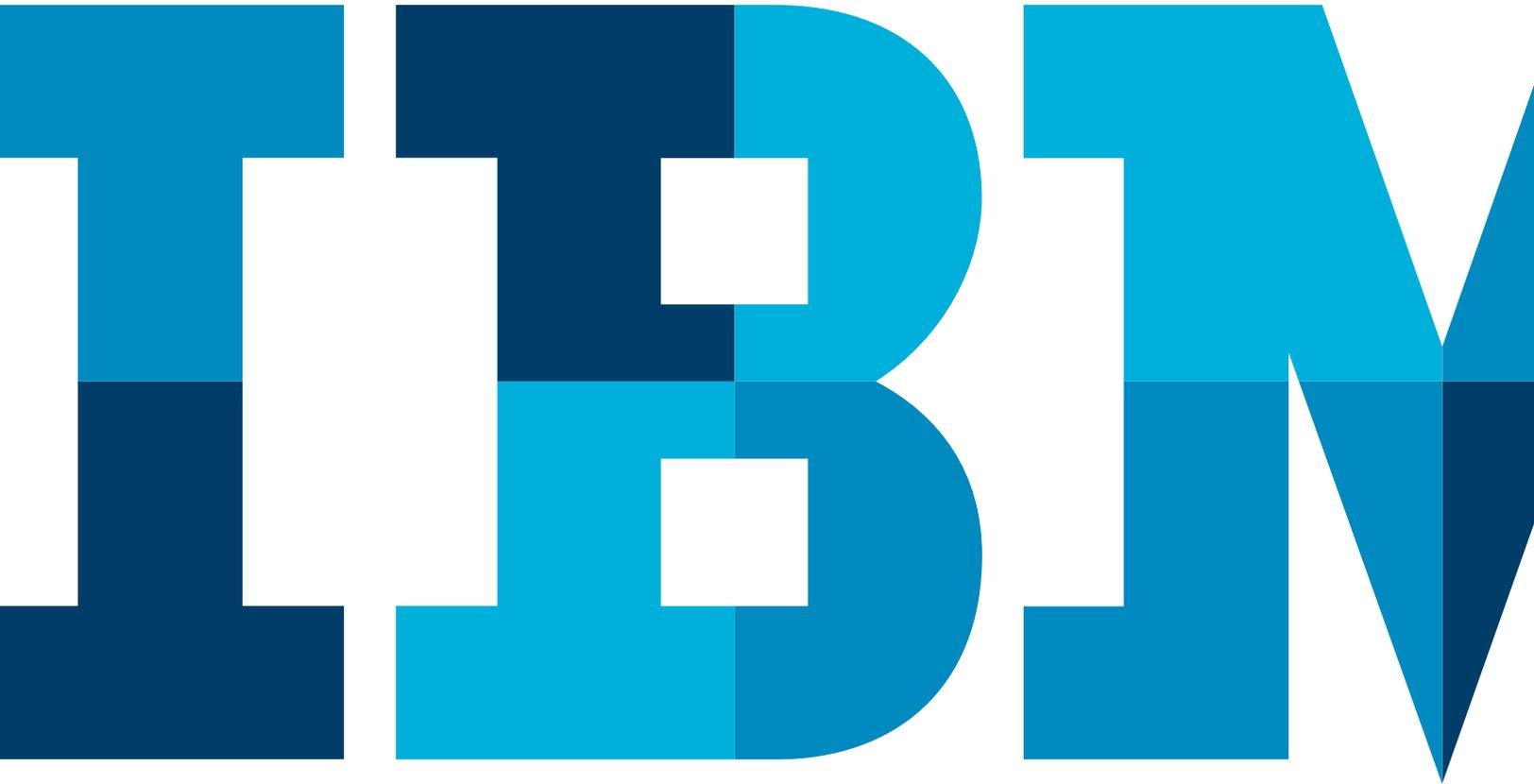


# Customs 2015: The Smarter Planet strategy for customs administration



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## Executive summary

Over the past five to seven years, the customs strategies of national, regional and international bodies have focused on finding a balance between control and trade facilitation. Control aims to cope with the increasing safety, security and fiscal risks of international trade. Trade facilitation is designed to reduce administrative burdens.

