is the Debt Collection Improvement Act which requires all Federal payments, except tax refunds, to be made electronically by January 1999 and for all payments to be matched against a comprehensive list of debtors for offset purposes. Agencies are on the fast track, and, since the law was enacted, the percent of vendor payments made by EFT has increased by more than 20 percent. These mandates will have subsidiary effects as well, contributing to the business case in related areas.

Outdated Legacy Systems and Processes

Many current government processes were established thirty to sixty years ago as agencies went through rapid growth periods. These processes typically are labor-intensive and involve recording and reconciling information on paper. Today, some processes have changed significantly, but most still rely heavily on paper. For example, most travel authorizations and vouchers still are filed and reconciled on paper. Purchase orders and petty cash disbursements remain common. The difference between sixty years ago and today is often that data from paper documents is hand-keyed into a computer rather than hand-written in a ledger.

Availability of New Technology

New technology continues to reduce the cost of communications and increases the convenience of accessing, analyzing and disseminating information. Most important is the Internet and Intranets, that collapse the traditional trade-off between the cost of communications and the detail of information, the customization of information, and the pace of feedback. The result is a radical reduction in communications costs. These networks quickly have had, and will continue to have, a dramatic impact on the information that surrounds business activity. Because change now happens on Internet-time, that is, at a fraction of calendar time, a modular approach to systems is a must. Whole-cloth systems will be obsolete long before completion.

A second key impact of the Internet results from its public architecture -- the same architecture that supports cheaper communications. Widespread use of public networks for public communications has created a demand for trusted communications, so that more sensitive business also can capitalize on the reduced costs of communication. Commerce and transactional exchanges soon will see the same radical changes heretofore seen for simple communications. Some experts estimate that Internet commerce will grow from a $8 billion industry in 1997 to a $330 billion industry by 2002.

Commercial Use of EC

Industry is capitalizing on technology opportunities and is organizing the market into segments that can be addressed by different EC products and services. A large growth area is EC applications for business -- a market segment that typically require more information about transactions than do consumers. This is coming at the same time that many traditional consumer EC products are reaching market maturity. For example, the corporate market for purchase cards--in both number of transactions

and dollar volume -- is growing much more quickly than the consumer market for credit cards. As a result, solutions for lower volume exchange of invoice and remittance information now are on the horizon.

The government, as a business customer, will benefit from these market forces. At the same time, government investment should be targeted and monitored to ensure that the promise of new technologies is realized in a timely manner.   Using commercial products and services can reduce the risk of such investment -- both in up-front design and development and in maintaining state-of-the-art systems. Federal agencies can reap savings to the extent that government transactions mirror commercial transactions.

5. POLICY PRINCIPLES

The principles listed below are intended to promote investments in EC projects that support commercial, market-based EC development policies. Simply put, these policy principles describe policy criteria for making and managing investments. The first two policy principles describe criteria for what to do.   The next three principles describe how to do it.   The last two policy principles are criteria for managing investments.   Investments in end-to-end processing should support the first five policy principles. Investments targeted at specific buying and paying functions also will benefit the end-to-end procurement and finance process continuum.   While these investments generally will not support all policy principles, they should be consistent with achievement of policy objectives.

Use EC to make the buying and payment processes easier and more efficient for both buyers and sellers

> *Agencies should use EC to reduce effort, time, and expense required for the government*
> *to buy from sellers and for sellers to sell to the government.*

Advances in information technology offer a solution for agencies that must do more with less, helping agencies meet taxpayer demands in a balanced-budget environment.   In addition, the government has a strong interest in decreasing the cost of sellers' participation in government procurement, e.g., in the source selection process. Agencies can and should use EC to help: (1) streamline and, where possible, eliminate transaction steps; (2) reduce unnecessary paperwork and its attendant administrative cost and delay; (3) facilitate access to resource materials; (4) improve buyer visibility of products and services under contract; (5) permit sellers to gain quick access through a single, government-wide point of entry to information on government contracting opportunities to be procured on the open market above $25,000; (6) avoid redundant reporting of business information; (7) enable sellers to receive timely and accurate payment and remittance information; and (8) ensure that buying and paying rules can be understood and applied in a consistent manner to transactions conducted electronically.   Whenever possible, Federal EC applications should not disrupt existing and developing commercial relationships for purchasing and payment support services.

Use EC to facilitate best value buying and paying

> *Agencies should use EC to improve key aspects of the buying and paying process that*
> *contribute to the government's ability to make good deals on behalf of taxpayers.*

Recent statutory, regulatory, and policy changes brought about by acquisition reform are improving agencies' ability to get more value from what they buy. The government can get better deals from quality contractors when it uses new technology to overcome inefficient paper-based processes.

- *EC can be used to help buyers research the marketplace for sources of supplies and services*. As agencies turn more to the commercial market to meet mission needs, knowledge and understanding of the industries and sectors that make up the global commercial market becomes more important. EC can improve the ability to search product and service information. To start, EC applications should enhance buyer awareness of products and services already available under contract at their own and other agencies. The competitive pressure among sellers across agencies for orders under existing contracts likely will increase as buyers are able to more easily make informed comparisons. To the extent practicable, systems should be open and interoperable. Closed or proprietary systems make buyer access difficult, reducing the utility of the information they contain.

- *EC can assist the government in accessing the competitive pressures of the marketplace*. Easier access will stimulate greater seller interest and participation by increasing the visibility of and reducing the cost of learning about buying opportunities. For open market buys above $25,000, for example, EC applications must foster convenient and universal user access through a single government-wide point of entry. Multiple points of entry discourage sellers from learning about and responding to buying opportunities.

- *EC can support easy and efficient information exchange during contract negotiations.* Recent acquisition reform efforts have recognized that more robust information exchange will help the government better identify the best value match between agency needs and items available in the marketplace. EC should be used to make these exchanges easier and more efficient.

- *EC can help to make the payment process more efficient and accurate.* Reducing the numbers of late payments, erroneous payments or payments with erroneous documentation can help attract high quality sellers to government solicitations. Simply automating old financial processes is not enough. Financial intermediaries can ensure that the agreed-upon price is paid. They also can help the Federal Government pay only the sales taxes that are due, not those charged. Proposals for investment in financial EC should make the payments process noticeably more accurate and reliable.

Take advantage of proven commercial applications of electronic commerce

Whenever possible and cost effective, agencies should rely on commercial products, services and practices.

In comparison to government-developed products, commercial items benefit from market-driven economies and innovation, that is, in terms of cost, quality, etc., and entail less risk of schedule overruns and performance shortfalls. The private sector has made and continues to make a significant investment of resources into information technology. The government should leverage the investment already made in the ever-growing commercial infrastructure and share the costs of maintenance and upgrades.

Tools such as performance-based service contracting (PBSC) can help agencies intelligently purchase EC services. Rather than telling sellers how to do the work, the government outlines its needs in measurable, mission-related, results-oriented performance terms and allows the contractor to be innovative and determine the best, most cost-effective way to do the job. With PBSC, agencies pay for results, not effort or process. In general, purchasing commercially-defined services, with commercial transaction processing rules, is preferable to purchasing services that merely support unique, expensive business methods.

When agencies design systems in-house, there is a real danger that the resulting system specifications will by overly prescriptive and the system will perform core functions poorly. For example, poor specifications may include a requirement that systems write upwards of twenty specific reports -- defined at the data element level. A better approach is to ask for the ability to provide standard commercial reports, such as account history, and the ability to define new reports.

In addition, the government must apply nationally and internationally recognized standards that broaden interoperability and ease the electronic interchange of information. Proprietary protocols should be avoided, as they fail to permit multiple sources from providing viable competition on multiple platforms. Further, proprietary systems limit interoperability and discourage full-scale private sector participation.

Strategies for EC should take advantage of the latest cost-effective technologies. This will help avoid static, one-size-fits-all, or overreaching applications with their attendant cost overruns. The Administration is drafting legislation that will encourage agencies and the private sector to implement innovative electronic payment technology by allowing for early payment in cases where EC promotes good cash management and sound business practices.

