

***Government Support for E-business:
Comparative Experiences***

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Government Support for E-business: Introduction¹

The spread of the Internet and the use of electronic business processes are dramatically altering the way business is conducted across virtually all sectors of the economy, including the public sector. Governments in leading industrial countries in Europe, North America, and Asia are adopting new measures to promote the use of electronic business processes within the private sector of their domestic economies, they are negotiating the establishment of international agreements in areas ranging from privacy, security, encryption and other matters affecting consumer trust, to ensure that the economic and legal conditions for the commerce are widely available. And finally, governments themselves have been adopting a host of new measures to speed the use of e-business techniques within their own administrative processes.

This report documents a number of the leading initiatives underway around the world. It makes no attempt to provide a comprehensive overview of these developments, as virtually every government in the world is currently either examining the ways in which it can facilitate the diffusion of e-business best practices and adopt those practices for its own internal use, or alternatively, is implementing the recommendations contained in recently released reports. Keeping up with these reports itself is a staggering task because the pace of innovation in government policy in this area is being conducted in what private sector entrepreneurs have come to refer to as “Internet time”.

The key question posed by a number of observers is whether there is one new economy emerging, based on the Internet and the e-business practices associated with it, or whether there are several variants of it. The dominant view in the US, especially in Silicon Valley, is that the technology drivers themselves will force a convergence in both business models and government policy towards a predominantly American model. In this view, fundamental economic changes driven by the market transformation underlying the Internet economy will sweep away both divergent national economic models and the ability of individual nation states to regulate the emerging economy. However, astute observers such as John Zysman and Francois Bar of the Berkeley Roundtable on the International Economy, suggest that this perspective may be somewhat limited. At the very least, the emergence of new forms of business networks and practices is forcing a wide array of new issues onto the government policy agenda. As a consequence, the emerging technologies, the applications to which they are put, and the various business models associated with them, are strongly influenced by the national and supra-national policy frameworks within which they operate. Differences in government policy and legislative frameworks in North America, Europe, and Japan will likely influence the development of the new technology and the patterns of market behaviour associated with it.

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The purpose of this report is to explore the ways in which government policies are being designed to influence the emerging Internet economy. While the full range of measures they are adopting to promote the use of e-business best practices is quite broad, the report focuses on a more limited array of initiatives that are attracting attention and are deemed to afford a high potential to stimulate the adoption of e-business practices in the private sector. In this context, a number of specific areas of government policy have been selected for more detailed examination across a range of countries. The measures surveyed below have been selected on the basis of two criteria: either they seem to represent current international 'best practice' or there is a strong consensus across several governments of the governments survey that they represent critical policy areas.

The countries surveyed in this report include the US, UK, Ireland, Australia, and, to a lesser extent, selected initiatives at the level of the European Union. All of these countries have adopted major policy initiatives to influence the diffusion of e-business practices and many of them view Canada as one of the key competitors that they must respond to. Among the specific policy areas examined are:

- Policy Frameworks and Executive Coordination
- Expanding Information Infrastructure - Broadband Access
- Governments as Model User
 - Procurement/Electronic Catalogues
 - Electronic Business Opportunities
 - Electronic Funds Transfer/Electronic Benefits Transfer
- Taxation of E-business
- Building Consumer Trust
- Technology Transfer/Small Business Support
- Export Development and Promotion
- Focused R&D Initiatives

Policy Frameworks and Executive Coordination

Each of the countries surveyed have recently adopted new policy initiatives and policy frameworks to guide the development of its e-business strategies. In addition, these countries have also put in place new bureaucratic structures to facilitate the coordination of their e-business strategy across a wide range of government ministries, departments and agencies. While the nature of these structures varies depending on the administrative culture of the individual countries, one feature which they share in common is the presence of a mechanism for ensuring that government initiatives are coordinated at the highest level of executive agencies and that a reporting mechanism exists to keep the chief executive directly involved in every aspect of the government's strategy. This fact indicates the high level of priority being given to this policy area.

The rapid growth of web sites around the world in the mid-1990s and the speed with which the Internet has been adopted as a new instrument by business propelled governments in the leading industrial countries to respond in rapid order. The negotiation of the Agreement on Basic Telecommunications Services in February, 1997 by the World Trade Organization signalled a significant transition in the international telecommunications policy regime away from national regulation of monopoly service providers towards more intense international competition between these entities, as well as new carriers oriented primarily towards the transmission of data, and new providers of value-added services in increasingly open international markets. This development unleashed a flood of new policy documents by the leading industrial countries, the European Commission's paper, *A European Initiative in Electronic Commerce* in April, 1997, MITI's report *Towards the Age of the Digital Economy* in May, 1997 and the Clinton Administration's *A Framework for Global Electronic Commerce* in July, 1997. Of these, it is the US Government's policy framework that has had the greatest impact on competitive developments in other jurisdictions.

US Framework for Global Electronic Commerce (July, 1997)

The United States was one of the earliest countries to seize the initiative in adopting new measures to promote the spread of e-business within its own economy and ensure that developments within the global economy provide key advantages for its domestic business enterprises. Many of the roots of the government's current initiatives can be found in the exercise in Reinventing Government undertaken in the early days of the first Clinton administration. A common feature that recent measures bear in common with those initial steps is the central role assigned by the President to his Vice-President in guiding the implementation of the Administration's strategy across the reaches of the Federal Government.

The Framework set out five principles intended to "guide government support for the evaluation of electronic commerce", as well as identified nine key areas where it recommended specific measures to be taken to achieve the principles. The five key principles are based on the idea that the private sector should assume leadership, government should avoid imposing undue restrictions on the dissemination of e-business, government should enforce a predictable, minimalist, and consistent legal environment, it should recognize that existing regulatory frameworks for telecommunications, radio and television may not be suitable to the unique features of the Internet and that e-commerce on the Internet should be facilitated on a global basis.

Among the key areas identified in the report in need of government attention were the need to refrain from imposing new taxes on Internet business; the need to avoid imposing overly restrictive regulations on electronic payment over the Internet, the need for adequate intellectual property protection on the Internet, the need to ensure personal privacy in an Internet environment, the need to guarantee secure data transactions on the Internet, the need to ensure that a seamless global telecommunications infrastructure was adequate to facilitate global

electronic commerce and the need to let the marketplace, not government, establish the technical standards for interoperability on the Internet.

To ensure that the desired actions were undertaken by his administration in the appropriate policy areas, the President issued a set of thirteen directives in the form of a memorandum for the heads of executive departments and agencies in the US government, including the Secretary of Commerce, the Secretary of the Treasury and the US Trade Representative, the Director of the Office of Management and Budget and the Administrator of General Services, instructing them to take appropriate action. Among the key directives that have received less attention in most accounts of the 'Framework' document, but which are central to the issues covered in this report, there was one to the Secretary of Commerce to work with the private sector, state, local and foreign governments to develop a legal framework that recognizes, facilitates and enforces electronic transactions worldwide (Directive no. 7), one to the Secretary of the Treasury to monitor developing experiments in electronic payments systems and to work closely with the private sector to stay apprized of policy developments and ensure that government activities accommodate the needs of the emerging marketplace (Directive no. 11), and another to the Administrator of General Services to move the Federal Government into the age of electronic commerce by expanding "GSA Advantage", its online shopping service for the Federal community to cover four million items by 12 months from then (Directive no. 13).

Finally, the President asked the Vice President to lead an inter-agency group operating out of the Executive Office to coordinate the US government's electronic commerce strategy and he directed that executive department and agency heads report back to himself and the Vice-President through this inter-agency group on its progress in meeting the terms of his directive. This part of the directive led to the establishment of the US Government Working Group on Electronic Commerce co-chaired by David Beier, the Chief Domestic Policy Advisor in the Vice-President's Office and Sally Katzen, the Deputy Assistant to the President for Economic Policy and Deputy Director of the National Economic Council. In August, 1999, the White House named Elizabeth B. Echols as the new Executive Director of the Electronic Commerce Working Group, responsible for coordinating e-commerce issues.

On November 30, 1998, the US Government Working Group issued an update report to the President on the government's progress in complying with his directives. The update details the progress made on each of the President's directives since the original policy framework was issued. A number of these are of interest. With respect to Directive no. 7, it notes that the Government Paperwork Elimination Act passed in 1998 provides for Federal agencies to implement electronic filing systems, to eliminate the need to retain paper records and to use electronic authentication methods to verify the identity of the sender and the integrity of electronic content. In the area of Directive no. 11, it comments that the Financial Management Service at Treasury has established a number of pilot programs to test Federal payments and cash collection management options. Recent initiatives include the use of smart cards, electronic checks, and Internet credit card transactions. It has sponsored the first fully digital electronic

check pilot project utilizing e-check technology to pay Department of Defense vendors. The Internal Revenue Service is also moving online to allow both individuals and business to file returns electronically. Finally, under Directive no. 13, it reported that the General Services Administration is making progress towards its goal of having four million items purchased by the federal government on GSA Advantage. A key objective of this directive is to “drive vendors to change as more agencies make electronic purchasing capability a requirement for doing business with them.”

