

THE TRANSITION FROM eCUSTOMS TO eBORDER MANAGEMENT

Stephen Holloway

Abstract

In this article, the concept of eBorder Management is developed from the need for change in customs administrations, especially insofar as that change relates to the adoption of information and communication technology (ICT) to respond to the demands of increased volumes of international trade and the documents that support it. The automation of customs procedures has been a key component of customs reform and modernisation initiatives, and its importance to trade facilitation has been emphasised by the World Customs Organization (WCO), World Trade Organization (WTO), World Bank, the Organisation for Economic Co-operation and Development (OECD) and the United Nations Conference on Trade and Development (UNCTAD). Core functionality of Customs ICT systems and the resultant benefits are identified, as is the significance of developing systems that can be integrated with those in the private sector and other government agencies. The development of eBorder Management at both national and international levels is only possible with uniform adoption or adaptation of policies and legal frameworks that will enable and recognise the interoperable use of the relevant system in both national and international respects.

I. Context

Over the last 30 years or so customs administrations have witnessed an evolution in the processing of imports and exports from a paper-based approach through the automation of customs processes (including the advent of ASYCUDA¹ in 1981) to the utilisation of the internet and the establishment of eCustoms (and 'national single windows'). The logical progression of that evolutionary continuum is going to be the development and implementation of what I call 'eBorder Management', which will be a synthesis of current information and communications technology (ICT) activity in this area, both nationally across government agencies with border responsibilities, and internationally between border agencies in different countries. This will be the real test for the 'single window' concept and an opportunity to solve many of the cross-border issues that are associated with attempts to achieve integrated border management.

This article explores the transition from eCustoms to eBorder Management by, firstly, examining the changing characteristics of 'Customs in the 21st Century', to quote the World Customs Organization (WCO), before analysing some of the key drivers for change and the more recent stages that Customs ICT has gone through. Finally, the article examines what eBorder Management might look like and some of the key obstacles to its achievement.

‘Customs in the 21st Century’

As is often stated, the ongoing challenge for customs administrations is the balancing of trade facilitation with border security and control in an environment of increased trade volumes and static or even decreasing resources. The WCO foresees ongoing complexity in the nature of international trade with the ‘proliferation of regional trade agreements’ (WCO 2008, p. 3) and substantial growth in the number of smaller consignments which are physically delivered across borders, but ordered and paid for over the internet. At the same time, increased security threats to international trade supply chains and organised crime require new approaches to border management.

Governments will continue to expect their customs administrations to maintain or improve the collection of revenue, facilitation of legitimate trade, community protection and supply chain security. Industry is also making demands for improved facilitation and the integration of government systems with existing global logistics systems. This is reflected in government policies to improve the service orientation of their agencies, including customs.

The combination of these factors and innovation within the supply chain puts considerable pressure on regulatory authorities to balance the competing demands on their resources and, at least, match the standard of innovation achieved by industry. This is where ICT plays such an important role. Automation is one of the most important tools for achieving this balance without huge increases in human resources. In the context of the regulation of international trade, it has been most evident with respect to customs administration. Automation has increased the speed with which cargo is cleared, for example, by enabling the required data to be sent in advance of the arrival of the shipment, and not necessarily in office hours. It has also improved the transparency and predictability of customs procedures. As the Organisation for Economic Co-operation and Development (OECD) points out in its Policy Brief on Trade Facilitation: ‘Automation can also be used to harmonize the interpretation and implementation of customs regulations across all border points, reducing the discretionary power of customs officials and improving integrity’ (OECD 2003).

The widespread adoption of the internet as the preferred communications medium for many commercial transactions has highlighted the need for government to examine web-based options for the delivery of services (the concept of eGovernment), and the fulfilment of regulatory obligations. ‘For customs to be efficient and effective in handling this increasing volume of trade transactions and to exchange information with different stakeholders (customs abroad, other government agencies, and the trading community), they must employ e-commerce practices and principles as adopted by the private sector for its daily operations’ (Baioni & Bhatia 2005, p. 1).