Outsource transaction processing

> *Common commercial services should be competed in identifying the best value source. Agency in-house processing capacity should be designed and developed only when there is a clear, demonstrated business case.*

There is substantial opportunity to move to commercial transaction processing for invoicing, authorization, payment, and remittance processing. Commercial transaction processing services are becoming ever more sophisticated in offering a wide variety of capabilities. Not only have these services been market-tested, but also they typically cost less than doing the processing in-house. For example, the purchase card capitalizes upon decades of experience in credit card processing and economies of scale from hundreds of millions of cardholders.

Too often, contractors build one-of-a-kind transaction processing systems to meet government-only specifications. Likewise, contractors often build government-only systems to meet government-only ways of doing business. This makes little sense when the same (or nearly the same) service is performed in better and cheaper ways in the private sector. Whenever possible, Federal agencies should change their processes to interact easily with commercial processing structures and take advantage of readily available transaction processing services.

Assign financial liability for losses commensurate with ability to manage and mitigate related risks

> *Federal programs should limit procurement and payments risk exposure by accepting liability only for risk they can control, managing risk by balancing security costs and expected losses, and managing trading partners' risk expectations.*

EC, like all commerce, poses a risk of adverse consequences that typically lead to financial losses. Managing that risk -- and preventing losses -- reduces the cost of doing business. At the same time, managing risk costs money, thus creating a disincentive for risk management -- especially when others will bear the losses. When developing EC systems or choosing among competing EC commercial services, choices must be made as to how risk will be managed. Risk can be managed by ensuring that

parties understand those losses for which they will be liable, developing security and risk-control measures, and limiting participation in the system based on the ability and willingness to bear risk. Systems and rules that assign financial liability for particular losses based on participants' ability to prevent those losses promotes stability and long-term working relationships.

For the government's trading partners, a framework of risk management creates a clear understanding of potential losses. Trading partners then can decide whether to participate based on their desire to bear that relatively well-known risk. The Federal Government intends to accept commercial processing rules where appropriate. Given differences in the commercial and government environments, the Federal Government may need to amend commercial rules at the margin. Where the Federal Government can mitigate risk, the security and risk-control measures used should balance costs of implementation with expected losses prevented by the measure. For example, such decisions as how extensively to encrypt transactions through a catalog system should reflect the number, size, and type of losses that might result from a breach.

Different business arrangements may be necessary to address different market segments. For example, a well-documented dispute resolution process (and a method of maintaining that system) would be appropriate for transaction systems involving a wide range of different businesses. On the other hand, the cost of maintaining corporate capability of this sort might not be worthwhile for a system involved only in very large in-progress payments with major vendors easily capable of directly controlling their risk exposure.

Monitor investment for returns

Agencies should devise performance metrics to determine return on investment.

Recent legislation aimed at performance has increased the pressure on agencies to demonstrate results. The government cannot afford to incur the costs of inefficient and impractical EC applications. EC investments must be supported by a business case. Achievement of benefits should be measured by establishing realistic outcome-oriented goals, defined in objectively measurable terms to help agencies determine return on investment. A "one-size fits-all" measurement system is not likely to reveal information that is useful for agencies to assess their achievements. With good measures, there is an understanding of the scope of transactions to which a given application is intended to apply so that actual impact can be measured against expectations.

Progress can be measured by gathering data on the possible universe of procurement and financial transactions that can be improved by using EC methods. A first step is to describe the current segments of the Federal market (based on the types of products or services, size and frequency of purchase, buying technique and legal considerations), the current processing methods used, and the current application of EC methods. These data should reveal those segments where increased use of EC methods would improve the efficiency of an agency's operation and result in measurable savings. Once the universe of transactions has been identified, a time period should be established to measure improvements. When determining how to measure the benefits of EC, agencies should take into account how other government and commercial concerns measure similar activity, which will allow for benchmarking against the performance of others.

Where performance can be measured across organizations, it should be reported to managers in those organizations. This reporting will enable managers to see how they are performing relative to their "peers." Peer performance reporting established the context managers need to evaluate the success, or lack thereof, of implementation in their agency. Such reporting also creates peer pressure to improve results.

Manage the change process

In order to reap the long term benefits of EC, the government must gain the ongoing acceptance of the users of its reengineered buying and paying processes -- both outside and within government

The successful transition from paper to EC-based buying and paying processes ultimately will hinge on how well the government makes its business case to garner buyer and seller investment and participation. To foster seller interest, the government must be able effectively to identify those market segments where using EC would provide both sufficient activity and benefit to make investment and participation worthwhile. To foster buyer interest, agencies must keep abreast of and apply successful commercial EC applications that make processes easier and simpler (taking into account the needs of federal acquisition, finance, and IT offices), reduce cycle times, lower costs, improve quality, and

increase productivity. To ensure effective change management, education, partnerships and performance measurement are needed.

6. BUILDING BLOCKS

Building blocks identify projects and sets of activities that must be accomplished in order to achieve the EC strategic positions identified earlier. Building blocks are activities associated with achieving efficiency and effectiveness through (1) improved communication, (2) agency implementation of commercial software, or (3) agency use of commercial transaction processing services. The three tiers

of the figure below correspond to these three methods of improving buying and paying processes.

Commercial services in the bottom row form the foundation for EC.   This view assumes that both the buyer and seller are authenticated for business transactions in cyberspace by a trusted commercial party. It also assumes that buyers can do comparison shopping at pre-negotiated terms and conditions on virtual shopping malls.   It assumes that the authentication is tied to utilities that perform payment and related transaction processing according to private sector rules, within a liability framework agreed to by all parties involved.

The middle row of building blocks in the pyramid focuses on the use of commercial software EC solutions that can enhance buying and paying even though use of end-to-end commercial services is not possible or practical. One area where these opportunities exist is, in the early phases of the acquisition process, to help sellers find out about market opportunity and negotiate a transaction.   Similarly, EC software solutions can help buyers write contracts. Another area of focus is in standardizing and reducing the number of interfaces between government systems and commercial EC applications.

Finally, the building block on the top of the pyramid focuses on managing work across stakeholders. The quality of activity in this area will affect the pace and smoothness of the organizational transition to an EC environment.

BUILDING BLOCKS AND COMPONENTS

Building Block	Description and Components
Electronic Catalogs (Tracks 2 and 3)	Interoperable Electronic Catalogs *Interoperability*　　　　*Commercial Catalog Solutions*
Payment Utilities (Track 2)	Payment and Transaction Processing Utilities *Purchase Cards*　　　*Invoice/Remittance Processing* *Account Management*　　*Intra-Governmental Transfers*
Buyer & Seller ID/Authentication (Track 2)	Standard Services for ID/Authentication of Buyers and Sellers *Authenticating Buyers and*　　*Commercial Risk Structures* 　*Sellers*　　　　　　　　　*Managing Seller Information*
Contract Formation/Administration (Track 3)	Market Research, Notice, Solicitation, Response, Negotiation and Award Solutions *Market Research Tools*　　　*Past Performance* *Notice, Solicitation, Negotiation* 　*and Award Systems*
Contract Writing Systems (Track 3)	Automated Acquisition:Contract Writing Systems
Federal System Interfaces (Tracks 2 and 3)	Standard Federal System Interfaces *Accounting and Reporting*　　*Performance Reporting*
Change Management (Track 1)	Education, Assistance, and Partnerships *External Stakeholder Relations*　　*Internal Management*

Electronic Catalogs

Advances in technology -- especially the recent explosive growth of the Internet and web applications and development of purchase cards (credit card products designed for businesses) -- and increased use of multiple award task and delivery order contracts (to take better advantage of leverage and market dynamics) has resulted in the emergence of federal "electronic catalogs." Electronic catalogs are web-based electronic systems that involve:

- contracts with pre-established business arrangements with industry;

- a way to identify and order goods and services, either from within an agency (intra-agency) or from another agency (inter-agency);

- sufficient and timely information to compare the items offered by performance, price and delivery; and

- mechanisms for vendor payment, including, where possible, government purchase cards.