There are five primary channels involved in international trade<sup>1</sup>. They represent five objects of value that exist and move through time and space, in relation to cargo shipments. They are:

- People
- Cargo
- Conveyances
- Money
- Information

Leading trade nations have invested in optimizing the cargo channel through customs operations, and the conveyances channel through port operations. They have done this by introducing automated support for faster clearance times, by giving authorizations for simplified procedures and by smoothing out logistics in main ports. Nations that lead the world in cargo movement, such as Singapore and the Netherlands, have done excellent jobs of optimizing the cargo and conveyances channels. Their achievements will be hard to improve upon.

Traditionally, customs administrations have optimized the paper information channel to maximize revenue. And because competition in international trade has mandated extremely tight margins, Authorized Economic Operators (AEOs), Logistics Service Providers (LSPs) and buyers and sellers have had limited desire to invest in IT modernization efforts.

Pillar	Strategy	Key IT solutions
Technology	Leverage technology to collect and share data that leads to new insights.	Data management, sensors, track-and-trace devices, analytics
	Drive operational efficiency and effectiveness.	Mobile and social media, analytics
Risk management	Set up instrumented, interconnected and intelligent systems to cope with 21st century risks and facilitate trade.	Predictive analytics, spatiotemporal analytics, social media analytics, data management
Global trade policies	Establish Secure Trade Lane to support lawful trade.	Information standardization, process integration across the supply chain, sensors, track-and-trace devices
Human capital	Adopt a strategic human capital approach to empowering front-line employees, which can help improve job performance.	Social and mobile media, IT education and enablement

Table 1: The pillars of the Smarter Planet strategy for customs administrations

A new differentiation strategy is needed to remain competitive. The information channel drives and enables the next generation of customs strategies and transformational business opportunities. A digital information channel must build upon the understanding that the world is becoming instrumented, interconnected and intelligent to enable a Smarter Planet™.

The Smarter Planet strategy for customs works to improve the efficiency and effectiveness of customs operations and achieve both control and trade facilitation. To respond to competitive and bottom-line pressures and to ensure the private sector's participation in modernization efforts, a critical success factor is developing a new business strategy for customers. This strategy is inherently collaborative and based on sharing information across international supply chain participants.

## Challenges imposed by a changing environment

Customs, immigration and border management agencies are facing challenges imposed by their ever-changing environment. Four influencing factors have been widely recognized:

- *Increasing trade volumes:* In spite of a temporary slowdown, trade volumes are expected to keep growing, fueled by countries with growing middle classes that raise demand for public services and consumption goods.
- *Increasing risks:* Risks are becoming less predictable because of geopolitical instability such as political and economic unrest, regional conflicts and terrorism.
- *Cost cutting required by the economic crises that most modern economies are experiencing:* The US annual structural deficit may reach USD1 trillion by 2015<sup>2</sup>, which many consider unsustainable. The US Department of Homeland Security (DHS) is reducing costs by USD800 million in 2012<sup>3</sup>. European governments face a similar situation. Cost cutting has affected governments' customers, too. Modernization strategies must be sensitive to the impact on traders' operating models and costs.
- *Shifts in expenditures:* As government agencies reorganize and restructure, roles and responsibilities shift. Processes are being redesigned, manual tasks are being automated and budgets are being allocated to new tasks and departments, at the expense of more traditional allocations.

These dramatic changes in the environment in which customs administrations operate pose a great challenge: How can customs administrations do more with less?



Figure 1: Government customs administrations face new challenges armed with fewer resources.

## Information channel and new strategies for the future

The 2007 IBM® Global Movement Management study identified five key flows of the global economy: people, cargo, conveyances, money and information. These are the five areas—or channels—relevant to customs. Traditionally, all customs administrations invest in the cargo channel to automate and optimize the customs clearance process. Impressive results have been achieved in this channel, as shown by statistics on the average clearance times for inspected cargo<sup>4</sup>. These clearance times have produced major cost savings in supply chain logistics for traders in recent years, and significant benefits for national economies.