What then are some of the characteristics of international trade and ICT that have driven these changes within and across customs administrations and the way in which they approach their regulatory responsibilities?

Key drivers of change

The first and foremost driver of change in customs administration and the adoption of ICT to facilitate customs processes has been the nature and volume of international trade and, in particular, the documents that support it. ‘A trade transaction may easily involve 30 parties, 40 documents, 200 data elements, and require re-coding of 60 to 70 percent of all data at least once. For example, within a port community where the two main actors, namely, the forwarding and the ship’s agents, must communicate and coordinate information flows, the exchange of information can amount to about 10% of the commercial value of the traded goods. Sources of information that could be involved include the port authority, shippers, banks, insurers, carriers, Customs, etc.’ (UNCTAD 2006, p. 3).

A recent SITPRO² study estimated that the UK import perishable food supply chain generates 1 billion pieces of paper annually; duplicate consignment data is keyed in at least 189 million times per year; the cost of document-related administration is estimated to be around 11% of the supply chain value per annum; the cost of delayed, incorrect or missing paperwork costs a little over £1 billion per annum for the sectors studied; and the total cost of generating paper documentation for the perishable sectors studied (4.5 million document sets) is estimated at £126 million per annum (SITPRO 2008).

The United Nations Conference on Trade and Development (UNCTAD) further concluded in its 2006 report on ICT that about one-third of international trade in goods is trade in unfinished goods and components, that is, trade is just part of a global supply chain and a similar percentage represents trade within the same company. It is likely that those percentages have increased since the OECD report and indeed, the WCO estimates that the percentage of intra-company trade is now closer to 50% (WCO 2008). Most of that trade is moved (in a documentary sense) within an integrated global logistics system in diminishing timeframes to meet global sourcing and just-in-time business models that emphasise low inventory.

The other key driver has been the increasing use of ICT itself and the way in which it is utilised to support international trade processes. For example, a forerunner to the ‘single window’ initiatives that are increasingly being adopted by customs administrations and government more broadly is the ‘port community system’ such as those which exist in Felixstowe and Singapore. Port community systems reflect and support an environment in which ports, airports and other transport infrastructures are increasingly being privatised. UNCTAD, quoting Drewry Shipping Consultants, identifies that ‘for example, only 20% of global container port throughput is nowadays moved by government-operated terminals, down from almost 50% in 1990. Electronic port community terminals are an example of public-private partnerships that combine the interests of the private port operators and users with those of Customs and other public sector entities’ (UNCTAD 2006, p. 5).

The fact is that international trade, transport and communication have evolved to the point where closer integration between government and industry systems is not only necessary but inevitable because customs and other border agencies are simply individual nodes within an end-to-end supply chain. As UNCTAD states in their 2006 report: ‘Government agencies, local traders and transport service providers are increasingly being forced to implement ICT solutions to ensure that national ports and border crossings support efficient supply chain operations’ (UNCTAD 2006, p. 5).

The extent and speed of innovation within the ICT industry has greatly reduced the cost of access to ICT which has enhanced its use by individuals and businesses and given rise to new models for sharing information on an ‘open access’ basis (UNCTAD 2007). This in turn, has forced governments to reconsider current approaches to regulation and service delivery including the legal framework that underpins those approaches.

II. Customs automation

The automation of customs procedures has been a key component of customs reform and modernisation initiatives for some time now, and its importance to trade facilitation has been emphasised by a range of international and donor organisations including the WCO, World Trade Organization (WTO), World Bank, OECD and UNCTAD. Customs automation benefits both government and business and some of those benefits are summarised below.