Some Federal Electronic Catalogs

Electronic catalogs can help shorten order cycle-times and reduce the resources required to fulfill needs -- especially for high-volume purchases. In addition, agency buyers can use electronic catalogs to gain greater awareness of the products and services available under contract and more easily make informed comparisons. This improved visibility of products and services under contract increases the competitive pressure among contractors seeking orders. Catalogs also can facilitate compliance with requirements to buy from mandatory sources. To take full advantage of the benefits offered by electronic catalogs and the evolving electronic commercial technologies that support them, the government will: (1) work to achieve interoperability among Federal electronic catalogs and among Federal and commercial catalogs; and (2) increase use of commercial software and solutions, whenever possible.

and Malls
· GSA Advantage On-Line Shopping Catalog
· NASA Government-wide ADP Contracts
· DLA Electronic Commerce Mall
· Navy Information Technology Electronic Catalog
· Justice UNICOR On-Line Shopping Catalog
· NIH Computer OIRM Catalog
· National Industries for the Blind Office Products Catalog
· DISA Defense Information Infrastructure Operating System Stores (DIIOSS)
· Air Force Country Store On-Line Shopping
· Federal EC Navigator
Source: ARNET *http://www.arnet.gov/references/references.html*

Interoperability

Catalog interoperability is the structuring of catalog content, the formatting of catalog information, and the provision of catalog access so that buyers may couple electronic catalogs with other systems for the purpose of market research, ordering, payment, accounting and reporting. Interoperability between catalogs increases visibility of products and services under contract, and facilitates comparison shopping and better use of existing contract vehicles. More informed decision-making means better deals for the government. The Federal Procurement Council will develop interoperability functional requirements that address:

- catalog content;

- the formatting of information with an orientation toward developing a "common look and feel" (a taxonomy) and establishing access privileges; and

- access from the community of users, e.g., through web directories, registries, search engines or software agents.

These specifications will be developed by examining current commercial standards and emerging technologies and reviewing existing commercial catalogs as well as government catalogs operated by agencies such as those listed in the figure above.

Types of Commercial

Interoperability is a means of enhancing the benefits of catalogs when consistent with agency buying strategies and applicable requirements. Toward this end, the Department of Defense has implemented Federal EC Navigator *(http://www.fedecnavigator.disa.mil)*, an electronic mall, as a web interface to support vendor information exchange, easily moving between catalogs and malls, and viewing both Federal and private sector electronic catalogs and malls. To leverage its internal buying power, an agency could mandate use within the agency and preclude other agencies from ordering. Regardless whether agency catalogs are available for inter-agency use, access to information still should be provided, when appropriate, to assist in market research efforts.

Commercial Catalog Solutions

In accordance with IT management best practices, agencies should operate catalogs on the same types of software used for commercial catalogs. When buying commercially, costs and risk decrease, while reliability, support and serviceability increase. Reliance on commercial solutions also reduces barriers to entry, meaning that large and small contractors alike can more easily participate without having to make significant investments in electronic catalog technologies.

Payment Utilities

Payment utilities are commercial entities that offer common financial transaction processing services, including authorization control, transaction processing, reconciliation, and reporting. Examples of payment and transaction processing utilities are financial institutions that issue credit cards, their transaction processors and related integrators of technology (e.g., software, hardware, and telecommunications) Commercial service providers can connect buyers and sellers in a seamless manner. For many agencies, outdated financial systems and processes coupled with manual compliance mechanisms have impeded their ability to operate efficiently and comply with accounting standards.

Industry is adopting and investing heavily in technology to upgrade the technical infrastructure supporting financial services and data integration. Firms hope to realize strong returns on investment based on a global network economy of transactions. Information technology development efforts of government organizations do not have the business case, the core mission, or the resources to develop parallel capabilities. The private sector is presenting these services to the government in the form of payment utilities.

The Federal Government has been a leader in using payment utilities in some areas, such as purchase cards and account management. The Office of Management and Budget (OMB), in conjunction with the Chief Financial Officers (CFO) Council, will work to expand more advanced purchase card and account management services from the pockets where they exist now and roll them out government-wide. With respect to invoice and remittance processing services, the government has participated in commercial pilots and expects to expand use of these services as the commercial market develops. And recent inquiries into intra-governmental transfers have led the Federal Government to take a more aggressive stance and play more of a leadership role for inter-entity payments.

Purchase Cards

In fiscal year 1997, Federal agencies used purchase cards for more than 10 million transactions worth in excess of $5 billion. Purchase card use has grown more than 80 percent annually since the program started.   Despite this level of growth, substantial potential remains for continued expansion of the purchase card program. The Administration's goal is to use the purchase card for more than 90 percent of micropurchases.   Acceptance by more than 14 million vendors around the world and an established indemnification structure make the purchase card attractive for high-volume, low dollar activity. Equally important, the purchase card also dramatically reduces the administrative time and cost associated with micropurchases. For example, in a recent 17-agency study by the Purchase Card Council, the purchase card could produce cost savings of greater than 50 percent, or $54 per transaction, when compared to purchase order processing. According to the General Services Administration (GSA), the purchase card was responsible for savings of $616 million in 1997.

Federal Purchase Card Growth

	Transactions		Sales	
	(000)	*% Growth*	(000,000)	*% Growth*
FY 1990	270	--	$56	--
FY 1991	639	*136*	$141	*152*
FY 1992	1,059	*66*	$276	*96*
FY 1993	1,512	*43*	$472	*71*
FY 1994	2,471	*63*	$808	*71*
FY 1995	4,248	*72*	$1,592	*97*
FY 1996	7,328	*73*	$2,914	*83*
FY 1997*	10,000	*36*	$5,000	*72*

* Estimated

Source: CFO Council Financial Implementation Team on Electronic Commerce (FITEC)
http://www.gsa.gov/fitec/

To enhance the purchase card program, the GSA conducted a solicitation in 1997 for purchase, travel, and fleet card services. The new card service contracts, awarded in February 1998, will offer new and innovative services to Federal agencies to support EC and business process re-engineering, including:

· A multiple award contract, with multiple service providers, to offer greater flexibility to agencies to best meet their needs;

· Integrated services which combine the service systems for the three business lines; and,

· Value-added service options to enhance core functionality, including smart cards, financial systems integration, enhanced reporting, secure Internet transactions.

The new card service contracts become operational in November 1998. These program enhancements will lead to continued cost savings, increased accountability, and streamlined operations.

Account Management

As the market for payment utilities matures, financial service providers are capturing and making available richer transaction-related information. For example, issuers of purchase cards could benefit from a push being made by card associations to collect more data at the point of sale. This would be accomplished by using terminals that capture and transmit line-item transaction detail, known as Level II and Level III data, from the cash register or merchant Internet server. This rich information could assist the government in accounting and measuring performance. Under the new GSA card services contract, agencies will receive Level III data whenever merchants capture and report it. To expedite merchant

capture and reporting of Level III data, the agencies should include this requirement in negotiations with sellers for volume buys.

Issuers now offer cardholders and agency managers desktop software "suites" to access this new data. These browser suites can provide authorization, ordering, payment, general ledger, acceptance, dispute and reporting services. Further, these suites can integrate system and user interfaces for multiple payment methods using a single platform. Account management desktops also provide for transaction acceptance, giving cardholders an opportunity to code transactions for object class, source of funds, activity codes and for other accounting needs. Also, purchasing data can be aggregated, e.g., by product codes. Similar web suites help merchants integrate management of multiple collections processes. Buyers and sellers are using these suites to collect better data on purchases and sales while reducing the number of interfaces with legacy systems.