On November 29, 1999, President Clinton issued a new memorandum to the head of all executive departments and agencies in the US Government setting out an additional process to help facilitate the growth of electronic e-commerce. The memorandum mandated the US Government Working Group on Electronic Commerce to establish a subgroup led by the Dept. of Commerce to: 1) identify laws and regulations that impose barriers to the growth of electronic commerce, and 2) recommend how these laws and regulations should be revised to facilitate the development of electronic commerce, while ensuring that protection of the public interest is equivalent to that provided with respect to offline commerce. The President directed that the Working Group request each federal agency to identify any provision of law administered by the that agency or any regulation issued by it that may impose a barrier to electronic transactions or otherwise impede the conduct of commerce online, and to recommend how such laws or regulations might be revised to allow electronic e-commerce to grow, while at the same time protecting the public interest. The Working Group was also directed to invite representatives of state and local governments to identify laws and regulations at their level that may impose a barrier to electronic transactions or to the conduct of commerce online. The Working Group was directed to report back to the President in a timely manner, identifying the laws and regulations that need to be amended to facilitate electronic commerce, as well as to recommend steps for removing barriers that will facilitate the growth of electronic commerce and ensure continued protection for consumers.

Internal Government Coordination of Electronic Processes

In addition to the Working Group responsible for coordinating the response to the Directives set out in the Framework for Global Electronic Commerce, the US Government has a second coordinating process responsible for overseeing the implementation of all electronic processes internally within the federal government. Responsibility for this internal process rests with the Electronic Processes Initiatives Committee (EPIC) which is chaired by the Deputy Director for Management (Acting) for the Office of Management and Budget, and also includes the Administrator of the General Services Administration, the Under Secretary for Domestic Finance at the Department of the Treasury and the Under Secretary of Defense (Comptroller) at the Department of Defense. The Federal financial, procurement, and information technology communities are represented in EPIC. EPIC is the US government's inter-agency policy coordinating organization for electronic commerce and electronic government. It was formed in 1997 by the President's Management Council whose members include the President, Vice

President and other key members of the Cabinet. While the work of this body has not garnered nearly as much attention as that of the better known Working Group, its responsibilities and activities have equally significant implications for the speed and manner in which the US government is promoting the adoption of electronic processes. Its members meet periodically to assess progress towards implementing the strategic plan and to collaborate on next steps for key initiatives with cross-functional interest. EPIC's support group ensures ongoing coordination of e-commerce development activity across the Federal finance, acquisition and information technology communities by including representatives of the Chief Financial Officers Council, the Procurement Executives Council and the Chief Information Officers Council in its discussions.

EPIC served as the forum for coordinating the government's 1998 electronic commerce strategic plan, *EC for Buyers and Sellers* and was responsible for the production of OMB's annual report to Congress on electronic commerce in the Federal government in June, 1999. EPIC focuses on a variety of areas, including electronic funds transfer (EFT), purchase cards, smart cards, electronic identification, electronic benefits transfer (EBT), electronic contractor registration, and others. Both the Working Group on Electronic Commerce and EPIC report directly to the Executive branch of government through high level bureaucratic officials responsible to the President and Vice-President. This ensures that US government policy, both external and internal is being coordinated by the head of the government.

Responsibility for the more programmatic aspects of implementing electronic commerce rests with the federal Electronic Commerce Program Office. This is co-chaired by a senior administrator of the General Services Administration and one from the Department of Defense. Jointly these two agencies are currently running the largest electronic catalogues offered by the US government and are responsible for the bulk of online purchases and contracts.

The administrative structures outlined above are responsible for providing the overall direction to US Government policy with respect to electronic commerce. They grow out of a number of earlier administrative reviews, as well as more recent pieces of legislation passed by Congress, that provide additional stimulus for the implementation of electronic processes within government. Among the significant reform measures and pieces of legislation that provide part of the foundation for the implementation of these electronic processes are the efforts initially undertaken in connection with the National Performance Review in 1993 that were institutionalized as the National Partnership for Reinventing Government (NPR), the National Information Infrastructure Initiative, the Access America Report, the Government Debt Collection Act, 1996 and the Government Paperwork Elimination Act, 1998. In interviews conducted in Washington in September, several officials pointed out that although not all of the legislation was initiated by the administration, they have been quick to take advantage of it to spur the pace of adoption of e-commerce. The key institutional feature that ties all of these administration initiatives together is the central role assigned by the President to his Vice-President in directing and coordinating them.

Policy Frameworks and Executive Coordination in the UK

The current government of the UK has also identified the promotion of electronic commerce as a top priority for its overall economic development strategy. In a new report issued by the Performance and Innovation Unit of the Cabinet Office in September, 1999, [e-commerce@its.best.uk](#), it asserted that electronic commerce lies at the heart of the Government's vision for building a modern, knowledge-driven, economy in the UK. It reasserted the Government's aim, originally set out in the Competitiveness White Paper issued in December, 1998 to "make the UK the best environment in the world for e-commerce." The overall purpose of the PIU report is to define the detailed, comprehensive and cross-departmental strategy needed to ensure that the UK achieves this Government objective. The report sets out three priorities for UK Government policy in this area: 1) to overcome business inertia and stimulate UK business to adopt electronic practices more speedily, 2) to ensure that the Government's own actions drive the adoption of electronic commerce, and 3) to ensure better coordination between government and industry to gain maximum benefit from existing and proposed programs.

The PIU report is the central agency planning document, intended to set the stage for a more coordinated approach to e-commerce across the UK Government, but not to supplant the existing efforts of program/policy areas which are already involved in e-commerce activities (especially the Department of Trade and Industry which has had the lead to date in many areas and the new Minister for e-Government currently operating in Cabinet Office). The overall vision or objective set out in the report is to establish the UK as "a world-class centre for e-commerce", "the leading "hub" for e-commerce activity within a successful single European market"; a country with "the necessary *foundations* of open and competitive markets and stable fiscal and regulatory regimes...where business and citizens *understand*...the opportunities offered by e-commerce and e-government...in which *access* is readily available to all...and where *trust* has been established to facilitate acceptance of new tools of commerce and new styles of operating business."

Both the PIU report and the Prime Minister's foreword stress the need for "higher political priority" and "stronger political and managerial leadership at the centre of government" for e-commerce and e-government initiatives. In response to the report, the government has established a more centrally managed coordination process. The Prime Minister's foreword announced the appointment of Patricia Hewitt as the Minister responsible for coordinating the e-commerce strategy across government and for taking forward the report. The e-Minister will report directly to the Prime Minister, providing political leadership and coordination of the full range of activities in this area and providing "a single point of contact with industry and media on Information Age issues". The e-Minister will also head an inter-Ministerial group responsible for coordination of numerous existing initiatives for "inclusion" of potentially excluded social groups and enhanced monitoring of e-commerce "distributional concerns".

At the management level, an “e-envoy” is to be appointed, reporting to both the e-Minister and the Minister for e-Government, but with a “direct link” to the Prime Minister and located in Cabinet Office (with staff as required). The e-envoy is to chair a new cross-departmental “Information Age Management Board” (at the staff rather than the ministerial level) to ensure effective coordination, with consideration given to the inclusion of external, non-executive members to bring in a wider range of public, private and consumer group input. The e-envoy is also to chair a larger inter-departmental group for coordination of these activities, an existing body of representatives from twenty-six departments, agencies and local government associations called the “Information Age Champions Group”, announced by the Public Service Minister in May, 1999. Each major department will also identify “e-commerce coordinators” to create an effective network of innovators at middle management levels in the civil service and wider public sector. They are to be given special training and charged with responsibility in line departments of directing agreed upon changes and providing a point of contact for the e-envoy to overcome the kind of “silo thinking which can sometimes be implied by organizational boundaries”.

The focus on new appointments, the training of selected staff, and cross-departmental organization structures with central reporting reflects a concern that the culture of government in the UK requires change to achieve its overall e-commerce/e-government objectives. The Information Age Champions Group is undertaking a program to address the behavioural and cultural changes that are inherent in moves to perform Government business electronically.

Policy Frameworks and Executive Coordination in Australia

The key document setting out the Australian strategy for e-commerce is *Australia's E-commerce Report Card*, released by the Minister for Communications, Information Technology and the Arts in July, 1999. The “E-Commerce Report Card” sets out the government’s priorities for e-commerce and identifies activities underway and planned in this area. This strategy is linked to the priorities of a broader “information economy” strategy which was set out in a framework document, *A Strategic Framework for the Information Economy*, released in January, 1999. The mission statement of the Strategic Framework is “To ensure that the lives, work and well being of Australians are enriched, jobs are created and the national wealth is enhanced, through the participation of all Australians in the growing information economy”. The ten strategic priorities identified in the E-commerce report card are divided into four general areas of priority: 1) establishing the legal and regulatory framework needed to create an environment of trust and the regular use of e-commerce by both business and consumers; 2) demonstrating the business case for e-commerce by demonstrating its benefits in solving business case imperatives and demonstrating its role in promoting business growth; 3) targeting barriers and improving infrastructure by dealing with issues such as the adequacy of bandwidth and questions of interoperability; and 4) maximizing the efficiency dividend for the economy by removing barriers in the uptake of e-commerce in key sectors.