Countries where the cargo and conveyance channels are already optimized, or at least extremely efficient and effective, have become world leaders in international trade. Again, key examples include the Netherlands (with the port of Rotterdam) and Singapore. For a customs administration to fulfill its role in helping its country remain competitive in the international trade arena and conquer the challenge of “doing more with less,” a new differentiation strategy is needed.

Country	Clearance time (in days) for inspected cargo
Australia	1.76
Belgium	1.17
China	3.38
Finland	0.60
Hong Kong	0.55
The Netherlands	1.13
Singapore	1.22
US	2.15

Table 2: Clearance times (in days) for inspected cargo

Every two years, the world’s digital universe—the amount of data—more than doubles<sup>5</sup>. In a world with abundant information, the key to success is locating the right data. Not only are we experiencing an information explosion, but at the same time new technologies enable us to create new insights and knowledge out of existing, unused information. The same new technologies enable us to share data and collaborate within agencies and outside of them.

Information drives the next generation of customs strategies. It also helps enable the next generation of business transformational opportunities. The information channel grows as the world becomes more instrumented, interconnected and intelligent, as with Smarter Planet solutions. A smarter information channel offers systems, processes and infrastructures that become more efficient, productive and responsive.

For both governmental and private sector customs administrations, Smarter Planet solutions can help the information channel become:

- *Instrumented:* More sensor data is becoming available as information that was previously created by people is increasingly machine-generated. New forms of data collection include radio-frequency identification (RFID) tag-generated data, vessel movement data, data from container tracking devices and data from traders' internal systems.
- *Interconnected:* Data will be shared across customs administrations or across functional domains within a single agency. Data can also be shared among participants in a logistics or supply chain, and customs employees may have access to location-independent data. IT solutions enable information sharing—and thus interconnection—among employees.
- *Intelligent:* Analytics will be used to create insights as early as possible. Human intelligence can be combined with analytics through interactive tools to turn mountains of data into intelligence that can be acted upon.

The Smarter Planet strategy for customs administrations makes it possible to achieve control and trade facilitation, rather than simply adopt the least undesirable trade-off between them. To meet this goal, importers and exporters, LSPs and customs administrations will need to:

- Turn data and information management into a key business and IT ability
- Make extensive use of analytics tools in the risk management process to detect risks as early as possible and support lawful trade
- Establish Secure Trade Lane to support a large amount of lawful trade
- Embrace and promote the usage of social and mobile media

### **Integrated risk management and analytics**

A survey among customs and immigration executives for the IBM Customs, Immigration and Border Management Executive Forum 2011 concluded that customs administrations' top business priority is in the area of targeting and selection.<sup>6</sup> The survey results pointed out that targeting and selection offers a lot of potential for improving efficiency and effectiveness.

A central means of getting the most value from the information channel of global trade is through heightened risk management. Risk management best practices from five to seven years ago focused on shifting from 100 percent physical control to administrative control, pre-arrival data collection and integration with other agencies. Many customs administrations can still gain a lot by implementing such practices. But these practices did not deliver sufficient capabilities in the areas of compliance monitoring and measurement system setup, risk identification and evaluation, or risk prevention. By complementing existing—often business-rules driven—risk management capabilities, the customs administration of tomorrow can use analytics tools to help become more instrumented and interconnected.