Account management software affords managers new flexibility and control. Employee profiles can control at a fine level what can and cannot be bought. For example, different spending controls could be established for overhead purchases than for charges made to support a specific project. Account management software also increases the timeliness and detail of reports, helping to quickly identify and resolve suspicious charges. As a result, more employees in end-user organizations can be allowed to buy as a result of the reduced risk of inappropriate purchasing. Account management services are available as a value-added service in the new GSA card services contract.

Invoice and Remittance Processing

The Federal Government is exploring opportunities to use payment utilities for relationship management broader than simply to make credit card purchases. In particular, several agencies rely on outside transaction processors for receiving invoices and sending payment remittance information. This will be accomplished both through traditional and new network relationships.

One of the longest standing Federal uses of a payment utility is the use of the ACH network of banks for payments processing, such as for direct deposit. The National Automated Clearing House Association (NACHA), which manages the ACH rules, will require as of September 1998, that financial institutions be able to provide payment recipients with remittance information in the addenda to the payment. The information must be provided by the opening of business two days following settlement. In 1997, the NACHA estimated that only 1,200 institutions could receive, translate, and report this information. To help financial institutions comply, the Federal Reserve System is enhancing its Fedline software to support the needed translation and reporting. Fedline is used by an estimated 12,000 small to medium sized financial institutions.

Several agencies currently post remittance information on password-protected Internet sites. For example, the Treasury Department's Financial Management Service posts remittance information on payments from the National Aeronautics and Space Administration's (NASA's) Johnson Space Center. The Department of Veterans Affairs, the GSA and the Defense Finance and Accounting Service (DFAS) also operate sites. These sites do not address invoicing and require sellers to use separate passwords and accounts for each agency site. The GSA has undertaken two pilots which try to overcome these barriers for vendors who do business with multiple agencies. One pilot offers remittance translation services in conjunction with standard electronic payment, while the other uses a financial invoice and bill payment network.

Intra-Governmental Transfers

Each year, Federal agencies make about 10 million transfers worth over $450 billion between different entities within the Federal Government. Unlike in the commercial environment, intra-governmental transfers are "book-entry," i.e., funds do not move between accounts at financial institutions. The majority of these transfers, though less of the dollars (about $175 billion), are in exchange for goods and services. The current processes for making these transfers do not provide sufficient data for agencies to make reliable payments and accurate, timely reports. As a result, in many instances agencies fail to pay each other promptly. In contrast, commercial payment services are well-defined, operate effectively, appear cost-effective, and are supported by robust corporate infrastructure. The Federal Government would like to use commercial transaction processing services to make inter-entity payments effectively and efficiently. For example, the Department of the Treasury (Treasury) is piloting and testing the services from a financial institution that makes use of browser technology and card based technology to meet reporting requirements.

The EPIC, through the Department of Defense (DOD), GSA, and Treasury, have undertaken a study to determine how best to use commercial processing services and improve compliance with government-wide policies. The study will include analysis of the transaction market, agency needs, applicable policies, available standards, audit requirements and how corporations and other governments process inter-entity payments. Design specifications derived from the analysis will document how to use commercial services to support intra-governmental transfers. Finally, these specifications will be prototyped, tested, and reviewed to ensure compliance with relevant information systems, financial systems, acquisition, cash management, debt management, accounting, budget reporting and management control requirements. The key to making this effort a success will be the implementation of flexible, robust management systems that interface between commercial "book-entry" processing and agency systems.

Buyer and Seller ID and Authentication

The Internet holds great promise to reduce the time, cost and risk for the government to do business and for others to do business with the government. The realization of this potential has been impeded by new elements of risk present on the Internet and uncertainty surrounding how that risk will be managed. To address the risks of Internet buying and paying, six questions must be answered.

(1) Who is the buyer?

(2) What trusted third-party stands behind the buyer's activity?

(3) Who is the seller?

(4) What trusted third-party stands behind the seller's activity?

(5) Are there a set of written agreements and rules governing the buyer and seller's transactions?

(6) Within this framework, how are buyers and sellers registered and warranted?

The same features that make the Internet a cost-effective medium for communications add elements of risk that merit additional security for large-scale financial operations. The Internet is a global, public, electronic network that shares communications links. Without adequate security, the electronic codes that signify our Internet identity can be mimicked and messages routed on the Internet can be intercepted and potentially altered. Systems coupled to the Internet are vulnerable to penetration and attack. And recourse for Internet losses is problematic because jurisdiction over Internet messages may be unclear. These problems are known as authentication, privacy and confidentiality, integrity, access control, and remediation. There are commercially available products and services which can address all of these except for remediation.

❍ *Authentication*--the risk of inadequate assurance of trading partner trustworthiness.

❍ *Privacy and Confidentiality*--the risk of improper access to information.

❍ *Integrity*--the risk that messages have been altered.

❍ *Access Control*--the risk of adverse effects upon systems coupled to the Internet.

❍ *Remediation*--the risk that recourse for losses is inadequate, ill-defined or not available.

To address these concerns, agencies will work in partnerships with those with whom they share common interests in order to help promote an electronic commerce infrastructure that is cheap, secure and open. This will include managing vendor identifying information through several ways, each suited to a different market segment and based on the volume and method of purchase and payment.

| **Managing Credit Card Risk** |

Authenticating Buyers and Sellers

Card associations manage credit card risk by assigning losses to one of two banks: the issuer or the acquirer. Issuers underwrite the activity of initiating a credit card transaction while acquirers underwrite the presentation of the merchant ticket for reimbursement. In general, acquirers are liable for losses the merchant could have prevented and issuers are liable for losses resulting from imprudent cardholder behavior.

These losses are reflected in cardholder and merchant fees and the recourse available to them. Lower-risk cardholders can obtain accounts with fewer and lower fees (such as interest rates). Merchants pay variable fees depending on the amount of risk associated with the transaction, e.g., higher fees for phone orders, lower fees for in-person orders, etc. And dispute resolution procedures vary based on the transaction risk, e.g., phone orders are easier to charge back, etc.

Card associations are piloting the Secure Electronic Transaction (SET) protocol to encrypt and protect credit card transactions on the Internet. These firms expect widespread use in the near future. Internet transactions not using the SET protocol usually are considered in the same risk pool as phone orders. Industry expects that SET transactions may be even more secure than those conducted in-person. As a result, SET merchant fees and dispute procedures could be more favorable to merchants than those for in-person transactions.

Authentication is an assurance of identity and authority. Authentication can provide protection against imposters, illegitimate businesses, non-repudiation, and other risks. Authenticating buyers and sellers involves receiving sufficient assurance that there is simple and speedy recourse in the event a trading partner causes a loss to be incurred. In short, authentication answers the questions of "Who is your trading partner?" and "Who underwrites your trading partner's activity?"

In existing payment systems, buyers are identified through written agreements. Cryptographic keys and/or hardware tokens typically then are issued to operate within those agreements. The ACH relies upon cryptographic keys, while for credit and debit card systems, buyers are identified by their plastic cards and signatures or PINs. Sellers are identified in similar ways, e.g., ACH payees use cryptographic keys, while credit and debit cards merchants have hardware terminal keys. These access devices are tightly controlled (e.g., through credit checks), closely monitored (e.g., through credit limits or fraud pattern detection), and have a limited life. The inset box entitled "Managing Credit Card Risk" offers a more detailed illustration of how industry manages payment system risk. To the extent that government EC applications can use these techniques to mitigate risk, EC will expand more rapidly.

Many in the payments industry expect to use similar means to authenticate buyers and sellers on the Internet. These new mechanisms must address the additional risk posed by the public nature of the Internet. "Public key" cryptography will allow for Internet transactions to be similarly secure to transactions on proprietary financial networks. Agencies still will need to determine how to use public key cryptography to securely couple agency systems to the Internet. The inset box entitled "Authenticating Buyers" offers more discussion of computer network authentication.