High level policy coordination in Australia's overall e-commerce strategy is assured by the emphasis in its planning placed on a "whole of government approach" and the subsequent consolidation of many e-commerce responsibilities under the leadership of the Minister for Communications, Information Technology and the Arts. Staff support and coordination for this leadership role is provided by the National Office for the Information Economy (NOIE) which works closely with other federal, state, territory governments and industry and community groups to translate the government's priorities into action. The Australian Information Economy Advisory Council provides high level industry and community input. The Online Council includes a Minister from each state and territory representing online information and communication services. The Office for Government Online is also responsible for implementing the procurement policy and other key initiatives that are part of the e-commerce strategy. Finally, key aspects of the strategy, especially those relating to the role of e-commerce in promoting Australian exports are being led by the Deputy Prime Minister and Minister for Foreign Affairs and Trade.

Policy Frameworks and Executive Coordination in Ireland

The government's strategy, *Implementing the Information Society: An Action Plan*, was published in January 1999. It was intended as a comprehensive action framework dealing with current and future government action in the areas of telecommunications infrastructure, development of e-commerce and business opportunities, associated enabling and legislative measures, the role of information and communications technology in the delivery of public services, support areas where further action is needed and the consequent plans for moving the overall strategy forward. Although there has been no separate government strategy issued to date dealing exclusively with e-commerce, the government did release an important report in August, 1999, the *Report on e-Commerce: The Policy Requirements* through Forfas, its economic development agency. The Report supplements the earlier Action Plan, providing a sectoral analysis of Ireland's requirements for e-commerce development and the associated recommendations for government action relating to the specific sectors reviewed, as well as other proposals for further government action relating to public services and public administration, legislative and regulatory initiatives, R&D, taxation and the ongoing monitoring of Ireland's e-commerce performance.

Overall policy coordination is managed by an Inter-departmental Implementation Group on the Information Society which was established in 1998 to draft the Action Plan, based upon recommendations from the Information Society Commission and other advisory groups. This body continues as the primary group responsible for coordinating, monitoring and further developing the Government Action Plan. The group reports directly to Prime Minister and is assisted by a Special Unit, headed by a Principal Officer, established in the Department of the Taoiseach (PM) in 1999. The Implementation Group works closely with the Information Society Commission.

Several other departments also share key e-commerce line responsibilities within the Irish Government. These include the Department of Enterprise, Trade and Employment, whose Minister (Mary Harney) is also the Tanaiste (Deputy Prime Minister), with high visibility due to the activities and reports of the agencies responsible for economic development which report to her, and the Department for Public Enterprise. The Information Society Commission is a joint private/public sector body established in 1997 (for a three year term) to advise and monitor the role of government and other key actors in achieving the objectives set by the Commission to promote the advancement of the “information society” in Ireland. In addition, several other agencies play a critical role in the development and implementation of Ireland’s e-commerce strategy, principally, Forfas, the economic development agency, which operates independently of the state bureaucracy and its two operational arms, responsible for assisting and promoting Irish enterprise (Enterprise Ireland) and for promoting foreign investment and export development (IDA). As in the three other cases discussed above, the most notable feature of the structures for coordinating Ireland’s e-commerce strategy, is the role played by high level coordinating bodies and the direct reporting relationship to both the Taoiseach and Tanaiste.

Government as Model User

In all of the countries examined for this report, efforts are under way to accelerate the shift of major aspects of government business from traditional paper-based methods to electronic ones. Countries are moving rapidly to get the bulk of their purchasing and payments activities online, as well as the delivery of a substantial portion of their transfer payments to individuals. They are also looking for ways to facilitate the numerous interactions that individuals and business have with their governments across an array of activities ranging from the filing of tax information or export and import data to the accessing of government information. Perhaps nowhere is this proceeding as rapidly or dramatically as in the US. Both because of its proximity to Canada, and the strong parallels between the growth of e-business in the private economy and the movement of government online, most attention in this section is devoted to it.

Electronic Purchasing in the US

The US government is accelerating the use of electronic catalogues and malls to facilitate the handling of low cost, high volume purchases. In conjunction with a consortia of financial institutions, it is moving rapidly to make as large a proportion of federal payments as possible electronically. Finally, it is piloting a number of initiatives on the use of smart cards throughout the government. The US has set extremely aggressive targets for the conduct of government business online and the pressure to meet these targets is reinforced by the requirement of an annual report to Congress on its progress. The overall vision for the use of electronic processes for purchasing and payment was set out in the strategic plan, *Electronic Commerce for Buyers and Sellers*, prepared by the Electronic Processes Initiatives Committee of the President’s Management Council and submitted to Congress in response to a requirement in the 1998

Department of Defense Authorization Act. The vision articulated in the report 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 processing of payment, accounting and performance reporting information.

The overall strategy is based on the assumption that government departments and agencies will primarily use cost effective commercial ordering and transaction processing services for their high-volume online activities. Only as a last resort for low transaction volumes where industry has not developed commercial platforms will they turn to custom-designed EC systems. In FY 1998, the Federal Government made approximately 28 million government purchases from the private sector annually (worth over \$200 billion), of which 98 per cent were valued at \$25,000 or under. The strategy assumes that this volume represents a sufficiently large business opportunity to attract the interests of sellers of e-business products and services. It requires that sellers, service providers and government buyers jointly establish a strong business case for making investments in e-business development. Thus, the strategic plan identifies micro-purchases, those of \$2,500 or less, and orders under \$25,000 from indefinite delivery, indefinite quantity (IDIQ) contracts or schedules as the segment targeted for most rapid rollout of e-commerce. The building blocks in this area emphasize e-commerce tools such as electronic catalogues and purchase cards most likely to facilitate high volume, lower dollar buying activity.

The report establishes seven basic policy principles to serve as guides for government managers in their conversion from traditional business methods to electronically enabled ones: 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 report envisages federal implementation of this strategy proceeding along three related tracks: the establishment of partnerships with commercial EC providers; the enhancement of purchase card use along with the development and expansion of electronic catalogue ordering; and finally, the re-engineering of additional buying and paying functions. “Simply put, the idea is to build a consistent structure for applications processing (both within government and with industry) that leverages the Federal Government’s economies of scale to take advantage of existing and emerging technologies.”

In large measure these initiatives are being driven by a series of acts passed by Congress in recent years, including the Government Performance and Results Act (GPRA), the Government Management Reform Act (GMRA) and the Federal Acquisition Streamlining Act (FASA) all of which require increased performance reporting. All of these requirements accentuate the need for accurate entry of low level transaction data into systems that allow for automated account reconciliation. Implementation of electronic processes for purchasing and payment can generate the detailed transaction data needed for these purposes. Most recently, passage of the Debt Collection Improvement provided an additional stimulus to these trends by requiring that all Federal payments, except tax refunds, be made electronically by January, 1999.

Ongoing support and assistance in implementing the government-wide e-commerce initiatives is provided by the Federal Electronic Commerce Program Office which is housed in the Office of Government-wide Policy at the General Services Administration and co-chaired by representatives of the GSA and DoD. ECPO supports, coordinates and monitors the implementation of e-commerce across the Federal Government. It manages pilot projects, such as the catalogue interoperability pilot (discussed below) where various government agencies and industry representatives cooperate to enhance the functionality of electronic catalogues. It also provides a forum where operational representatives of the same constituencies represented in the EPIC support group, ie. the procurement, finance and technology communities, can share their experiences and discuss common challenges in the implementation of e-commerce.

One of the key initiatives managed by the GSA is its electronic catalogue or buying site, *GSA Advantage*, which now includes over 1 million items with approximately 70,000 registered users who use the system for comparative shopping and placing orders. The GSA estimates that about 18,000 searches of the catalogue are performed on a daily basis and that 1,000 purchase orders are placed. Total online sales amounted to \$61 million in FY 1998, an increase of 117 per cent over the previous fiscal year, and had climbed to \$100 million to the end of July for FY 1999. Current enhancements being implemented on the system include a reduced burden for scheduled vendors supplying data; the introduction of online interactive help, such as customer call-back and email updates on status of orders; and improved interfaces to agency buying and paying systems.

The next step in the development of electronic catalogues is to explore ways in which government purchasers can conduct research on available products more effectively across a range of catalogues. The government is currently funding an interoperability pilot to demonstrate the feasibility of a common framework across multiple electronic catalogues. In FY 1998, ten government agencies including the GSA, NASA and Department of Defense worked with CommerceNet, a not-for-profit industry consortium, on a pilot to create a suitable search environment and demonstrate that federal government buyers could search across multiple existing catalogues for items available for order and obtain the same search results.