Customs ICT systems have moved from so-called ‘legacy’ approaches to more distributed and web-based approaches but are a relatively mature technology these days. Customs administrations can choose from a diverse range of ‘off-the-shelf’ solutions including ASYCUDA, TATIS, TIMS, SOFIX, ‘Customs

Solutions' (Crimson Logic), Microclear, PC Clear, IBM Customs Agency Solutions and Oracle Customs Framework. They might also choose to pursue a proprietary system as countries including the US, UK and Australia have done. There is some commonality across these various options however in terms of functionality, and it is worthwhile to touch on what constitutes that 'core' functionality so as to inform consideration of future eBorder Management systems.

Core functionality

The following core functionalities or modules of a Customs ICT system can be distilled from the relevant literature including the WCO (2004), UNCTAD (2008) and Baioni and Bhatia (2005):

- *Cargo control* – to monitor all movements of imported, exported and transit goods and ensure that all goods are duly cleared before release.
- *Declaration processing* – to capture and process data for the assessment and collection of relevant duties and taxes.
- *Payments and accounting* – to register and account for payments by importers and exporters.
- *Risk management* – the targeting and selection of those consignments representing a high risk including consignments that may conceal goods seeking to evade duty and tax, illegal drugs or material for terrorism.
- *Statistics and reporting* – the extraction of data for other government agencies including for the dissemination of foreign trade statistics and to generate management reports as required by Customs.
- *An efficient and effective Communications Gateway* – to provide legitimate access to Customs processing systems by traders and other government agencies.
- *Intelligence and enforcement* – to store and exchange data for risk profiling, compliance and enforcement activity.

Benefits of customs automation

Much has been written about the benefits of customs automation and I do not propose to go into detail in this article. The principal benefits as identified by the WCO, UNCTAD, and OECD include:

- More accurate and increased collection of duty and taxes due to the uniform application of the law, automated calculation of duties and taxes, and built-in controls.
- Less corruption due to improvements in the transparency and predictability of decision-making.
- Automation of customs procedures in conjunction with electronic exchange of information, such as cargo data and goods declarations, enables pre-arrival and/or pre-departure information processing. Processing of information in advance of the physical goods arriving in or departing from a country allows Customs to verify information and perform a risk assessment on the consignment. With this data available, decisions on the release status of the goods can be transmitted electronically immediately the goods arrive, therefore facilitating their release.
- As a corollary to the previous point, a reduction in the physical examination of goods.
- The ability to further streamline customs clearance by separating the payment of duties and taxes from the physical clearance of goods (under a deferred payment scheme, for example, payment by week or month coupled with post-transaction audit).
- Improved Management Information Systems (MIS) enabling more effective post-transaction compliance management.
- Faster electronic lodgement of customs declarations, using Direct Trader Input (DTI) via electronic data interchange (EDI) or the internet.

Integration as a step towards eCustoms

As will be discussed in relation to eCustoms in the next section, the internet has provided both opportunities and challenges for customs administrations, not least being the need to maintain data integrity within the customs processing system. This requirement has led customs administrations to work closely with the private sector and other government agencies to come up with information technologies that automate, validate and authenticate the customs process and transfer data in a secure environment (Baioni & Bhatia 2005).

The development of secure systems architectures for customs processing has also provided the opportunity to integrate and harmonise the customs regulatory process with the business processes of traders, shippers, logistics providers and other stakeholders in international trade.

Private sector participants in international trade prefer that customs information requirements draw on existing commercial information rather than requiring the separate submission of data that imposes additional cost on the supply chain. Consistent with that sentiment is a desire to make the interaction between regulatory authorities and business as seamless as possible through increased integration of systems and procedures. This is not a 'zero sum game' because government also gains benefits from closer integration between customs systems and global logistics systems. For example, the ability of Customs to access data directly from industry, such as invoice, manifest, bill of lading and air waybill information, can significantly improve targeting and selectivity as part of a risk management program that relies on advance (that is, early) submission of customs declarations.