The Federal Public Key Infrastructure (PKI) Steering Committee (chartered by the Government Information Technology Services Board (GITSB)) is working with agencies and industry to field a comprehensive network-based infrastructure to support cryptographic digital signatures as a cross-cutting enabling technology. The PKI is an evolving combination of products, services, facilities, policies, procedures, agreements, and people that provide for and sustain a secure operation of end-user applications. It will be designed, built, owned, and operated by the private sector. The government, through the steering committee, will facilitate the development of the PKI. Currently, the steering committee is sponsoring 25 pilot projects across the government which are serving to develop and

demonstrate the technology, and is preparing a strategic plan for Federal involvement in the emerging public key infrastructure.

Commercial Risk Structures

The infrastructures, consisting of liability frameworks and managerial corporate capability--needed to support Internet commerce are not in place. Rather than develop these infrastructures *de novo*, there is strong support in industry to "piggy-back" on existing infrastructures and to expand them to support new methods of commerce. Industry leaders have testified that the current infrastructure can be expanded to accommodate many types of EC without creating new legal and regulatory frameworks in which to conduct Internet commerce.

The strength of existing commercial financial indemnification and risk structures makes them an attractive base on which to build in the near term for Internet commerce within multi-lateral liability agreements. Financial institutions have a distinct ability to bear and manage risk in a network environment. This ability is demonstrated in debit and credit card, electronic funds transfer and wire transfer systems. The operating rules, multi-lateral liability agreements, governing these systems assign risk and loss commensurate with ability to bear and mitigate risk. The financial services industry also has corporate capability developed over more than 30 years of managing using operating rules. The financial services infrastructure can be adapted successfully to support safe and sound Internet buying, paying and related information exchange.

> For a vendor, the problem of authenticating buyers in cyberspace is more difficult than over the telephone or face-to-face. The contextual clues which the vendor instinctively uses to verify genuine buyers are absent.
>
> For years, passwords have been used to signify identity in cyberspace. Though useful, passwords alone are not adequately secure for high volume financial operations across relatively open vendor networks, such as to use an automated teller or point-of-sale machine. In this case, a hardware token such as a debit card is required to supplement the password.
>
> Transactions between computers process in short time frames and can be submitted in high volumes with high velocity. The limited memory and ease of counterfeiting magnetic stripe cards makes them inadequate for such an environment. For high volume financial transactions in cyberspace, the banking industry appears to be converging on smart card technology -- plastic cards with micro-processing chips -- to provide secure, portable network identification.

Two sets of changes are needed to piggy-back on existing financial infrastructures to support new EC products: amendments to existing multi-lateral liability agreements (operating rules) and new security mechanisms. The Federal Government will work to support development of these changes for defined market segments in forums that represent buyers, sellers, and financial intermediaries. For example, several agencies are working under the new GSA card services contract to look at liability agreements for emerging EC buying and paying applications. Other market segments, which require stronger authentication and certifications, may take longer to migrate to end-to-end EC. This is because more substantial amendments to existing risk structures, or perhaps even new risk structures, will be needed to assure adequate protection against fraud.

Federal agencies are participating in partnerships with others who share common interests to explore making these changes. Public-private efforts include CommerceNet and the NACHA's Bankers EDI Council. Agencies are working with States as well. For example, the GSA, the SSA, and others are members of NACHA's Internet Council, which is working with states and the private sector on assurance

standards for digital signatures. In addition, Treasury is working with the Banking Industry Technology Secretariat (BITS) to develop standards for the rapidly emerging electronic money technologies. Treasury also is collaborating with card associations and financial institutions to explore using SET to encrypt both payments and collections. Finally, the Department of Commerce (DOC) is working with the World Wide Web Consortium on Internet security protocols and with other industry groups.

<u>Managing Seller Information</u>

As a longstanding part of the contract process, Federal contractors have been required to remit data to the government about themselves and their businesses. The information is used to determine contractor compliance and eligibility under procurement laws, to satisfy legislative reporting requirements, and to enable agencies to pay contractors and comply with tax laws. The Debt Collection Improvement Act brought renewed attention to the collection of contractor information. The Act required that all vendor payments be made electronically and that taxpayer identification numbers (TINs) be collected from all trading partners.

Agencies currently have at least three options for managing seller information: (1) through a central registry, in which sellers could centrally provide information for multiple-contracts; (2) through financial intermediaries (networks), who could collectand maintain information on network members; and (3) on a contract-by-contract basis. Agencies should consider options, including using commercially-available services, in the light of their market of transactions and IT best practices. The DOD has developed and is implementing a registration architecture and interfaces in early 1998. The Department will add additional application functionality and consider the integration of commercial sources for this architecture. As part of the GSA card services contract, purchase card issuers can maintain seller information for payments made through them. Information likely will continue to be collected on a contract-by-contract basis for many other relationships.

Contract Formation and Administration

Contract formation and administration tools can help buyers make better deals and monitor them with less administrative burden. These tools can help vendors more easily sell their goods and services to the government. To get good value for taxpayer dollars, a buyer (among other things) must have a keen understanding of what the market offers, the ability to gain effective access to the marketplace, a way of efficiently and effectively negotiating with interested sources, and the means to ensure that sellers are keeping to the bargain during contract performance. Sellers, in turn, must be afforded easy access at minimal cost.

While agencies have been able to make improvements, due in large part to recent statutory, regulatory and policy changes, they continue to be hampered by the inefficiencies inherent in using paper-based processes. Keeping informed on the latest developments in the marketplace, for example, can be a time-consuming process where surveillance must be done manually, e.g., by hand searches of paper indices to catalogs, trade journals, or market surveys. By contrast, IT tools can give buyers the ability to efficiently conduct sophisticated searches of a vast amount of information and to undertake the type of product and service comparisons that form the underpinning of well-grounded, best value decisions. Accordingly, the government will strive to take advantage of technological advances to improve how it performs key functions of the buying and paying processes in the formation and administration of its contracts.

On-Line Market Research

Market Research

Buyers will use EC to improve their knowledge of the marketplace. Federal procurement offices will work to achieve this goal by: (1) expanding use of on-line commercial data bases and increasing buyer access to information contained in commercial catalogs, and (2) improving buyer ability to make comparative analyses regarding products and services currently available under various government contracts and those available on the open market.

Buyers find the growing number of Federal and commercial electronic catalogs to be useful research tools for learning about products and services. As described earlier, Federal electronic catalogs essentially are indefinite delivery contracts that government buyers can access electronically through use of a web browser. Commercial catalogs are established by private sources in the marketplace to provide product and service information and on-line ordering capabilities. Improved access to the growing number of Federal and commercial electronic catalogs can enhance an agency's ability to find useful, comparative information about a broad array of products and services. Improved access to Federal electronic catalogs, in particular, should also help buyers to take fuller advantage of the products and services already available under contract, and avoid the waste and delay of entering into a new contract. Buying from statutorily-mandated sources, such as UNICOR or JWOD, also is made easier. Representatives from selected procuring agencies will work with industry representatives to improve the interoperability between and among Federal and commercial catalogs.

> One of the first larger-scale efforts to harness the vast information on the Internet involved the DOD's Commercial Advocates Forum, which created an on-line "toolbox" to assist in market research. The toolbox contains items such as (1) a commercial register, which identifies information on industrial products and services as well as specifications and availability information; (2) a commercial catalog, which identifies and assists in evaluating potential sellers based on purchasing needs; and (3) a commercial report, which offers market research information and reports on key industries. Information on suppliers is "hot linked" to their catalogs. The forum also assists officials in identifying commercial terms and conditions, and other information, such as lessons learned and best practices.
>
> *http://www.acq.osd.mil/ar/cadv.htm*

Notice, Solicitation, Negotiation, and Award

Under the leadership of the Federal Procurement Council, Federal agencies will continue to expand the application of EC in support of the contract formation process. These efforts include enhancing current capabilities to provide sellers electronic notice of open market contracting opportunities above $25,000.