<b>Analytics capability</b>	<b>Explanation</b>	<b>Examples of IBM tools</b>
Predictive analytics	<ul style="list-style-type: none"> <li>• Identifies unknown and new risks by finding patterns in historic data and scoring and assessing them</li> <li>• Generates new risk profiles or business rules</li> <li>• Deepens the learning cycle through continuous assessment of risk profiles</li> <li>• Identifies trading and logistics patterns that justify attractive business models for participation in security and clearance facilitation for specific commodities, trade lanes and ports</li> </ul>	IBM SPSS® Data Collection
Spatiotemporal analytics	<ul style="list-style-type: none"> <li>• Identifies risks related to objects, such as vessels or containers, moving in space and time, and detects patterns that impose risk</li> </ul>	IBM Spatiotemporal Visual Analytics Workbench
Identity and social network analytics	<ul style="list-style-type: none"> <li>• Identifies connections between entities such as companies or people to improve safety, security and fiscal risks</li> </ul>	InfoSphere® Identity Insight
Social network analysis	<ul style="list-style-type: none"> <li>• Offers an integrated platform for social media monitoring and social networks analysis. Identifies interesting postings and assesses them</li> </ul>	IBM SNAP (Social Network Analysis Platform)
Social media analytics	<ul style="list-style-type: none"> <li>• Analyzes a broad range of social media content, including Twitter feeds, web pages such as Facebook or blogs, and other unstructured textual data</li> <li>• Provides a rich set of tools that can be used to draw meaningful information from the broad range of text and metadata associated with social exchanges</li> </ul>	IBM SMART (Social Media Analytics Research Tool), using IBM Content Analytics

Table 3: IBM tools offer competitive analytics capabilities.

Implementing capabilities on a solid information infrastructure—sharing and managing data—will improve risk assessment, fraud prevention, efficiency and profitability for traders. This will lead to reduced risks, improved use of customs inspection resources and a reduced administrative burden for legitimate trade. Our executive report, *The Power of Analytics for Public Sector*<sup>7</sup>, helps lay the foundation for analytics capabilities within customs and other border management agencies. As Table 4 shows, substantial benefits can be achieved quickly by implementing small, focused, commercial-off-the-shelf (COTS) analytics solutions.

Analytics is a technological enabler for creating new business models to justify and motivate private sector stakeholders' (for example, LSPs, importers and exporters) participation in customs data regimes and AEO programs. Analytics tools give customs the ability to predict which shipments are likely to be fraudulent and which are likely to be compliant, the ability to detect with high precision any deviation from common trading patterns and the ability to tell with a high degree of certainty that shipments involve no risks that cannot be handled in the postclearance audit process. New business models, which are changing the nature of interaction between the private and public sectors, will build upon this promise, offering large business value to traders and LSPs.

Client	IBM Solution	Benefits	ROI
Memphis Police Department (MPD)	IBM SPSS Predictive Analytics	<ul style="list-style-type: none"> <li>• Reduced crime rates greatly without a proportional increase in staff members</li> <li>• Improved identification, targeting and responses to crime</li> </ul>	<ul style="list-style-type: none"> <li>• Annual ROI: 863%</li> <li>• Payback period: 2.3 months</li> <li>• Average annual benefit: More than USD7 million</li> <li>• TCO: less than USD400,000</li> </ul>
MoneyGram International	InfoSphere Identity Insight	<ul style="list-style-type: none"> <li>• Increased the ability to identify and interrupt potentially fraudulent transactions by 40%</li> <li>• Helped achieve a 72% reduction in consumer fraud complaints in one year</li> </ul>	<ul style="list-style-type: none"> <li>• Stopped more than USD37.7 million in fraud.</li> </ul>
Clark County Department of Family Services	IBM Cognos®	<ul style="list-style-type: none"> <li>• Streamlined case management and reporting practices</li> <li>• Increased visibility and productivity and improved the ability to justify funding</li> </ul>	<ul style="list-style-type: none"> <li>• Annual ROI: 245%</li> <li>• Payback period: Nine months</li> <li>• Average annual benefit: USD4.4 million</li> </ul>

Table 4: Small, focused, COTS analytics solutions can provide a large ROI.

## Secure Trade Lane and supply chain visibility

Secure Trade Lane<sup>8</sup> (STL) assumes that if an international consignment is compliant at the beginning of its journey and its integrity has been guaranteed by technological means until it arrives at its destination, it will not require inspection at its destination. If traders can demonstrate that their internal control mechanisms ensure compliance and they provide customs with full visibility of their supply chain data, customs can shift control to the postclearance process, resulting in faster logistical processes.