Similarly, there are efficiency gains to be had from closer integration across government agencies as well as between government and industry. This is the 'single window' concept that has received so much attention within the customs community in recent times. The integration across government that is embodied in 'single window' initiatives has significant potential to further improve efficiency through the harmonisation of data, elimination of duplication, sharing of information between regulatory authorities and the coordination of border management activity. Unfortunately, the potential for integration is often not being realised. In many cases, perhaps even the majority of cases, data requirements are duplicated across border agencies and traders are asked to submit the same data to different agencies at different times in specific formats that don't allow it to be 'pulled' from existing commercial sources.

The lack of integration is exacerbated by the customs legacy systems mentioned previously. Such legacy systems are generally characterised by individual applications that are difficult to integrate and often inefficient. They are difficult and expensive to change and data migration to new systems is particularly problematic. They present potential data inconsistencies between the different applications and can be very labour intensive because of the need to establish and monitor reconciliation processes between different applications that often utilise the same data. This all equates to high costs of development and maintenance, and the lack of integration across customs applications reduces both the speed of transaction processing and accuracy. Some of those non-automated, labour intensive data collections are critical to the government's ability to prepare accurate trade statistics and provide information to other government agencies.

'Modern integrated customs applications can replace legacy information systems with the necessary means to achieve effective and efficient operations, provide more timely and convenient access to data, and fully comply with internationally accepted standards and requirements' (Baioni & Bhatia 2005, p. 3). This integration can be web-enabled and therefore is comparably less costly than its legacy equivalent. The WCO foresees integration as a critical component of 'globally networked Customs' that achieves 'closer collaboration between customs administrations and between Customs and business in facilitating legitimate trade and undertaking customs controls...the creation of an international 'eCustoms' network that will ensure seamless, real-time and paperless flows of information and connectivity' (WCO 2008).

The WCO describes the ICT framework for integration between business and Customs and between Customs administrations in its June 2008 ‘Resolution of the Customs Cooperation Council on the Role of Customs in the 21st Century’ as requiring:

- Internationally standardized data requirements for export, transit and import and the implementation of the WCO Unique Consignment Reference number as part of a Cross-Border Data Reference Model
- Interconnected systems and aligned customs databases to enable the electronic exchange of data between customs administrations as early as possible in the international movement of goods
- Mutual recognition and coordination protocols between exporting, transit and importing administrations to eliminate unnecessary duplication of controls in international supply chains
- Standards to enable the development of a system of mutual recognition for Authorised Economic Operators (AEOs)
- A set of rules governing the exchange of information between customs administrations, including rules on data protection.

The adoption of the framework suggested by the WCO coupled with web-based customs applications facilitates a level of integration that can appropriately be described as eCustoms which I will now examine in more detail.

III. eCustoms

As electronic commerce has developed in line with use of the internet as a communications medium and supported by improvements in telecommunications infrastructure such as broadband networks, the impetus for a fully electronic customs environment has also grown, culminating in the vision for globally networked Customs articulated by the WCO and outlined previously. However, in considering the further transition from eCustoms to eBorder Management, it is important to understand some of the rationale that has been behind the shift to open networks such as the internet.

Customs administrations have traditionally focused on the use of electronic data interchange (EDI) to conduct electronic transactions.³ But EDI has its limitations, not least being its cost and therefore its lack of attraction for small and medium enterprises (SMEs) and occasional importers and exporters. From a technology perspective, EDI standards also fail to capture the three-dimensional nature of a typical international trade transaction because of their focus on properly formatted single messages. In this regard it has been overtaken by XML⁴ and other web-based protocols but it should be noted that EDI nevertheless remains as the data format used by the majority of electronic commerce transactions.

The progression from EDI to broad-based e-commerce technologies has resulted from customs administrations looking for ways to connect the widest possible user base to their systems. This required Customs to move towards an open system philosophy that would enable the big as well as the small and medium sized trader to exchange information electronically (WCO 2004). The use of open networks such as the internet as the delivery platform for information is a feature of contemporary electronic commerce in contrast to the closed networks associated with EDI such as ‘value-added networks’ (VANs). However, with the advantages of open networks (particularly cost) also come some challenges including the security risks that are a consequence of the network and its data being open and potentially unsecured.