One of the largest efforts to move its activities online is that being undertaken by the US Dept. of Defense. DoD's activities in this area are coordinated by its Joint Electronic Commerce Program Office which is a joint initiative of both Defense Logistics Agency and the Defense Information Systems Agency. JECPO is responsible for providing shared e-commerce services to the entire department. One of its largest initiatives is the DoD E-Mall, an internet-based system that provides one-stop shopping from Defense-approved commercial catalogues. The E-Mall provides a single search engine that allows consolidated ordering from different catalogues throughout the different services and branches that comprise DoD. The capability of finding items quickly on the E-Mall has been dramatically improved by the addition of more advanced search capabilities, which include part numbers, keywords, catalogue numbers, supplier searches, federal classifications and specialized graphic searches when little or no information is

known about the item. The E-Mall with 850 registered users, currently stocks 2.3 million items in 19 vendor catalogues and did \$36 million in sales to the end of June, in FY 1999.

In addition to the E-Mall, the Defense Department also maintains the Central Contractor Registration, which is a central database containing trading partners' procurement and financial information. The CCR includes taxpayer identification numbers and electronic funds transfer information required by the Debt Collection Improvement Act of 1996. It also contains data for identifying the type of equipment, supplies and services that a potential supplier may be interested in offering. There are currently more than 152,000 contractors registered with the CCR who can manage how their information is stored through a web-based interface. The creation of CCR has eliminated the need for contractors to submit duplicative administrative data to multiple DoD agencies in order to be considered for solicitations and awards. The CCR data is equally beneficial to procurement officers, financial officers and other government officials because it is both pre-validated and updated more frequently than conventional data sources. The CCR is rapidly becoming the foundation at Defense for implementing streamlined acquisition procedures and paperless accounting.

The Electronic Document Access (EDA) is another web-based tool that affords the entire DoD the ability to store and retrieve contracts documents, vouchers and government bills of lading electronically, thus reducing the need to print, mail, file and manage paper. Since it is designed to easily integrate with other document initiatives, EDA is becoming the equivalent of a department-wide virtual filing cabinet. Authorized users applying current Internet tools from nearly any location within the DoD have access to these electronic documents.

Finally, the DoD has also developed an EC Navigator to provide a web-based guide to EC resources. It provides easy access to the CCR database, user assistance, news and current events in EC, links to web-based electronic malls and catalogues generated by the military services or other federal agencies to facilitate electronic ordering.

Electronic Business Opportunities in the US

The US Government also makes extensive use of several electronic posting systems to facilitate the process of requesting bids on government contracts. It is currently pursuing multiple systems, with the goal of eventually migrating to one integrated approach. The most commonly used listing at present is the CommerceBusinessDailyNet (CBDNet), which provides an official free online listing of all the Government contracting opportunities published in the Commerce Business Daily. It represents a convenient and universal user access to all US government contracting opportunities through a single point of entry. The next phase of CBDNet, CBDPlus, will allow for the direct upload of solicitation documents and receipt of solicitations.

There are several other existing services for the electronic posting of information about government contracts and business opportunities, such as the NASA Acquisition Internet

Service, a system created in 1997 to allow procurement staff anywhere in NASA to make notices and solicitation files accessible on the Internet from a single point. Another is the DoD Business Opportunities website, managed by JECPO, which provides a single point of entry for vendors to identify business opportunities within the DoD component branches and agencies. It helps vendors locate pools of procurement and acquisition information, such as that contained in the CCR and the DoD's technical data repositories. In early 1999 the BusOpps website was enhanced to provide users with the capability of conducting searches using various criteria. To the middle of 1999, the Navy had 100 sites connected, Air Force 150 sites, Army 34 sites and the Defense Logistics Agency 3 sites. It is expected to have a total of 600 sites online by the beginning of 2000 feeding information into the system.

In 1998, the GSA, NASA, Department of Transportation, Air Force, Treasury and Department of Commerce formed a team to pilot a new multi-agency electronic posting system (EPS). The EPS is designed to enable buyers to make notices of requirements, solicitations, awards and other acquisition-related documentation accessible on the Internet to vendors. It is intended to provide easy access with variety of convenient search and downloading tools available through one uniform resource locator address. EPS is based on the NASA Acquisition Internet Service described above. EPS utilizes a distributed architecture that allows centralized access with decentralized maintenance. The GSA has declared EPS the single, agency-wide electronic system through which it will solicit quotations, bids and proposals and it will interconnect with other existing systems, such as the DoD's Business Opportunities System. The EPS software is also designed as a modular 'freeware' application that can be made available to government agencies without charge. The EPS user group is working on significant enhancements to the pilot version that will allow vendors to upload information securely using PKI, so that they can send authenticated offers to potential buyers over the Internet. In the fall of 1998, the GSA declared EPS to be the single, agency-wide system through which it will solicit quotations, bids, and proposals. Current efforts are underway to evaluate the potential for EPS to effectively serve as the government-wide point of entry for procurement information. In the interim, CBDNet continues to provide the single entry point for posting electronic notices and EPS provides an interface with CBDNet, so that notices posted to one are automatically transmitted to the other.

Electronic Payments in the US

One of the key elements in the Federal Government's strategy for implementing e-commerce solutions is to improve the mechanisms available to allow departments and agencies to make payments electronically. The fastest rate of growth in this area is occurring in low dollar, high volume payments where purchase cards are being deployed to increase efficiency in the payments process. The current emphasis on the use of purchase cards to streamline purchasing and payments stems from a recommendation by the National Performance Review in 1993 that agencies increase the use of purchase cards to improve the Federal procurement process. Additional impetus towards the use of purchase cards was provided by the Federal Acquisition Streamlining Act (FASA) which facilitated the use of purchase cards for micro-purchases.

Finally, the Debt Improvement Collection Act contributed to this trend through its requirement that federal payments be made electronically. In the judgement of the recent Annual Report by EPIC to Congress (June, 1999), "Commercial purchase cards constitute the foundation of much of the government's strategy for implementing electronic commerce because they combine easy application to both buying and paying with potential for end-to-end electronic processing and significant administrative savings. In addition, they are extremely well suited to purchasing from electronic catalogs, a preferred electronic commerce application."

An additional incentive for the use of purchase cards is afforded through the refunds they provide to purchasing agencies. The government has negotiated refunds in its card services contract with a variety of the card-issuing banks. The extent of the refund varies from agency to agency. The use of purchase cards is growing rapidly throughout the US government. Total government-wide use of purchase cards totalled \$8 billion in FY 1998 and was estimated to reach \$12 billion in the current FY and rise to \$18 billion in FY 2000. The US government plan for the future of card services is to build a multi-application platform based on an open, interoperable system architecture. It will consist of core financial services (including travel, fleet and purchase card services) with the ability to expand to include other financial and administrative functions. To this end, the GSA has awarded a SmartPay contract to help agencies begin migrating from single purpose cards to integrated or even multi-functional smart cards.

As noted above, the conditions of the Debt Improvement Collection Act mandated that all Federal payments be made electronically by 1999. It is estimated that compliance with these conditions of the Act will save the Federal Government \$100 million annually when fully implemented. The government increased the number of non-tax payments made electronically from 55 per cent in FY 1995 to over 72 per cent as of January, 1999. More relevant to the issue of e-commerce in government is that the percentage of vendor payments made electronically has increased from 10 per cent in 1995 to 52 per cent by March, 1999.

Electronic Benefits Transfer in the US

Another high priority area for the US Government in the implementation of electronic processes for the delivery of government programs and services is electronic benefits transfer. The US currently transfers more than \$500 billion annually to its citizens, more than 20 per cent of whom do not have bank accounts. In 1993, the National Performance Review, led by Vice-President Gore identified the development of a standard, nation-wide system to deliver government benefits electronically as a high priority. The EBT Task Force in 1994, *From Paper to Electronics*, set a goal of rolling out national EBT by 1999. The US approach to the delivery of EBT relies upon the use of a single, plastic card to access cash and food benefits (through the food stamps program) either at automated teller machines (ATMs) or point-of-sale terminals in retail locations. The value of EBT is seen as both an increase in convenience and dignity for the beneficiaries of these programs, as well as a reduction in theft, fraud and abuse in the delivery of

the benefits due to a reduction in the number of steps in the process and the ability to track these patterns electronically.

The GSA is currently working with a range of government agencies to speed the implementation of a national EBT system. It has targeted a number of transfer programs, principally welfare benefits, such as food stamps, and student aid for delivery through electronic means. The food stamps and cash entitlements program has seen the most extensive rollout to date. Government benefits are being delivered electronically in 42 states and the District of Columbia - with the system operating statewide in 29 of them. They are providing benefits to 4.25 million families with value of \$1.35 billion per month in food stamps alone. This represents over 54 per cent of the caseload served and a higher percentage of the dollar value of the benefits disbursed. In interviews with OMB officials in the fall of 1999, they indicated that the next benefits area targeted for electronic delivery is that of federal transfers to students (estimated at \$100 billion annually). They indicated that this area had been selected because existing systems in other jurisdictions had demonstrated solutions to the technical problems involved. The Federal Government is also working with the National Automated Clearinghouse Associations EBT Council, which is currently studying the costs of processing transactions in an interoperable mode, across state and regional lines. The GSA is also working on a number of projects to study the potential to deliver benefits electronically using newer smart card technologies in the areas of health care and welfare reform.