STL is a true Smarter Planet initiative. It's instrumented, using track-and-trace devices that send container location information and security alerts. It's interconnected, enabling businesses and government agencies to share supply chain information through data standardization and a service-oriented architecture (SOA). And it's intelligent, as it enables customs to take action when supply chain integrity breaches occur.

IBM began implementing pilot STL programs as early as 2006. We've learned that a main inhibitor to broad adoption is that a true mind shift is required to enjoy the full benefits of STL, which justify its investment costs. The full potential of STL will be achieved by exempting participating traders from the requirement to submit import and export declarations, by allowing them to calculate and pay import duties by themselves periodically, and by pushing any customs involvement into the postclearance process as long as no supply-chain integrity breaches have been detected by the technology.

## Social and mobile media to empower employees

Consumer adoption and use of digital, mobile and social media throughout the world is changing the nature of information collecting and sharing and human interactions. Social media tools include profiles, communities, blogs, wikis, (video) chat, file sharing, bookmarks, virtual spaces and more. IBM practices what we preach by using IBM Connections social software company-wide.

There are two major reasons why customs administrations, like other organizations, must embrace social and mobile media:

- Social and mobile media offer a huge potential for improving the efficiency and effectiveness of employees by making information, knowledge and experience sharing easy and location-independent (see the "IBM's ROI on social media" section).
- Employees love it! "Generation Facebook" (the employee of tomorrow and of today) is "infinitely more international-minded, flexible and tech-savvy than we were 20 years ago".<sup>9</sup>

Social software users say social media:

- Is easy to use
- Enables quicker decision making
- Makes collecting feedback and gathering information easier
- Makes users more knowledgeable and productive
- Fosters internal and external relationships
- Helps them get immediate responses or feedback
- Allows them to reach customers or employees who insist on engaging through social software<sup>10</sup>.

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### **A day in the life of a customs agent: Smarter Planet solutions for customs administration in action**

Social and mobile media tools increase the efficiency and effectiveness of a customs inspector's daily tasks. Here's a look at what a typical day might look like.

- A customs officer logs in and reads an assigned inspection task.
- The officer looks in the cargo's location and inspects it based on instructions listed on the inspection task. Also, when out of the office, the officer has access to all data using a mobile device. For example, the officer retrieves the standard inspection instructions on the mobile device.
- The officer sees a pallet of boxes of medicine with an unfamiliar name.
- The officer registers the pallet's numbers in the inspection task. The officer takes a photo of the goods using a mobile device, and attaches it to the inspection results, tagged as "medicine," and includes the product name. The information is accessible to the entire customs organization.
- The officer searches for the unfamiliar name on the social platform or intranet. No results appear.
- In the customs inspection officer's platform the officer learns which colleagues online are experts in medicinal inspections. A chat session is initiated through a mobile device.
- The colleague asks to see the cargo. The inspecting officer shares a link to the centrally stored picture and starts a video chat or conferencing session by mobile device and streams near-real time video.
- The colleague sees the medicine and confirms that he or she has seen such shipments before.
- Based on this information, the inspection officer decides that it is not necessary to send a sample of the shipment for lab research.
- The inspection officer enters inspection results through a mobile device. They include text from the chat session. The chat is tagged and is available to all employees on the search engine. The inspection results are available when the official customs clearance decision occurs.

Social media benefits in this scenario include quick release of the shipment (no referral to laboratory was required, eliminating a delay), resulting in lowered overhead costs for traders. The inspector also learned on the job and made a valuable connection with a skillful colleague.

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### **IBM and social media ROI**

IBM has been a leader in social media. We encouraged our employees to use the Internet back when other companies didn't allow their employees to access it. Before offering social media solutions to clients, IBM achieved an impressive ROI through employees' social media usage. Many point to solutions that were successful. For example, IBM developerWorks® is a technical resource that offers developers a dynamic forum for technical content and information. It provided USD100 million per year in estimated support cost savings. IBM also saves money in reduced travel costs thanks to social media.