In the Customs context, the factors contributing to the adoption of web-based solutions include ease of network access, easily available and cost-effective software, and low communications costs. SMEs and occasional traders are much more likely to take advantage of the internet to conduct their transactions with Customs than they are to use a private network or VAN. For this reason, customs administrations

need to be able to provide web-based options for their clients. A good example of the direction in which customs administrations are moving in this respect is the European Union (EU).

eCustoms case study

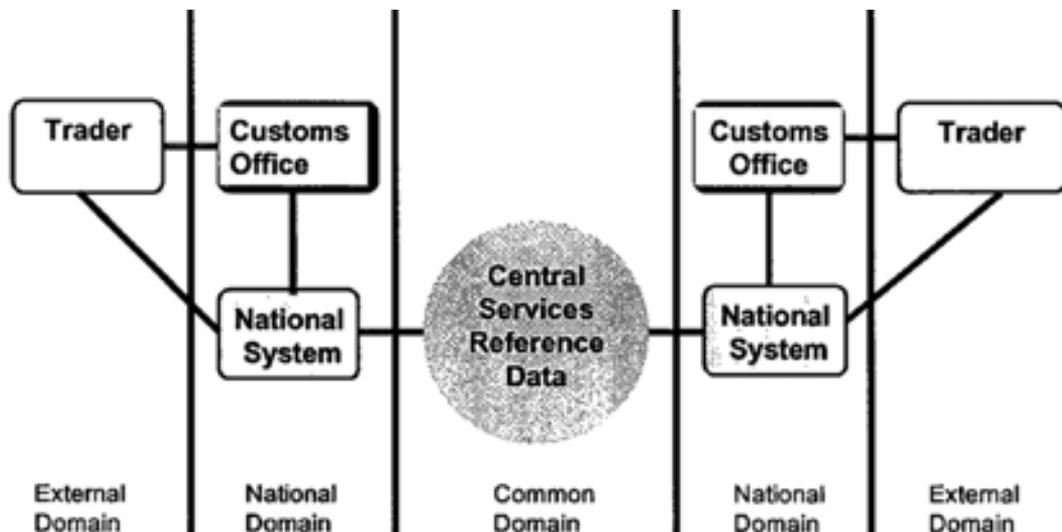
The European Community (EC) is currently developing and implementing a ‘single window’ for the EU, the objective of which is to ‘set up and operate secure, integrated, interoperable and accessible electronic customs systems in order to facilitate end-to-end supply chain logistics and customs processes for the movement of goods into and out of the European Community, and to reduce the risks of threats to the safety and security of citizens by minimising the remaining differences between Member States’ customs processes’ (EC 2008).

This objective is supported by a legal, technical and administrative framework including amendments to the Community Customs Code that take effect from 1 July 2009 to permit and recognise electronic customs declarations and the exchange of data between different customs offices within the EU while the ‘Electronic Customs Decision’ (Decision No. 70/2008/EC):

- Commits all stakeholders to implement pan-European interoperable and accessible electronic customs systems in an agreed timeframe
- Sets the objectives, strategy and coordination mechanism for the electronic customs systems
- Defines EC and national components of the systems and the related responsibilities and tasks
- Establishes monitoring and reporting frameworks for the eCustoms initiative.

It is further intended that the electronic customs systems will be developed according to international standards as regards data models and message formats so that they can interact with the customs systems in other countries external to the EC. It can be graphically represented as follows:

Figure 1: System architecture



Source: European Commission 2008, *Electronic Customs Multi-Annual Strategic Plan – 2008 Yearly Revision*, TAXUD/477/2004-Rev.9_EN, Directorate-General Taxation and Customs Union, EC, Brussels, 22 September, p. 12.