Electronic Procurement in the UK

This area is of particular concern in the UK, since the Government is seen as having the potential to “act both as an exemplar and an engine for change” through its role “as head of a large supply chain and as an organization with which everyone must interact”. The Performance and Innovation Unit report, released in September, 1999, recommends a more pro-active use of the “Invest to Save” budget which finances public/private sector partnerships and could be used to promote joint projects involving electronic delivery of government services. The principal objective in pursuing electronic procurement is “good value for money”, but the report recognizes that cost savings realized by transforming internal government processes can be combined with the “huge capacity for a procurement effort of this size to leverage business in the UK and thus act as an engine of change”. This effect can be achieved by developing experience and confidence, as well as assisting in standardization, especially if all government purchasing is done according to consistent and coherent standards which may encourage business adoption of the same standards and protocols.

An extensive review of central government procurement was conducted in July, 1999 and resulted in an initiative to establish a central Office of Government Commerce (OGC) under an OGC Supervisory Board overseeing all civil Government procurement activities (excluding the National Health Service). The report sets aggressive targets of 25 per cent of high value procurements to be made electronically and the publication of documentation on the Internet by

December, 1999, moving to 90 per cent high value and 50 per cent of low value purchases to be made electronically by March 2000, and 90 per cent of low value purchases made electronically by 2001.

The PIU reports that the Ministry of Defense is separately undertaking a project to introduce electronic purchasing for military spending which is in the early stages. It recommends consideration of a coordinated civil/military initiative to move towards common standards and efforts to ensure that SMEs are able to participate in electronic procurement. It also recommends that reviews of the effect on SMEs be conducted for each department and a concerted campaign be undertaken to promote SMEs' involvement).

The PIU targets for departmental ability to provide services electronically are also set at 25 per cent for 2002, 50 per cent for 2005 and 100 per cent by 2008. Monitoring of the progress towards realization of these goals is to be done by CITU (Cabinet Office Central IT Unit). To date departments have selected their own basket of electronic services to meet these targets. The PIU report notes the ad hoc mix of Internet services available and the need for improved standards in presentation and navigation (addressed in the initiatives outlined in the *Modernizing Government White Paper*). The PIU report also recommends a target of July, 2000 for the establishment of a prototype Government portal to facilitate payment and act as a one-stop-shop – with an authentication system backed by a private sector SmartCard, The lead on this is to be taken by the CITU. SmartCard technology appears to be a major area of interest both in terms of establishing improved trust in e-commerce and meeting the logistical demands of e-business.

Electronic Procurement and Payment in Australia

In a discussion paper released by the Office for Government Online in August, 1999, the Australian government also set out some very aggressive targets to chart its progress in moving towards rapid implementation of electronic processes in government. The discussion paper, *Moving to an Electronic Marketplace*, established two key goals: to pay all suppliers to the Government electronically by the end of 2000; and to trade electronically with 90 per cent of suppliers to the Government by the end of 2001.

The discussion paper sets out a number of principles to guide the development of its procurement and payment strategy. These include a preference for adopting easy to use system interfaces for all participants; promoting interoperability of systems through the use of standards and protocols; recognition of the need for flexibility of design in the implementation of the strategy; encouraging consistency in the adoption of electronic purchasing within the Government; minimizing the need for duplication of registration information provided by business to Government; recognizing that government as a major purchaser of goods and services can act as a positive force to promote national competitive advantage; and minimizing the barriers to entry to Government markets for small and medium-sized enterprises to ensure that they achieve at least 10 per cent of the share of Government procurement.

While the discussion paper sets out a number of possible options for implementing these goals, it also gives a clear indication of the Government's preferred option: for the Government to adopt electronic commerce by participating in existing electronic trading communities and encouraging the development of new trading communities where appropriate. According to the Office of Government Online, the key characteristics of this preferred option include: the Government working with its suppliers to support and develop electronic marketplaces; the Government paying all suppliers electronically through increased use of direct credit with improved remittance advice; the Government establishing a single supplier registration process so that suppliers need only provide details once; the Government supporting the use of open standards wherever possible to ensure consistency in trading within, and between, electronic marketplaces; and the Government implementing consistent electronic support systems to maximize the efficiency of its purchasing. The overall goal here is to allow for the majority of agency purchases to be transacted from the desktop through electronic marketplaces on the Internet. Agency purchase orders will be registered electronically and be recorded electronically when the goods or services are received. Payments will also be made electronically through direct credit or credit cards.

The discussion paper calls for comments on the proposed options and indicates that once the consultation period is completed, a preferred option will be finalized and a detailed implementation strategy developed. The Government anticipates submitting the strategy for endorsement later this year.

Taxation Issues Related to E-commerce

An issue that has emerged at the centre of virtually all discussion of about electronic commerce is the issue of taxing transactions undertaken over the internet. The question of taxation poses a number of difficult questions for governments, including the issue of imposing e-commerce specific taxes, the equitable application of existing sales and value added taxes to both electronic transactions and those in traditional bricks and mortar outlets, and finally the transnational levelling of taxes between various jurisdictions for goods purchased in one, but provided in another.

Many of the discussions of taxation with respect to e-commerce take their lead from the position set out in the US Framework for Global Electronic Commerce in July, 1999. The second of the five principles set out in the Framework stated that governments should avoid undue restrictions on electronic commerce. To this end, it recommended that "governments should refrain from imposing new and unnecessary regulations, bureaucratic procedures, or taxes and tariffs on commercial activities that take place via the Internet. This position was endorsed at the OECD Ministerial Conference on Electronic Commerce in Ottawa in November, 1998. In endorsing the principles set out in the report, *Electronic Commerce, Taxation Framework Conditions*, the Ministers accepted that existing taxation principles - such as neutrality, efficiency, certainty,

simplicity, effectiveness, fairness and flexibility - should work for electronic commerce and governments should avoid new forms of taxation, such as the bit tax, which would discriminate against electronic commerce. The OECD established five technical advisory groups (TAG) in January, 1999 on a range of issues to develop solutions to the challenges in a range of areas involving international taxation norms, consumption taxes and tax administration. The Consumption Tax TAG is examining a range of issues including how to determine the place of consumption for the cross-border supply of intangible property and services supplied in business to consumer transactions. The TAGs have drawn up work plans to carry them through to 2001.

Taxation of E-commerce in the US

The principle regarding taxation set out in the President's *Framework* was reinforced by the passage of the Internet Tax Freedom Act which was signed into law in October, 1998 and placed a three year moratorium on new and discriminatory taxes on internet commerce. The act created the Advisory Commission on Electronic Commerce with responsibility for developing a uniform system for the application of existing taxes to remote sales. The nineteen members of the commission are divided between representatives of government, who tend to be concerned about the fiscal implications of foregone tax revenue due to the growth of e-commerce, and business representatives, who see the application of any taxes, even existing state, county and local taxes, to e-commerce as a potential inhibitor to its growth and development. The commission which is chaired by the Governor of Virginia held its first meeting in June, a second in September, and is scheduled to hold its third in San Francisco in mid-December. At its inaugural meeting, 17 of the 19 members indicated their belief that e-commerce must be subject to some degree of existing tax measures. Under the terms of its creation, it is required to report back to Congress by April 21, 2000.

In September the National Governors Association engaged the debate by putting forward a proposal to simplify existing state sales taxes. The NGA proposal is intended to produce a plan that can take advantage of new software technology to allow states to make their tax codes uniform for all types of business and commerce. Representatives of the states agreed to work on a plan that would sharply reduce existing burdens on sellers in their states, simplify the existing system of sales tax collection and not discriminate against out-of-state or remote vendors. The Governor of Utah who chairs the NGA (and is also a member of the Advisory Commission) pledged to produce a proposal that the Advisory Commission on Electronic Commerce would be able to incorporate into its final report.

The Commission has established a report-drafting subcommittee responsible for framing the issues that must be resolved in order for it to produce a report by the deadline. In an open conference call on December 3, 1999, the drafting subcommittee produced an issues and options paper for discussion at the San Francisco meeting. The paper sets out a number of themes that it believes form the basis for a consensus among the members of the Commission. These include: the desirability of establishing an environment that fosters innovation and technical advance with

respect to the Internet and e-commerce; the need to respect the sovereignty of state and local jurisdictions, as well as interstate commerce; the desire to simplify current state and local sales taxes; the need for efficiency and fairness in the tax system; the issue of whether tax policy should privilege internet commerce or whether it should strive to avoid any discrimination between electronic and other forms of commerce; the need to balance reasonable tax burdens on citizens with a sufficient fiscal base for state and local governments to deliver needed services to their citizens; respect for consumer privacy rights; the need to remove financial and logistical burdens on sellers; and the need to maintain the global competitiveness of US business.

