

and those dealing with crime reduction and law enforcement.

Return on Investment

As a planning baseline, it is reasonable to assume that successful EC/EDI implementation in the public sector can yield a benefit in the range of 8% to 12% of the purchasing/contracting volume. Therefore, if a public entity spends \$1 billion on purchasing and contracting, it stands to gain some \$100 million in value. This value will come from two areas; first, the reduction in cost of goods or services due to the availability of an on-line history of prior awards (this has been successfully documented and audited).

Second, the reduction in personnel and operating costs resulting from effective use of technology. Current public sector administrative cost for each dollar of acquisition is approximately five and a half cents (State of Texas study) [4]. Successful EDI implementation should bring this closer to one cent for each dollar of acquisition. In addition, there is enormous potential for the State to leverage EC/EDI to help achieve its goal for participation of small and other emerging enterprises in the State market, as well as reduce the acquisition cycle time. Finally, it is the author's contention that public

sector planners need to pay a great deal of attention to this technology if for no other reason but to position its jurisdiction for success in the global economy. We are witnessing a dramatic reduction in the cost of matching the products with the buyer due to availability of information technology tools. This reduction coupled with the emergence of the global information infrastructure will lead to a great increase in the number of international transactions while lowering the average size of the each transaction. Early electronic commerce implementations on Internet clearly indicate the potential of this new market in the emerging global economy. The societies that adapt early to EC/EDI and use it as a strategy for economic growth will have a competitive advantage over the laggard. The societies that successfully develop their information and commercial (EDI) infrastructure will be more successful in bringing in service/information jobs for their constituents and also be able to market their own products and services better, and act as brokers for other producers in the global marketplace.

For a thousand years there was a 'silk road' from Europe to China. Societies along the 'silk road' prospered. There is a 'new silk road' being formed. Those will-

ing to venture out early are likely to be rewarded with prosperity for generations to come. ■

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The Role of Government in Electronic Commerce

The role of government in electronic commerce (EC) is partially dependent on the role that each government perceives it has in commerce itself. Governments adopt differing degrees of intervention within the commercial world, and this directly affects their participation in this world. Even amongst the Federal and State governments in Australia, there are sufficient differences in views on the role of government that their approaches to EC also differ.

The Federal and Western Australian Governments have chosen to implement and operate a corporate gateway through which all agency transactions will be fun-

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nished and processed. The New South Wales Government has established a partnership with a local Australian network service provider (NEIS) to develop and operate the Government's system and the Queensland Government has determined a preference for a totally outsourced solution or strategic partnership with a service provider [1].

The approaches also vary from a stance of expecting suppliers to use the network of its choice, through to establishing connections to all networks in order not to disadvantage any particular supplier on the basis of their choice of network. Further, some Governments have considered specific strategies for

addressing the needs of small and medium businesses that might be disadvantaged by the entry costs involved in adopting EC techniques. Governments' role in EC needs to be considered from three perspectives, being their role as a purchaser of goods and services, a provider of services, and a regulator of commercial activities.

Purchasing Role

Governments are significant purchasers of goods and services. In particular markets, they can represent up to 100% of a company's customer base. Therefore, the way in which governments participate in the marketplace has an impact on that marketplace. This means that governments can be a significant catalyst for adoption of EC techniques by their suppliers of goods and services. Adoption of EC techniques which lead to lower supplier costs and lower government costs makes a direct contribution to the

improved competitiveness of the suppliers, the government and the other industries serviced by the supplier community. However, to achieve the catalytic effects, governments need to take a coordinated approach to the adoption of EC techniques. It is clear that the business case for adopting EC techniques is not so compelling that a supplier will adopt it as soon as one customer requires this mode of operation. Otherwise, it would be far more widely adopted than is presently the case. Rather, there must be the volume of business to generate sufficient benefits to offset the costs of implementation and operation. Ideally, a supplier would like all customers to trade electronically, enabling avoidance of the more expensive manual processes, or a mixed mode of operation which may be more expensive than either manual or fully EC enabled processes.

For government to really encourage suppliers to adopt EC techniques, it is important that the full volume of government business is transacted electronically. Typically, different agencies in governments operate sufficiently autonomously that the timing of their implementation of EC techniques will vary significantly, due to differing internal priorities, resource availability, and relative benefits. Therefore, specific effort or decisions must be made to ensure that adoption by

government across the majority of agencies occurs quickly enough to provide a real incentive to its suppliers. The other role for government in purchasing is to effect corporate citizenship responsibilities involving support for international standards, and demand for 'community-wide' beneficial services.