The EC approach is further supported by a project called ITAIDE, that is, Information Technology for Adoption and Intelligent Design for E-government.⁵ To quote from the website: ‘ITAIDE addresses issues related to eCustoms: How can customs documents and procedures be redesigned and supported by ICT? What are the drivers and barriers for adoption? ITAIDE research spans the levels of technology, processes and networks to understand eCustoms in a comprehensive manner. We investigate eCustoms from the following different angles: (1) standardization; (2) interoperability; (3) control and redesign; (4) network innovation and (5) value assessment’.

It is important to note however, that while the overall eCustoms model for the EC has been established along with high-level functional and technical specifications, actual implementation of the model remains the task of individual customs administrations (Raus, Flügge & Boutellier 2009). This creates challenges for harmonisation, standardisation and interoperability and has the potential to create significant complexity within the EC and with respect to traders and external customs administrations. The ITAIDE research will therefore be an important input to the achievement of the EC’s eCustoms objectives.

Benefits of eCustoms

The benefits of customs automation were discussed briefly above. The benefits of an eCustoms approach are essentially the same as those for customs automation generally but of a greater order of magnitude because of the level of integration and response times inherent in eCustoms. Therefore, we see increased time and financial savings and greater accuracy in the processing of data (Raus, Flügge & Boutellier 2009). There are similar improvements in regulatory and business processes that are a consequence of earlier (electronic) provision of data and the ability to risk assess consignments before they actually arrive at a port or airport. This flows through to improvements in supply chain efficiency and lower costs to business. Since the eCustoms system is based on open architecture, it is cheaper and easier for SMEs to access and participate in the electronic process and this further enhances business and regulatory efficiencies.

IV. eCustoms to eBorder Management

The impact of moving from paper-based procedures through basic automation to integrated eCustoms has been significant for business and government both in terms of improvements in efficiency and with respect to cost savings. Imagine then, the possibilities that flow from taking the next step and achieving cross-border and eventually global integration with respect to border procedures, not only for customs procedures but for all border-related regulatory procedures.

There has been considerable progress in establishing a legal and administrative framework for customs procedures and supply chain security. The WCO’s *International Convention on the Simplification and Harmonization of Customs Procedures (Revised Kyoto Convention)* and the Framework of Standards to Secure and Facilitate Trade (the SAFE Framework) provide considerable guidance for customs administrations seeking to modernise their processes. In the latter case the framework is based on two ‘pillars’, namely Customs-to-Customs network arrangements and Customs-to-Business partnerships and consists of a further four core elements, all of which involve the use of ICT.

From a data standardisation perspective, Customs also has the advantage of the WCO Customs Data Model which provides a framework of standardised and harmonised sets of data and standard electronic messages (EDIFACT) to be submitted by trade for Customs and other regulatory purposes to accomplish formalities for the arrival, departure, transit and clearance of goods in international cross-border trade.

There is also the potential for trade rules with respect to Customs as an outcome of the Doha Round of Multilateral Trade Negotiations on ‘trade facilitation’. The achievement of eBorder Management is therefore less an issue of customs processes than it is of other border-related processes where there isn’t the same degree of innovation or integration.

The issue

The regulation of international trade involves a diverse range of controls beyond customs procedures. If the objective of trade facilitation is to improve the efficiency of movement of goods across borders to reduce costs while maintaining security of the supply chain, then the satisfaction of that objective requires not just business involvement but also the involvement of other government agencies with responsibilities at the border.

A country could have the most efficient and effective customs administration in the world but if the clearance of goods is also subject to checks and approvals from other regulatory authorities that result in delays in getting the goods to market, it has not altered the bottom line for the business adversely affected by the loss of opportunity and increased costs that result from that delay. If regulatory authorities with border responsibilities do not coordinate their activities, there is the real danger that such delays will be realised on a regular basis along with the additional costs of having to duplicate information. There is also potential for unlawful goods to enter the country because intelligence is not shared between border agencies to provide a complete risk profile of a particular consignment.