Using these general principles, the report then sets out a set of policy options to be discussed on the wide range of issues within the Commission's mandate. The policy options synthesize both the internal discussions of the Commission as well as selected representations made to them by interested third parties. A selection of these will appear before the Commission at its next meeting. While the range of options presented in the draft report is extremely broad and the time span for producing recommendations to Congress short, there does appear to be both the elements of a consensus emerging among the members and the basis for producing a report. That combined with the apparent desire of the NGA (several of whose members serve on the Commission) to see the exercise succeed, is grounds for expecting that it may surprise many observers and produce a report with significant implications for both the administration of sales and excise tax in the US, and external implications for their trading partners and competitors. The work of the Commission over the next five months warrants close scrutiny.

Taxation of E-Commerce in the UK

Taxation policy appears to be an issue of particular concern to the Government of the UK. The PIU document suggests that the UK sees itself as a leader in international efforts to achieve agreement on critical areas of tax administration. The goal of maintaining the tax base also emerges as an area of concern more expressly than in other national strategies. The UK position also supports the WTO/OECD principles regarding neutrality, certainty and transparency, effectiveness and efficiency that were agreed upon at the 1998 Ottawa Ministerial Conference.

In general, no major changes in the tax system are foreseen, but some of the issues in tax administration that require attention include updating the tax regime for e-commerce by developing internationally agreed rules about the place of indirect (VAT) taxation for electronically delivered products and the tax jurisdiction for direct taxation of profit/income for services delivered online (including clarification of conditions under which non-resident income associated with a web-site is taxable in the UK as equivalent to a "place of residence" under existing tax treaties).

Safeguarding the tax base is seen as a critical problem due to the fact that e-commerce transactions may be more difficult to trace and transfer pricing may increase the complexity of tax administration and international distribution. A major source of concern is the estimates

made in the US of potential tax losses due to uncollected sales taxes. VAT collection is more conducive to e-commerce due to the national as opposed to the state structure in the US, but the overall vulnerability to potential tax losses arising from electronic delivery is expected to increase.

E-commerce adds complexity to the process of determining prices of transactions for tax purposes, determining place of service delivery and the quantification of value added, as well as the complexity of attributing profits to permanent establishments; the UK is playing a leading role in OECD work on transfer pricing rules and rules for attributing income to permanent establishments.

Considerable study is underway of the technological means of gathering improved taxation information, potential automatic tax bill triggers in non-resident supply transactions, monitoring the development of electronic payments systems for compliance issues, improving inter-jurisdictional information exchange and multilateral tax collection assistance.

The UK policy paper also regards the communication of tax rules for e-commerce as an important issue to resolve in order to facilitate the take-up of e-commerce by small and medium-sized enterprises. There is a pressing need for clarity, low compliance costs and well-distributed public information about tax principles and practice. An updated, comprehensive Information Paper on the issues involved in adopting tax rules and administration to the needs of e-commerce was published by Inland Revenue and Customs and Excise on November 26, 1999 and posted on their web site.

Taxation of E-Commerce in Ireland

A detailed report on the tax implications of e-commerce was published in June 1999, analysing the technical issues and seeking input from Irish business and tax practitioners. No specific initiatives are indicated as in place or underway in this material, but the maintenance of low corporate tax rates has been key to Ireland's economic development strategy and are cited as part of its e-commerce strategy for the continued attraction of investment in key sectors of the information economy. Although no new measures are proposed at this point, a number are currently under review.

The Forfas report published in August, 1999, *Report on E-Commerce: The Policy Requirements*, recommends consideration of options to encourage alternative forms of remuneration to assist new and emerging companies in employing and retaining skilled staff and to generally encourage enterprise in the ICT sector. One specific proposal under development is reduced taxation of profit sharing and share option schemes. Ireland is also considering how to deal with the investment impact of the current withholding tax on patent royalties for software for countries not subject to tax treaties in this area. The patenting of software is expected to increase

as a general practice due to pending changes to European Patent Office rules to conform with recent WTO agreements.

Potential changes in EU regulations regarding the application of VAT rules to e-commerce is also a major source of concern for Ireland's strategy for e-commerce. One option under this plan could see the VAT rate set by country of registration and then applied to all business-to-consumer transactions (currently companies must register in each state where goods/services supplied). The Irish are concerned that their VAT rate of 21 per cent may deter registration in Ireland due to lower rates elsewhere in EU (16 per cent in Germany; 17.5 per cent in the UK). Ireland is requesting that applicable VAT rates be the rate in the country of residence of the consumer (rather than the registered country of the supplier). Forfas is also setting out to examine the issues and options of amending the VAT regime in Ireland to facilitate e-commerce, - including reducing the standard VAT rate.

Building Consumer Trust

Branding in the UK

The PIU report identifies further action on the establishment of an effective branding initiative as a key element for building consumer and business trust, extending the work of TrustUK. The December 1998 *Competitiveness White Paper* announced the Government's commitment to work with business and consumer groups to draw up a code of conduct by summer 1999 which would support establishment of an on-line digital hallmark (along with an on-line facility to assist consumers with complaint and redress procedures). DTI worked with the Alliance for Electronic Business to this end, reporting the results in the July 1999 White Paper, *Modern Markets: Confident Consumers*. Currently TrustUK is established as an industry-led body "ensuring that e-commerce hallmarks meet a consistent standard, those that do so will be identified by the TrustUK branding . . . offering users the re-assurance they are dealing with an authentic, trustworthy trader who will respect the consumer's privacy, follows good information security practices, will not display any illegal or immoral content and will have a clear policy concerning its contracts and dispute resolution."

However, the PIU report suggests that the policing of TrustUK is not clear at this time. The PIU recommendation is that the Department of Trade and Industry ensure that TrustUK puts in place clear mechanisms to police its standards and that TrustUK establishes an Internet disputes arbitration service allowing both consumers and businesses fast-track access to arbitration for any dispute arising from an e-commerce transaction with a trader bearing a TrustUK hallmark.

Expanding the Information Infrastructure: Broadband Access

A major policy concern for most of the countries covered in this survey is ensuring that the expansion of the telecommunications infrastructure occurs rapidly enough to facilitate

broadband access for both business and consumers to the Internet and e-commerce sites. The current state of access speeds and relative costs in both the US and Canada was covered in earlier material prepared for the Roundtable and will not be repeated here. However, in most of the other countries recent initiatives have either announced new strategies to expand broadband access or undertaken studies of the adequacy of existing broadband connections to the Internet.

Ireland

Expanding and upgrading the telecom infrastructure is a major government priority in Ireland. It is regarded as a key requirement to meet the demands of existing enterprises and attract telecom-intensive users, as well as respond to the social and economic objectives identified by the Information Society Commission. The Irish government has identified an investment gap in studies of projected versus required investment levels for telecommunications infrastructure to provide advanced services and competitive pricing. The government has prioritized infrastructure investment as a key requirement for its economic and social objectives (especially for meeting the emerging needs of key sectors, including financial services, multimedia and the software sector).

In response to these requirements, the government has launched a number of recent initiatives to expand the telecom infrastructure both to and from Ireland, as well as within the country. In July, 1999, it signed a major agreement with a US company, Global Crossing, to improve its international connectivity by supplying two fibre-optic telecommunication cables (25 gigabyte capacity) linking Ireland with the US (via New York) and with twenty-four European cities. Construction of these new cables is to be completed by mid-2000. Completion will result in an increase to fifteen times current international bandwidth capacity out of Ireland at one tenth the existing cost levels. The total value of the contract is \$80 million US. Under the terms of the contract, over-capacity rights on the new channels belong to Global Crossing.

The same announcement in July also included notice of nine new contracts signed with local and international telecom companies to expand the domestic broadband network. This expansion of the domestic network will roll-out broadband infrastructure to 120 communities throughout the country (including regions and educational institutions). The companies awarded contracts include ESAT Telecom, Suir Nore Relays, Cablelink, CMI, Ocean, H.E.A.net, Telecom Eireann. These contracts involved an investment of 70M Irish punts (including 20M IR of EU funding from European Regional Development Fund (ERDF)). Proposals for further domestic broadband projects have been submitted to the Department of Finance for EU funding under the next Community Support Framework. A pilot project has also been proposed to test the feasibility of laying armoured fibre cabling throughout the sewer network to bring broadband infrastructure to 90 per cent of the homes in Ireland. Discussions are also underway to promote the establishment of an Irish peering facility with high capacity links to the US and major European hubs. A domestic peering facility is seen as providing a competitive advantage in terms of connection

speed and costs and is also seen as critical for Ireland as a European centre for e-commerce activities, in terms of including Ireland as part of the Internet global backbone system.