Improving access to open market contracting opportunities through the use of EC has long been, and remains, a key government initiative. Currently, all open market contract opportunities above $25,000 are published electronically and are available through a convenient, universally accessible, government-wide, single point of entry, called CBDNet. CBDNet gives acquisition professionals the ability to post notices directly to an electronic version of the Commerce Business Daily (CBD) while providing the public access to this information free of charge. In addition, CBDNet provides three search engines: (1) text searches, (2) field searches, or (3) searches by classification code. Finally, CBDNet supports hot links to agency home-pages and e-mail links to designated officials.

CBDPlus

CBDPlus, the next generation of CBDNet, will permit government buyers to post solicitations and other information directly to the Internet from their desktop computers. CBDPlus will support downloading documents for local printing and editing and will provide automatic e-mail notification about contracting opportunities in specific categories of interest to vendors who have signed up to receive such information. The CBDPlus system will have robust, free-of-charge search capabilities.

http://cbdnet.access.gpo.gov/index.html

In an effort to distribute acquisition-related information to industry more quickly and cheaply, CBDNet will be enhanced. The enhancement of CBDNet will be called "CBDPlus." CBDPlus is the result of a progressive partnership between the DOC, the GSA, the DOD and the NASA. CBDPlus will be developed in phases. Phase I will provide basic posting of solicitations and other information, search and e-mail notification capability with additional features added later. CBDPlus will be modular and enhanceable as the EC needs of the Federal acquisition and vendor community are more clearly defined.

Internet technology permits agency personnel to communicate internally or with sellers through secure "chat rooms" to improve the effectiveness, efficiency, and timeliness of the proposal evaluation process. From dispersed and remote locations throughout the agency, source evaluation panel members can conduct their independent proposal evaluations, log on and enter the designated chat room to discuss their individual concerns. EC applications also can be used to facilitate discussions with interested offerors.

Past Performance

Government evaluation and greater consideration of contractor past performance information in source selection decisions is motivating sellers to meet and exceed their cost, schedule, and performance goals. The utility of such information can be enhanced further through easier government access to such information. For this reason, agencies are choosing to increase their use of EC in the collection and retrieval of past performance information.

For example, the DOD is developing an integrated data environment that will allow all its component organizations and other agencies to collect and retrieve standardized past performance information. The DOD plans to develop its automated architecture in coordination with the development of its contract writing system (see the building block on contract writing systems).

As another example, the National Institutes of Health (NIH) has expanded its usage of EC in the collection and retrieval of past performance information. The NIH has been using an automated system since 1996 to gain access to past performance information. The system is projected by Spring of 1998 to serve 34 different government agencies with over 2,500 users with offices in all 50 states. The NIH intends to automate its entire past performance evaluation process. Under the new automated process, a

buyer's technical representatives will be able to enter the initial data into the system. The contracting official then electronically will be able to: (1) confirm and complete the evaluation; (2) transmit the evaluation to the contractor; (3) receive contractor responses; and (4) store the responses in the database.

Automated Acquisition: Contract Writing Systems

Automated acquisition/contract writing systems are used to automate a wide variety of buying-related business functions.   With greater workloads falling on the shoulders of a shrinking workforce operating under tighter budgets, agencies are turning to electronic acquisition systems to reduce and eventually eliminate inefficient and administratively burdensome paper processes.   Typical contract system functionality includes electronic assistance in:

· development and issuance of requisitions by the program office/requiring activity to the buying office;

· determination if funds are available for a contract;

· preparation of synopsis for direct transmission to CBDNet (or its successor);

· development and issuance of solicitations as well as electronic receipt of responses;

· preparation and issuance of award documentation; and

• preparation of receiving reports for transmission to and review by paying offices.

With the assistance of a contract writing system (and other EC initiatives), the DOD expects that contracting for major weapons systems will be paper-free by the year 2000. This "paper free" initiative will include all phases of the contracting process, including contractor selection, contract writing, contract administration, payment and accounting, auditing, and contract reconciliation and close out. Other agencies are undertaking similar efforts. For example, the Department of the Interior expects to have all its major buying offices fully implemented in its automated acquisition system by the end of FY 1999.

Federal System Interfaces

System interfaces are those points where software capabilities are required to allow one system to link up electronically (couple) with another, thereby eliminating any need for manual intervention, crosswalks or re-entry of data.   Interfaces are necessary to integrate Federal systems and allow automated processing end-to-end. End-to-end transaction processing will require interfaces: (1) between Federal financial management systems operated by the government and systems operated by commercial service providers to support Federal transaction processing and information needs, and (2) among Federal systems operated by the Federal Government (either using commercially available software or government- developed system).

Many different types of interfaces between Federal and commercial systems exist as commercially-available software or services.   Software interfaces usually are designed to reuse information from prior activities to subsequent activities. That is, while each government or commercial system is designed to support a limited set of activities within the broad scope of the end-to-end buying and paying process, each system also must transfer data to other systems and receive data from other systems as the buying and paying process progresses. Examples in buying organizations include purchase card management systems, requisitioning and ordering systems and contract writing systems.   Examples in paying organizations include financial and cost accounting system modules, and cash management systems. Interface services sometimes can be used in place of interface software in areas such as market

research, posting and payment.   Examples include catalog systems, purchase card provider systems, card management systems, invoice processing services, and third party payment systems.

The major processes that must be linked to Federal Government systems can be grouped into three categories: (1) buying (i.e. notices/solicitations, offering and awarding), and (2) paying (i.e., invoicing, third party pay services, electronic funds transfer (EFT) and Treasury checks); and (3) combined, where both buying and paying may be handled through the same support mechanism primarily in the area of the use of cards. These major processes or capabilities must be linked up with the various types of agency application systems which support transaction processing, financial accountability, and performance measurement. These systems exist to support particular functions and will need to link electronically with commercial services to properly track transactions and to ensure adequate accountability over taxpayer dollars.   In addition, performance data will be needed to monitor procurement activity, e.g., Federal Procurement Data System (FPDS) and systems that monitor prompt payment or vendor activity.

Interfaces between Federal and Commercial Systems

Commercial Services	Transaction Tracking					Financial Accountability		Performance Information	
	Acquisition		Accounting						
	Contracting	Ordering	Payables/ Disbursements	Property/ Inventory	Travel	Fin/Cost Accounting	Cash Mgt (Treas)	FPDS	Other
Buying									
Notice/ Solicitation	•	•						•	
Offering	•	•						•	
Awarding	•	•						•	
Paying									
Invoicing			•						•
Third Party Pay Services			•						•
EFT			•				•		•
Treasury Checks			•				•		
Combined									
Card Services									
Purchase		•	•	•		•		•	
Travel			•		•	•			•
Fleet		•	•	•		•		•	
Intra-governmental	•	•				•			•

(An "•" indicates the system in the column and row header must exchange data.)

The government recognizes the challenge and opportunity Federal systems interfacing represents for improved efficiency in the buying and paying process, and will address that issue as part of the future growth management of Federal EC. In particular, the government will undertake the following actions to ensure maximum benefits are derived from the initiatives in this plan.

·   The CFO Council Financial Systems Committee, the Joint Financial Management Improvement Program (JFMIP), and the EC Program Office will work in partnership with commercial systems and service providers to define the standard interface points necessary for common data exchange between component systems. Existing national and international standards will be used (when possible) in exchanging data at those interface points. Industry-led consortia standards, e.g., SET, SSL, digital encryption standard (DES), etc, also will be considered in this process. The goal is to maximize the availability and use of commercially-developed off-the-shelf interoperable component systems which can be modularly assembled into fuller-function procurement and financial support systems.   Priority will be on Federal systems interface agreements with commercial transaction processors who collect, transmit, or report, information necessary for government operations or management.

·   The CFO Council Financial Systems Committee and the JFMIP will work to take advantage of commercially available capabilities by re-designing the Federal financial systems architectures. New systems capability will be developed to replace or supplement existing Federal systems capabilities to enhance interoperability of these commercial systems with existing Federal systems.