As the World Economic Forum has stated in its *Global Enabling Trade Report 2008*:

Even in developed countries such as the United Kingdom, there are close to 60 or even more distinct regulatory procedures and regimes that affect cross-border operations. These operations fall into the wider categories of revenue collection and fiscal protection, public safety and security, environment and health, consumer protection, and trade policy. Procedures, documentary requirements, inspections, visas, and vehicle regulations, as well as general security issues can all severely hamper the movement of goods across borders (2008, Chapter 1.5, p. 69).

At page 70 of that report, there is a telling observation from the perspective of business that highlights the issue of lack of coordination particularly well:

The private sector can often do no more than comply with the requirements and bear the costs that are associated not only with collecting, producing, transmitting, and processing required information and documents, but also with the expenses of setting up and financing guarantees, laboratory testing, inspection fees, stamp charges, service fees levied by shipping lines and banks, labor and handling charges to deliver goods to inspection facilities and to present goods, storage charges, and possible out-of-hours surcharges...Typically such unpredictable circumstances are the result of multiple and contradictory requirements or lengthy inspection procedures by agencies that include customs, immigration, health and sanitary authorities, police and other security agencies, and standardization or conformity assessment agencies (World Economic Forum 2008).

Similar observations are made by the World Bank in its *Logistics Performance Index (2007)*. It is also interesting to note a World Bank study conducted in 2004 that examined port efficiency, customs, regulatory transparency, and services sector infrastructure. It concluded that increasing global capacity in trade facilitation by half, when compared with the global average, would increase world trade by US\$377 billion, amounting to a 9.7% rise in global trade. The study estimated that about US\$107 billion of the total gains would come from improvements in port efficiency, about US\$33 billion from improvements in the customs environment, and *US\$83 billion from improvements in the regulatory environment* (emphasis added). In other words, there is significant scope for improvement outside of customs regulation, particularly if it is further leveraged through the application of electronic commerce.

A significant obstacle to the achievement of eBorder Management is the lack of interoperability of electronic commerce legal frameworks among countries, even those countries that have adopted international standards with respect to electronic commerce such as the United Nations Commission on International Trade Law (UNCITRAL) Model Laws. As a United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) study conducted in 2004 states:

They still did not permit mutual recognition of electronic data messages and digital signatures necessary for cross-border e-commerce. Other examples included variation across countries in data privacy protection...In some areas, such as communications infrastructure regulations, most countries have elements in their legal enabling frameworks, but the experiences in implementation are widely divergent (2004, p. 4).

The foundation of any electronic transactions initiative including eCustoms and eBorder Management is the ability of electronic documents to perform the same function and have the same legal recognition as that of a paper document. A cross-border legal framework that provides that recognition is therefore essential.

The steps ahead

The development of eBorder Management at both national and international levels is only possible with uniform adoption or adaptation of policies and legal frameworks that will enable and recognise the interoperable use of the relevant system in both national and international respects. The saying about any process only being as effective as its weakest link applies very much to this scenario. As pointed out in the UNESCAP study referred to above, even basing a country's laws on UNCITRAL model laws with respect to electronic commerce and digital signatures is no guarantee of cross-border interoperability.

The implication is that proper coordination and harmonisation between relevant regulatory authorities at both national and international levels together with private sector stakeholders is critical. Governments that possess effective cross-agency coordination mechanisms will have a 'head start' in turning eCustoms into eBorder Management and both international and regional organisations can play a valuable role in achieving cross-border coordination and harmonisation.

An example of a regional initiative in this context is the e-ASEAN reference framework for e-commerce legal infrastructure (2001) which outlines general principles for e-commerce laws that Member States must adopt in drafting their own laws. Those general principles are:

- They should conform to international standards such as UNCITRAL's Model Law on Electronic Commerce and Model Law on Electronic Signatures to be interoperable with similar laws of other countries.
- They should be transparent and predictable so that there is no legal ambiguity between transacting parties in an electronic transaction.
- They should be technology neutral, with no discrimination between different types of technology.
- They should be media neutral, that is, paper-based commerce and e-commerce are treated equally under the law.