The Irish government has also planned the construction of two digital industrial parks offering office and laboratory space with advanced telecom services to attract companies with significant telecom requirements as the location for their headquarters or R&D operations. The first park opened in July 1999, located in Leixlip, west of Dublin. Targeted enterprises for this park include: specialized advertising, sound and video recording and editing, film and television studios, animations, software programming, production and business management. The park is a component of the national strategy to establish an Irish Centre of Excellence in the content industry. Firms currently resident in the park include Iomega (IOM), Nortel, Netscape, Millennium Software, and Rhone-Poulenc Rorer. The park was developed as a joint project between IDA Ireland and Citywest Business Campus; the site is the 'carrier hotel' for the new international connectivity project with Global Crossing (ie. the point at which the international cables branch out to individual networks). A second park is in the planning stages, to be located in the eastern area of Dublin (Docklands Digital Park). The leadership role played by the IDA in establishing the Digital Park indicates the emphasis of the government on attracting foreign enterprise as a key element of the digital business base (IDA is the foreign investment arm of Forfas).

A related part of the Irish strategy is the targeting of industries associated with digital media and digital television. In June, 1999 the Government announced plans to 'roll-out' digital television. Regulations were set out in March 1999 by the Office of Telecommunications Regulation for the establishment of a new licensing system for cable TV and MMDS operators, which requires licensees to develop a rollout plan for digital programme services. The broadcasting Bill 1999 which is scheduled for second stage debate in the Fall of 1999, includes provisions regarding the regulation of digital television transmission and related roles of regulatory agencies. The broadcasting Bill also provides for the establishment of a new joint venture company (Digico) which will take over the existing analogue transmission function of RTE and will provide and operate the digital terrestrial broadcasting.

Australia

Australia has launched the National Bandwidth Inquiry to explore this issue. The Inquiry was set up by the Minister for Communications, Information Technology and the Arts in December, 1998 to investigate the issues of bandwidth availability and pricing both within Australia, as well as to and from Australia. On September 29, 1999, the Australian Information Economic Advisory Council subcommittee conducting the inquiry released a discussion paper for public comment which provides information about the likely bandwidth availability and pricing between 1999 and 2004. The paper canvasses strategic issues for communications markets arising from the transition to a data-based mode of providing for all communications services.

Work undertaken to date by the inquiry which forms the basis for the discussion paper starts from the recognition of a number of key developments underway that are affecting bandwidth capacity in Australia. One is the paradigm shift from voice circuit switched based technology to data IP based technology which is radically altering the economics of communications services. The inquiry believes that the price of wholesale bandwidth will fall by an estimated 30 to 50 per cent over the next five years on thick route markets. The discussion paper canvasses a range of potential issues for policy consideration arising from its findings about the market outlook for bandwidth and the transition to a data-based communications infrastructure, and invites public comment on the analysis, data and issues outlined in the paper.

Technology Transfer/Small Business Support

A critical area of policy that has not received as much attention with respect to the promotion of e-business is government support for technology transfer for businesses interested in adopting the new technology for their purposes. Governments in the US, Canada, Australia and some of the European countries have established programs, such as IRAP or the state and federal Manufacturing Extension Partnerships, to assist small and medium-sized business with the problems encountered in adopting and using the latest technologies. It is somewhat surprising that this area of government policy has not been given more attention with respect to e-commerce. Outside of the US, government policy and programs addressing concerns about the speed of technology transfer and the integration of small business into electronic commerce are largely in the formative stage, receiving less specific attention than the issues of the legal and regulatory framework, infrastructure and government's own use of electronic commerce. The notable exception to this rule is a program run by the US Department of Defense.

Electronic Commerce Resource Centres in the US

The Electronic Commerce Resource Centres have been a highly successful initiative run by the Joint Economic Commerce Program Office at the Department of Defense to assist small and medium-sized firms in the Defense supply chain to acquire the technological capabilities to serve as electronic vendors to the department. The major objective of the program is to provide technical leadership and support to thousands of organizations doing business with DoD. Its roots go back to the Computer-Aided Logistic Shared (CALs) Resource Centres established by Congress in 1991 with three original centres. In 1994, the program was renamed the Electronic Commerce Resource Centre Program and the number of centres has subsequently expanded to seventeen located strategically across the US.

The ECRC program is run by a number of private not-for-profit contractors and two key integrators, each of whom is responsible for managing a number of the centres. The integrators, CAMP, Inc. and Concurrent Technologies, both report to JECPO in the Defence Logistics Agency. The strategic goals of the program are to: identify and understand customer needs; drive

customer implementation of electronic commerce; evaluate, develop, demonstrate and transfer electronic commerce technologies to client firms; and leverage existing resources and capabilities across other government agencies at the local, state and federal levels as well as private sector organizations. The clients of the ECRCs include economic development organizations at the state and local level, small business development centres, state and regional Manufacturing Extension Partnership centres, the federally funded NIST Manufacturing Extension Partnership centres, government prime contractors assisting their supply chain, and finally, small and medium-sized enterprises who serve as partners in the defense supply chain.

The ECRCs engage in three principle types of activity. Outreach activities are necessary to disseminate information about the program and the role of the centres to potential clients. It involves establishing new contacts with individual firms and maintaining existing ones. Training courses offered by the centres provide customers with an opportunity to develop knowledge and hands-on experience working with electronic commerce technologies. The ECRCs offer twenty training courses at little or no cost to clients, ranging in subjects from basic internet familiarity to courses in advanced Electronic Data Interchange. The seventeen centres have offered a total of 3,942 classes to 51,841 students.

The third type of activity, technical support, helps the clients of the centres identify needs that can be met effectively with electronic commerce technologies. The Technology Development Activity component examines, develops, evaluates and transfers emerging EC technologies to government and industry. It involves demonstrations and the testing of electronic commerce technologies, guidance for selecting software and service providers, and on-site support. The TDA component has also developed multiple web-based applications for moving technical and procurement information electronically. The TDA component includes an EC testbed, which is a physical facility providing a shared computing environment networked with internal and external capabilities in EC technologies. It allows collaborators and clients to access testbed assets and technology solutions from remote locations. The objective of the testbed is to accelerate the implementation of e-commerce in the Department of Defense by mitigating the risks of adopting new technologies and business practices. The TDA component has involved 15,488 technical supports to suppliers in the defense chain and overall, the program has assisted with 147,000 CCR registrations for the Department of Defense.

Technology Transfer/Small Business Support in the UK

Concern over the level of adoption and use of e-commerce by small and medium-sized enterprise in the UK is a central issue in the PIU report. The Department of Trade and Industry has established a goal of bringing the smaller enterprises up to the level of international best practice by 2002. The DTI through its Information Society Initiative operates a network of Local Support Centres providing SMEs with advice. The Competitiveness White Paper released in 1998 extended this initiative to include e-commerce awareness and marketing activities. There are currently eighty such centres throughout the country with an additional twenty to be set up

by the end of the year. The PIU report is also concerned with a potential bias against SMEs in terms of their ability to participate in electronic procurement and recommends that individual departments conduct reviews of the effects of their procurement practices on SMEs.

There has also been a major effort to integrate e-commerce concerns into the regional development strategies being planned by the Regional Development Agencies. The areas in the UK which have benefited from greater devolution (Northern Ireland, Scotland and Wales) have tended to include a focus on e-commerce in their development strategies, but the extension of the Regional Development Agency model to the English regions is seen as a further opportunity to extend e-commerce strategies into these regions as an integral part of the regional economic planning processes being initiated by the agencies, and through these efforts gaining additional funding from EU programs to promote the uptake of e-commerce practices.

Technology Transfer/Small Business Support in Australia

Small and medium-sized enterprises are the focus of one of the four priorities areas set out in Australia's e-commerce strategy. As a result of this emphasis in the overall strategy, there are a number of initiatives in place targeted at increasing the uptake and use of electronic commerce technologies in Australia. One of these initiatives is the Information Technology Online Program which is an annual competitive grants initiative run by the National Office for the Information Economy that provides matching funding to industry consortia to encourage partnering on collaborative projects to test or demonstrate new/innovative online technologies. In March, 1999, matching funding was provided to thirteen projects in industries to undertake a range of projects. The emphasis in the projects funded is on using government partnerships with industry consortia to improve supply chain management across a number of industrial sectors. Examples of projects currently being funded are the Australian Automotive Network Exchange, which is creating an extranet linking suppliers, manufacturers, importers, dealers and the after market trade; the Pharmaceutical Electronic Commerce and Communication project to introduce e-commerce in the pharmaceutical supply chain, Intrawool - a project to manage information on wool bales as the move from growers in Australia to spinners in Europe (designed in part to meet European technical standards for information processing and data interchange); and the building and construction online initiative.

Another important government initiative which is now mostly funded by industry through a range of partners, including the chambers of commerce, industry associations and training and consulting organizations, is the Australian Electronic Business Network which provides e-commerce training and awareness programs, access to web-based information and training resources for SMEs, and pilots e-commerce business systems and solutions. This initiative includes AUSe.NET, which is the network delivering AEBN products and services online (through both physical and virtual delivery channels). The AEBN also undertakes research on the reaction of SMEs to e-commerce which highlights the wary and non-experimental perspective of SMEs to e-commerce.