·   Under the auspices of the PKI Steering Committee, agencies will work in partnership with industry information technology and security experts to create and adopt standards needed to bring Internet security for system inter-connectivity to an acceptable level of trust for interfacing systems.

·   The EPIC will work with commercially segmented associations representing commodity groups (e.g., automobile industry, aerospace, medical, information technology services, financial, office supplies, etc.) where there is interest to standardize across industry lines.   Where this is possible, the government can reduce the number of interfaces needed to do business.

In addition to these interfaces, the government must link agency systems. The myriad of existing agency systems architectures precludes the concise presentation of a structure of electronic links among Federal systems and extends beyond the scope of simply buying and paying. Agencies will need to both work independently and together where there are commonalities to address these interfaces.

Collecting and Reporting Performance Information

Measuring the performance of government operations in terms relevant to the customer can help increase public confidence in government. EC can facilitate the collection of timely, accurate and detailed performance information by reporting performance information in an automated process, reducing the risk of lost or erroneous data.

Automated procurement data collection systems traditionally are developed as stand alone applications. As a result, users are forced to connect to a multitude of systems -- through unique connections, method, interfaces, and protocols -- and re-key data already existing in other systems. In the short run, the amount of information collected could be supplemented by techniques such as sampling. The long term challenge is to build a framework in which necessary reporting systems are coupled (interoperable). The ability for these systems to interface with one another would greatly enhance system functionality and the ease of collecting performance information.

The value of reporting systems can be increased by giving managers on-line access for data submission and retrieval throughout the procurement cycle.   For example, information in the FPDS could be used for market research. FPDS data is now available on the Internet for program managers to access.

Change Management Process

No matter how great its potential, achievement of the long-term benefits of EC will be delayed unless there is effective management of the transition from paper based to electronic buying and paying processes. Change management involves a coordinated effort by Federal agencies to identify and leverage the common interests of stakeholders to achieve the strategic positions described in this EC plan. This requires leadership across organization boundaries. Starting with the EC plan as a road map, there are change management functions to be fulfilled in an organized manner by Federal and state governments and the private sector community of trading partners. Efforts must be directed at stakeholders both within and outside government.

External Access to Markets and a Uniform Operating Environment

Two important conditions for stimulating the buy-in needed for large scale Federal EC are: (1) the ability for sellers to have easy and less costly access to government contract opportunities; and (2) the existence of a uniform operating environment for payment and related transaction processing.

- The government's continuing efforts take into account the need for easy and inexpensive access as well as the importance of educating buyers and sellers about the government's EC activities. Existing government change agents will help accomplish these objectives.

- Agencies will work in specific areas, such as intra-governmental transfers or PKI, with their commercial counterparts to address issues related to developing a uniform operating environment. A uniform operating environment for EC ordering and payment includes, among other things, technical components (e.g., physical and application standards); performance requirements (e.g., processing times, volumes, etc.); and, privacy, liability, risk management and audit requirements (reflecting applicable laws and regulations). For large scale transaction processing, these components are reflected in private sector operating rules (multi-party liability agreements) that govern the behavior of all parties to the transaction.

Several aspects of the operating environment needed to support large scale EC are a work in progress, particularly as risk management and liability structures strive to keep pace with technological advances. Across the Federal Government, states and the private sector there are common interests in speeding the development of the operating environment in a responsible manner. States, state trade associations and private sector trade associations offer open forums to pursue such operating environment issues. The large scale EC prototypes and operations contemplated by this plan, because of the market opportunity they represent, can offer a useful context and timetable for resolving issues related to the EC operating environment. Federal Chief Financial Officers,

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· **ARNET** -- the Acquisition Reform Network, serves as a central location for Federal acquisition related issues for both government and industry

· **PRONet** -- the Procurement Marketing and Access Network, is a free, on-line search engine providing access to the profiles of more than 170,000 small, disadvantaged and women owned businesses.

· **ECRCs** -- 16 regional EC Resource Centers (ECRCs) within the Department of Defense promote EC among small and medium sized businesses by providing training and technical assistance.

Private sector operating rules for retail and wholesale payment processing incorporate technical and application standards for transactions; and roles, responsibilities, performance criteria, liabilities and audit requirements for the various parties involved in a transaction. They are managed by a series of committees, with rotating chairs, populated by representatives of the various processing entities and functional areas in the association. The rules form the basis of multi-party agreements that support operations and their structure provides a management framework.

Chief Information Officers, and Senior Procurement Executives involved in Federal EC projects will work with their State counterparts to identify and capitalize on areas of common interest.

Internal Government Marketing and Management

The President's Management Council, comprised of cabinet agency chief operating officers, has created the Electronic Processes Initiatives Committee (EPIC). The EPIC is a functionally-integrated, interagency body, to coordinate EC development activity across the Federal acquisition, finance and information technology communities. The EPIC will review the current cross-functional needs of these communities and assess the effectiveness of existing interagency bodies to meet those needs. Within the next six months, the EPIC will develop a plan for reshaping or eliminating existing bodies and establishing new bodies, as necessary, to facilitate government EC partnerships and successful large scale reeingineering guided by the policy principles.

Relationship of Policy Principles and Building Blocks

Key ● Strongly Supports ● Supports *Building blocks signify identifiable groups of activities that support increased compliance with policy principles*		**Policy Principles**						
		Reduce Administrative Costs	Facilitate Best Value Buying and Paying	Use Proven Commercial Applications	Outsource Transaction Processing	Assign Liability Based on Ability to Mitigate	Monitor Investments for Returns	Manage the Change Process
B u i l d i n g	Electronic Catalogs	●	●	●	●	●	●	●
	Payment Utilities	●	●	●	●	●	●	●
	Buyer & Seller ID/Authentication	●	●	●	●	●	●	●
	Planning & Contract Formation	●	●	●			●	●
	Contract Writing Systems	●	●	●			●	●
	Federal System Interfaces	●	●	●			●	
	Change Management	●	●	●			●	●

The Track 2 scope and vision statements call for Federal EC program managers to assume a new role and rely upon commercial transaction processing services of payment utilities. To exploit the potential of these services, each party must be educated about the other. Agencies must be able to access and analyze the menu of available services, across payment utilities competing for their business. Payment utilities need a description of agency transactions, a checklist of agency service needs, and a portrait of each agency's systems landscape. For payment utilities to yield important value added

services,   agencies together must agree on and document their service needs in areas such as intragovernmental transfers, use of electronic malls, and smart card applications.   Utilties will have to understand these value added processing needs and match them up with their own commercial product offerings.   The EPIC is establishing a group of senior technical advisors from interested agencies to coordinate these functions within the framework of the new GSA card services contract.

Beyond the initial wave of education, operations staff at agencies and at the utilities have to hook up new systems interfaces and manage roll out of the new services within agencies.   As work proceeds across agencies and across utilities, policy and operational guidance issues in acquisition, finance and information technology will have to be resolved in a consistent manner and in a timely manner.

The Track 3 change management functions associated with reengineering steps in the acquisition cycle are more developmental in nature.   Transaction processing for internal acquisition cycle functions are, at least for the time being, less like the processes supported by commercial services for ordering and payment. More process reeingineering needs to occur. Track 3 work requires both a dedicated effort within the acquisition community and forum for coordination across functional areas.   Over the next six months, the President's Management Council will work with OMB and the Federal Procurement Council to establish an acquisition cycle reengineering structure. As the acquisition cycle development effort creates requirements, a measure of their success will be the extent to which they can be linked to commercial   service systems for ordering and payment. When considering proposed EC investments in the budget process and in agency IT review boards, agencies and OMB will use the policy principles as criteria for judging the merit of investments into building block activities.

7. MIGRATION PATH

The EPIC will provide a forum for inter-agency coordination on the activities below. The responsible party(ies) for each activity is (are) identified in parentheses in the description of each activity. Progress on these activities will be reported in subsequent iterations of this plan. Given the dynamic nature of the EC environment, these iterations will also report on changes in expected timelines.