Given the significance of government in the purchasing business, governments' insistence on the adoption and implementation of accepted international standards will provide demand for services supporting the standards, and leadership to its trading partners in adopting the same standards. Governments have a significant moral responsibility to support adoption of international standards. Various services are required by governments and suppliers alike, the most significant being seamless interconnection between EC networks. To date, commercial pressures have restricted the extent to which (technically feasible) fully functional interconnection has been provided between competing network service providers. As a significant volume customer, governments have the capacity to place substantial demand on suppliers to meet this genuine 'community-wide' need.

Governments should not implement 'workarounds' to achieve the required functionality. This lets suppliers off the hook, and only adds to the total implementation cost. In addition, it does not provide the functionality to those of its trading partners which also require it. This has been the case where governments have implemented corporate gateways to provide connection to multiple networks, satisfying the government's need to communicate with suppliers using different networks. However, these gateways have only provided easy access to the government as a customer, and have not provided any assistance to the individual suppliers who require access to customers on other networks.

Services

Governments provide a wide range of services, some of which involve the provision of information and others which involve information flows to support the delivery of a total service to the customer. Sometimes this service involves a combination of public-sector, private-sector and non-government (community service) sector organisations. Two significant areas are the health and justice sectors. In health, patient information needs to be exchanged between general practitioners, specialists, pathology companies, private and public hospitals, nursing homes and other community support services. Many of these information flows involve interaction with hospitals which have the opportunity to provide leadership in the adoption of EC techniques to

the benefit of the entire health industry and to the patient. In South Australia, one public hospital has commenced trials of providing discharge summaries to the local treating doctor using electronic mail. This application will significantly reduce the delays in making available directly to the treating doctor important diagnostic and treatment information about patients required in the post-hospitalisation period. From this base, further applications will be implemented to support electronic submission of medical care (Medicare) claims, distribution of pathology results and access to drugs databases. Also in South Australia, trials have commenced in supporting electronic lodgement of court documents by legal firms, and providing access to court listings and other court information to these legal firms. This pilot will form the basis of implementing a much wider range of court transactions and access to court information.

Applications such as these are providing more effective ways to streamline the operation of Government agencies and to improve their service delivery to their customers. As a major service provider, it is incumbent upon governments to recognise the opportunities for improving service delivery and to initiate the investigation, design and implementation of appropriate solutions in partnership with the businesses or organisations which may also be involved in the overall service being provided.

Regulation

An example of government regulation is the role performed by customs services in providing the necessary community protection in relation to movement of people and goods in and out of Australia. The Australian Customs Service has been an international leader in the adoption of EC techniques. It has demonstrated that through its legally compulsory role, it can provide the impetus for other sectors of the trade and transport industries to adopt EC techniques. Due to its national responsibilities, its adoption of EC leads to the adoption of these techniques on a national basis, without being dependent on the vagaries of local interests, or agendas. Through the adoption of EC for both import and export activities, it has assisted in generating sufficient critical mass of transaction volumes to make the provision of value-added services viable, and to change the situation from one of being compulsory to adopt EC to one of being commercially compelling to adopt EC. Taking a leadership role, however, also brings certain responsibilities with it. Over the period of implementation, the Australian Customs Service has discovered the significance of customer consultation in designing electronic commerce-based solutions. In essence, the changes im-

plemented by customs services constitute a re-engineering of the national trade and transport processes.

Impacts

The redesign of these processes can have impacts on the business practices of other industry participants such as customs brokers and shipping agents. Poorly designed, the new system can affect industry partners by:

- limiting their realisation of benefits
- impacting on their service delivery capabilities
- detracting and discouraging the adoption of EC techniques

It is very important, therefore, that a cross industry approach is taken to designing the new models of business interaction which are to be supported by the adoption of EC techniques. In environments where industries comprise many small businesses with limited capacity to undertake such analysis and design activities, governments can provide leadership and resources necessary for this essential first step in proceeding with the development and implementation of EC initiatives. Too many delays in implementation increases the costs to participants, particularly relating to maintaining mixed mode operations as well as to delayed realisation of benefits. It is important that where governments participate in EC projects, adequate planning and resourcing is undertaken to ensure timely and successful implementation.

Conclusion

Across these three areas of activity, it is clear that government should provide leadership, often simply because of the significance of its size and involvement in a particular arena, and because of its greater combined resource base. Government, however, cannot afford to take an arrogant approach to participation, and is obligated to undertake appropriate consultation with all participants. ■

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