Export Development and Promotion

A number of countries have launched new initiatives to either use electronic processes more efficiently to manage the collection of data about exports, or else to promote their country's exports over the Internet.

Automated Export System (AES) in the US

The AES is a joint venture between the Customs Service, the Foreign Trade Division of the Bureau of the Census, the Bureau of Export Administration (DOC), the Office of Defence Trade Controls (Secretary of State) and other agencies of the US Government. It constitutes a central point through which export shipment data required by multiple agencies is filed electronically to customs using Electronic Data Interchange. Before the introduction of this system, the export system was paper bound, expensive, labour intensive and prone to errors. The electronic system allows for the required data to be collected electronically and edited immediately to detect and correct errors at the point of origin. It is a nation-wide system operational at all ports and for all methods of transportation. It is designed to ensure compliance with and enforcement of laws relating to exporting, to improve the collection of trade statistics, reduce the need for duplicate reporting to multiple agencies and improve customer service. Requirements for the collection of transportation data for air and overland shipments are currently under development.

Export Promotion and Development in Australia

E-commerce is seen as critical for building Australia's export trade; the significance of exports to Australian economy has online promotion of exports a strategic priority for the Department of Foreign Affairs and Trade. Australia is seen as having an emerging comparative advantage in online trade, as well as a need to respond to the demands of increasingly sophisticated trading partners in Europe and North America. There has been an extensive analysis and reporting on the role of e-commerce and foreign trade. The Minister of Foreign Affairs and Trade has commissioned a series of reports on the subject, including *Putting Australia on the New Silk Road: The Role of Trade Policy in Advancing Electronic Commerce* (1997); *Driving Forces on the New Silk Road: The Use of Electronic Commerce by Australian Businesses* (1999); *Creating a Clearway on the New Silk Road: International Business and Policy Trends in Internet Commerce* (1999).

Three challenges have been identified by the Australian Government for its online trade strategy: the need to increase business awareness of the significance of changes involved in the information economy; providing information to exporters about the role of the Internet and e-commerce in trade; and leading public discussion on the safety of the Internet for trade. The DFAT has a number of current initiatives under development or consideration to promote exports electronically that build upon the existing initiative of Austrade Online. These include

the increased delivery of trade and investment services electronically; the development of starter kits for online exporters tailored to specific industries and online market assistance and advice to small firms wanting to access international markets; the development of seminar programs for exporters; the development of new forums for individuals and firms to exchange information and ideas; to link Government web sites focussing on export trade and e-commerce to develop a virtual community of traders and investors; and to develop better data on the level and direction of Australia's cross-border online trade. The Australian Customs Service (ACS) is also engaged in pioneering e-commerce initiatives including a review of cargo and computer systems to establish the ACS as an open, flexible e-business gateway.

Focused R&D Initiatives

The emphasis in most of the policy initiatives discussed above has been on measures being taken by government to create the conditions viewed as necessary to encourage greater consumer or business to business take-up of e-commerce, to promote the more effective use of electronic processes internally within government, to use e-commerce to achieve other government objectives, such as export promotion or to resolve regulatory or tax issues seen as being affected by the spread of e-commerce, such as the application of state and local sales taxes or value-added taxes. However, little in these initiatives acknowledges the extent to which many of the software and other technological innovations on which the emergence of e-commerce depended, including the development of the Internet, the World Wide Web, or the Internet browser, all resulted from either direct government research initiatives or were developed in research facilities funded largely by the public sector. Recent policy documents recognize the extent to which the current explosion of electronic commerce has from these research initiatives seeded by public funding, some as long as thirty or forty years ago. This recognition of the indirect role played by government support in promoting electronic commerce also underlines the growing concern that the redirection of government funding over the past two decades towards more applied research and development and the increasing emphasis on commercialization may be shifting the balance of government funding away from the needed or appropriate levels of support for basic research. This shift may inhibit the conduct of the kind of research that will generate the innovations for the next generation of e-commerce innovations.

Information Technology for the Twenty First Century

Several recent reports, both by and for governments, have placed greater emphasis on the need to restore the funding base for basic research in the areas that will ensure the continued growth of the next generation of technical applications to seed the e-commerce related technologies. One of the most significant of these is the February, 1999 report produced by the President's Information Technology Advisory Committee (PITAC) in the US. The report concludes that after a careful review of existing federal research programs, funding for research in information technology is seriously inadequate. Research programs needed to maintain the flow of potential

new ideas in information technology and to train the next generation of researchers are sufficient to fund only a small proportion of the required research. Furthermore, federal agency managers lack sufficient resources to meet all of their research needs and have tended to support research that contributes to the short-term missions of their agencies, at the expense of investing in longer-term, higher risk research. It argues that in order to sustain the economic boom in information technology, address important societal problems, and protect against potential failures in complex systems that underpin much of the infrastructure in transportation, defense, business, finance and healthcare, the nation needs significant new funding for research on computing and communication systems. To meet these needs, the Committee recommended an increase for the total funding base in software, scalable information infrastructure, high-end computing, and socioeconomic impact research, rising from \$472 million in FY 2000 to \$1.37 billion a year by FY 2004, in addition to the funding levels in place in these areas in FY 1999.

In response to these recommendations, the President and Vice President proposed a \$366 million increase in the government's investment in information technology research as part of their FY 2000 budget. This initiative, known as IT² (Information Technology for the Twenty-First Century) responds to the recommendations in the PITAC report and is designed to expand the knowledge base in fundamental information science, advance the nation's capabilities in cutting edge research, and train the next generation of researchers. The Presidential initiative recognizes the role played by Federally-sponsored high end research in strengthening US leadership in the information technology industry and helping it account for nearly one third of US economic growth in recent years and the employment of 7.4 members of the labour force. It also explicitly acknowledges the emerging role of e-commerce as part of the information technology revolution and its potential to grow to \$1.3 trillion in the US by 2003.

The IT² initiative builds on the funding base already in place in the programs for High Performance Computing and Communications, including the Next Generation Internet and the Department of Energy's Accelerated Strategic Computing Initiative. The proposed funding augments the base HPCC programs to fund critically needed extensions of some existing research agendas and expand into the entirely new research areas recommended by PITAC. The proposed additional funding of \$366 million would combine with the base of HPCC funding for a total of \$1.342 billion. It targets its support at three kinds of activities: long-term information technology research that will lead to fundamental advances in computing and communications; advanced computing for science and engineering that will contribute to research breakthroughs in a wide range of areas that rely on this technology; and research on the economic and social impacts of the information technology revolution. It includes new funding programs for scalable information infrastructure, deeply networked systems, anytime, anywhere connectivity, and network modelling and simulation. Funding is spread across six different Federal agencies including the Department of Defense and the Advanced Research Projects Agency, the Department of Energy, NASA, the National Institutes of Health and the National Science Foundation. In the final budget package approved by Congress and accepted by the President on November 24, 1999, although not formally labelled as IT², funding for new fundamental

information technology research activities received \$235, including \$126 million for the National Science Foundation and \$60 million for the Department of Defense.

Focused R&D Initiatives in the European Union

The Information Society Technologies Program of the 5th Framework integrates previously discrete R&D funding programs of the European Union. The overall goal of the program is to promote the development of advanced technologies crucial to the Information Society, accelerate their adoption and broaden their field of application to ensure the competitiveness of European industries, and provide financial support to companies to assist them in leveraging the development of new information society technologies. The key priorities of the program are to expand the technological basis of convergence in terms of innovative communication and open service platforms, overcome bottlenecks in the development of ubiquitous and scalable networks, promote interconnection between different networks, infrastructures and technologies. The priorities for research funding under this consolidated program include: expanding the technological basis for convergence, overcoming bottlenecks in the development of ubiquitous and scalable networks, promoting the interoperability of heterogeneous systems, and building applications and supporting new organizational schemes to enable individuals to take advantage of the new technological environment.

Specific research initiatives include the European centre for Web technology which is supporting European participation in W3C, the third generation Web consortium, the Esprit-Wire project, which assists business deployment of secure enterprise webs through the development of security, data management, groupware and multimedia access services. A key action of the Fifth Framework is a major research initiative on New Methods of Work and Electronic Commerce whose objective is to integrate socio-economic and technological research on issues such as management systems for customers and suppliers, network security and confidence building technology, and the dynamics of networked organizations. Another piece of the program is the ACTS Program which combines strands of high-speed access research and technology development. One strand of this research, the ACTS-Bourbon project brings together 40 organizations in 11 member states to explore technology development and trials of cheap ATM access for SMEs.

The European Union has long seen the increased uptake and use of information technologies as a key competitive challenge that its firms must overcome. The proposed directions of the new IST program under the Fifth Framework strongly expands this thrust in the direction of research of facilitate and support the use of electronic commerce technologies by European firms.