It proposes that e-commerce laws should include the following provisions at a minimum: (1) electronic transactions; (2) normal rules of contracts should apply equally to transactions online; (3) the legal effect of using electronic records and electronic signatures; (4) rules regarding the reliability of electronic records and electronic signatures; (5) duties and regulation of trusted third parties and certification authorities; and (6) the extent of legal liability for service providers.

The mutual recognition of different countries' regulations is perhaps the most problematic issue because of its political and sovereignty overtones as has been evidenced by the difficulties being experienced in achieving mutual recognition of AEO programs. Nevertheless, mutual recognition is the backbone of the entire process and without it, international eBorder Management will not eventuate and the potential benefits of truly seamless trade and end-to-end supply chain risk management will not accrue.

Privacy and security issues will be paramount in an international eBorder Management environment because relevant transactions will be taking place over open communications networks such as the

internet, and there will also be information-sharing with overseas administrations as well as other national regulatory authorities involved in border management.

The operational basis of eBorder Management would be harmonised rules and business processes for border clearance and control (including supply chain security) and the re-use of business data, preferably through direct and secure access to global logistics systems as a corollary to government-business systems integration. Of course, online access to supply chain information in a secure environment with real time data access also offers significant opportunities to not only improve transparency but also private sector competitiveness by providing information for better decision making, asset visibility and management that leads to lower trade costs (Baioni & Bhatia 2005).

Of course there are many technological challenges in achieving international eBorder Management and others are better qualified than I to comment on those technical issues. It is possible that a 'distributed computing' approach would be followed because of its advantages in transparency, openness and scalability but this further highlights the importance of establishing interoperability of different systems and either standardisation of data content and format or tolerance of multiple formats so that, for example, invalid messages, which might otherwise bring down the system and perhaps the whole network, are rejected. The ITAIDE research referred to earlier can make an important contribution to meeting these challenges.

If all of the challenges can be overcome to create a fully integrated border management system that is easily accessible and interoperable between regulatory authorities with border responsibilities nationally and internationally, then seamless international trade can be a reality. It will no longer matter where a business is located because their trading transactions can be completed via a single access point, and there will no longer be a clear regulatory demarcation between export and import, at least from an information perspective which means that it should be possible to obtain a detailed picture of a specific international trade transaction from end-to-end. This means better targeted border controls based on more complete risk management information.

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Endnotes

- 1 Automated SYstem for CUstoms DAta.
- 2 SITPRO Limited (derived from Simpler Trade Procedures Board) is a UK non-departmental public body, focused on the removal of barriers to international trade through the simplification and harmonisation of trade procedures.
- 3 EDI (Electronic Data Interchange) is the structured transmission of data between organisations by electronic means, that is, computer-to-computer.
- 4 XML (Extensible Markup Language) is a general-purpose specification for creating custom markup languages. It is classified as an extensible language, because it allows the user to define the markup elements. XML's purpose is to aid information systems in sharing structured data, especially via the internet (www.wikipedia.org, accessed 22 April 2009).
- 5 www.itaide.org, accessed 23 April 2009.

Stephen Holloway



Steve Holloway, Principal Director of the Centre for Customs and Excise Studies and an Adjunct Professor in the Faculty of Law, University of Canberra, has had 25 years experience in customs and international trade, including 20 years with the Australian Customs Service. He works closely with international organisations, customs and revenue administrations and the private sector on a wide range of international trade and border management matters including customs reform and modernisation, international logistics, the international regulation of intellectual property, legislative reform and strategic export controls.

Steve holds a Bachelor of Laws from the Australian National University, a Masters degree in International Customs Law and Administration from the University of Canberra, and is admitted as a Barrister and Solicitor of the Australian Capital Territory Supreme Court and a Barrister of the Federal and High Courts of Australia.