Track One: Foster Partnerships by 1998	**Estimated Completion**
Building Blocks: Change Management	
1. Provide direction for agency-specific EC plans (OMB)	3rd Qtr FY 1998
2. Establish management framework to support government-wide card service EC applications (EPIC, GSA)	3rd Qtr FY 1998
3. Develop agency-specific EC plans (PMC agencies)	4th Qtr FY 1998
4. Review mission and relationship of existing inter-agency EC groups to EC plan (EPIC)	4th Qtr FY 1998
5. Identify acquisition cycle reengineering structure (PMC)	4th Qtr FY 1998
6. Report on status of migration path activities (OMB)	1st Qtr FY 1999

Track Two: Reengineer and Integrate High Volume Services End-to-End by 2000	**Estimated Completion**
Building Blocks: Electronic Catalogs Payment Utilities Buyer and Seller ID/Authentication Federal System Interfaces	
7. Establish government-wide performance measures for use of payment utilities [e.g., purchase cards] (OMB, CFO Council)	3rd Qtr FY 1998
8. Begin using payment utilities to support standard catalog access (EPIC, ECPO, Catalog Agencies.)	1st Qtr FY 1999
9. Begin using payment utilities to support intra-governmental transfers (Treasury, Defense, GSA)	1st Qtr FY 1999
10. Begin using payment utilities to support Internet ID and authentication (GITSB, PKI Steering Committee, EPIC, Selected Agencies)	1st Qtr FY 1999
11 Develop interfaces standards between payment utilities and agency legacy systems (CFO Systems Committee/JFMIP)	1st Qtr FY 1999
12. Conduct and evaluate EC payment pilots using next-generation commercial technology (Treasury)	1st Qtr FY 1999

13.   Implement prototype for integrated smart card EC access. (GSA, Selected Agencies)

2nd Qtr FY 1999	**Track Three: Reengineer Additional Buying and Paying Functions by 2001**	**Estimated Completion**
	<u>Building Blocks:</u> Electronic Catalogs Buyer and Seller ID/authentication Contract Formation and Administration Contract Writing Systems Federal System Interfaces	
14	Establish government-wide performance measures for EC (Federal Procurement Council [FPC], with EPIC and ECPO assistance)	4th Qtr FY 1998
15	Issue plan for identifying and implementing EC applications related to acquisition functions. (FPC, with assistance from EPIC and ECPO)	1st Qtr FY 1999
16	Issue plan for enhancing electronic catalog purchasing. (FPC, with assistance from IAIC, ECPO and EPIC)	1st Qtr FY 1999
17	Roll-out CBDPlus (Pilot agencies)	1st Qtr FY 1999

Authentication: A security measure that verifies that an electronic data interchange message was not tampered with or altered during transit.

Authorization: The act of insuring that the cardholder has adequate funds available against an account at a financial institution.

Business Case: A rationale for action that includes analysis of costs and benefits over time, market position, willingness to bear risk, and other business factors.

Cardholder: Any person who makes purchases using a purchase card.

Cryptography: The application of mathematical theories to realize a certain level of security or secrecy.

Digital Signature: A transformation of a message using an asymetirc cryptosystem (and public key cryptography) and a hash function such that a person having the initial message and the signer's public key can accurately determine wheter the transformation was created using the private key that corresponds to the signer's public key and whether the initial message has been altered since the transformation was made.

Electronic Catalog: A web-based electronic ordering system which involves (1) a contract with pre-established business arrangements with industry,(2) a means for the customer to identify and order goods and services, and (3) sufficient information for the customer to compare the items offered by performance, price and delivery.

Electronic Commerce (EC): Electronic techniques for accomplishing business transactions, including electronic mail or messaging, World Wide Web technology, electronic bulletin boards, purchase cards, electronic funds transfers, and electronic data interchange.

Electronic Data Interchange (EDI): The computer to computer exchange of business data in a standardized format between Trading Partners.

Electronic Funds Transfer (EFT): The exchange of payment and remittance information electronically.

Electronic Signature: A code or symbol that is the electronic equivalent of a written signature.

Encryption: The transformation of confidential plain text into a cipher text in order to protect it.

End-to-End Services: Services that support the complete buying or paying process, from needs assessment through final payment; usually focused on order and payment processing.

Federal Procurement Data Center (FPDS): Established by the Office of Federal Procurement Policy Act as the central repository of information on federal contracting.

Intranet: A proprietary network that uses Internet Protocol for communications.

Internet: A data infrastructure that connects computers via telecommunication networks. It is estimated that in 1995 the Internet consists of over 120,000 host computers connecting more than 40 million users through 70,000 networks. Today, an estimate 58 million users in North America access the Internet

Internet Commerce: Business transactions conducted on the Internet

Intra-Governmental Transfer: A transfer between two different budgetary accounts in the Federal Government that occurs outside of a single general ledger system.

Market Opportunities: Opportunities to send signals into the marketplace about a product, service or market segment that have a good chance of changing market position of that product, service or market segment.

Payment Utility: Commercial entities that provide common financial services including authorization control, transaction processing, reconciliation, and reporting.

Private Key Cryptography: Cryptography using symmetric keys, or the same key for encryption and decryption.

Public Key Cryptography: Cryptography using asymmetric keys, or different keys for encryption and decryption.

Purchase Card: A charge card product oriented towards institutional (business) customers.

Remittance: The process of identifying the purpose of a payment and detail about the payment, such as with a remittance stub included with a check for bill payment.

Smart Card: A plastic card in which is embedded an IC chip and has both data-processing and storage functionality.

System Interface: The link between two computer systems.

Trading Partners: Commercial entities that do business with each other using EDI.

Transaction: A generic term used to describe any step or set of steps, usually grouped together for legal, processing, selection or liability purposes, in the end-to-end processing of orders and payments.

APPENDIX B: ABBREVIATIONS

APPENDIX C: CONTRIBUTORS

ACH -- Automated Clearing House

ADP -- Automated Data Processing

ARNET -- Acquisition Reform Network

BITS -- Bankers Industry Technology Secretariat

BPA -- Blanket Purchase Agreement

CBD -- Commerce Business Daily

CFO -- Chief Financial Officer

CIO -- Chief Information Officer

DES -- Digital Encryption Standard

DOC -- Department of Commerce

DOD -- Department of Defense

EBT -- Electronic Benefits Transfer

EC -- Electronic Commerce

ECPO -- Electronic Commerce Program Office

EDI -- Electronic Data Interchange

EFT -- Electronic Funds Transfer

EPIC -- Electronic Processes Initiatives Committee

FASA -- Federal Acquisition Streamlining Act

FPC -- Federal Procurement Council

FPDS -- Federal Procurement Data System

GITSB -- Government Information Technology Services Board

GMRA -- Government Management Reform Act

GPRA -- Government Performance and Results Act

GSA -- General Services Administration

IAIC -- Inter-Agency Internet Council

ID -- Identification

IDIQ -- Indefinite Deliery, Indefinite Quantity

IRS -- Internal Revenue Service

IT -- Information Technology

JFMIP -- Joint Financial Management Improvement Program

NACHA -- National Automated Clearing House Association

NASA -- National Aeronautics and Space Administration

NIH -- National Institutes of Health

OMB -- Office of Management of Budget

PBSC -- Performance-Based Service Contracting

PMC -- President's Management Council

PIN -- Personal Identification Number

PKI -- Public Key Infrastructure

SET -- Secure Electronic Transaction

SSA -- Social Security Administration

SSL -- Secure Socket Layer

TIN -- Taxpayer Identification Number

Treasury -- Department of the Treasury

APPENDIX C: CONTRIBUTORS

This report is a result of the dedication and hard work of many contributors. The Electronic Processes Initiatives Committee (EPIC) principals and their senior staff on the EPIC support group charted the course, reviewed the draft reports and provided valuable input. Staff from the Office of Management and Budget (OMB) prepared the draft based on input and advice from a wide range of Federal contributors.

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