The Gartner Group predicts that by 2014, organizations that integrate communities — a social media feature available in the IBM Connections suite — into customer support will gain cost reductions ranging from 10 to 50 percent.<sup>11</sup>

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### **Private sector participation as a key to success**

A lack of convincing business models and business cases has slowed the adoption of many customs AEO programs and of STL programs in recent years. A critical success factor in the customs Smarter Planet strategy is the development of a business strategy by customs for private sector customers.

The strategy is based on the understanding that new technology, including analytics tools, sensors, track-and-trace devices and social and mobile media, helps enable customs to identify fraudulent as well as legitimate shipments and traders. New modes of operation are possible for interactions between customs and private sector stakeholders.

While evidence for the quantified benefits of these new operating patterns has not yet been established, it's clear they can help reduce trade transaction costs. An Organization for Economic Cooperation and Development (OECD) study suggests that a reduction in trade transaction costs of 1 percent of the value of world trade would amount to as much as USD40 billion savings worldwide.<sup>12</sup> The European Commission has estimated that halving the cost of bureaucratic trade procedures might save approximately EUR300 billion a year worldwide for traders.<sup>13</sup>

Actor	Operations using current business model	Operations using new business model	Benefits
Carriers and LSPs	Provides transport services	<ul style="list-style-type: none"> <li>• Provides transport services and near-real time track-and-trace data to supply chain participants and customs</li> <li>• Relies on sensors and analytics to identify risks and report to customs</li> </ul>	<ul style="list-style-type: none"> <li>• Enables new revenue streams</li> <li>• Helps increase market share with differentiating service</li> <li>• Improves branding and speeds the logistical process, enabling a price premium</li> </ul>
Customs	Processes every trade transaction in real time	<ul style="list-style-type: none"> <li>• Processes risky trade transactions in near real time and low-risk transactions in postclearance audits</li> </ul>	<ul style="list-style-type: none"> <li>• Improves resource use in near real time</li> <li>• Provides faster logistical processes for traders</li> </ul>
Customs	Runs risk assessments per transaction using profiles	<ul style="list-style-type: none"> <li>• Works based on the analysis of the compliance of the customer</li> </ul>	<ul style="list-style-type: none"> <li>• Improves targeting</li> <li>• Improves control resource usage</li> </ul>
Customs inspection officer	Inspects cargo offline; later records results in IT system	<ul style="list-style-type: none"> <li>• Enables customs officer usage of mobile and social media to acquire and share information regarding an inspection in near real time with an extended network of private and public sector actors</li> </ul>	<ul style="list-style-type: none"> <li>• Improves information and knowledge sharing</li> <li>• Results in more effective inspections and indirectly in fraud prevention and increased revenue collection</li> </ul>
Importer/exporter	Submits declarations to customs for every trade transaction	<ul style="list-style-type: none"> <li>• Shares supply chain and internal control information with customs.</li> <li>• Reports control breaches</li> <li>• Submits declarations for non-routine trade transactions</li> </ul>	<ul style="list-style-type: none"> <li>• Improves branding, product quality and supply chain agility with a high degree of internal control</li> <li>• Reduces trade costs thanks to an exemption from submitting declarations</li> </ul>
IT service providers	Provides software packages for submitting customs declarations and manifests	<ul style="list-style-type: none"> <li>• Provides information sharing facilities for supply chain data and shipment monitoring services</li> <li>• Manages identities, authorizations and access rights</li> </ul>	<ul style="list-style-type: none"> <li>• Offers new revenue streams</li> </ul>

Table 5: IBM Smarter Planet solutions offer new ways for customs and private sector stakeholders to interact.

These benefits must be the core of the customs strategy for private sector customers. Customs can offer these customers compelling business value to justify the cost of participation in these strategies, and justify investments in IT solutions.

These business models have not yet been widely adopted, with the exception of certain vertical trade lanes, such as air cargo, pharmaceuticals, perishable flowers and fresh food. This is because insufficient business value has been offered to private sector stakeholders, and because legislation has stood in the way of changing working practices. In recent years we have observed an increasing maturity in international mutual recognition agreements, paving the way to a legal framework enabling these new working practices.

## Conclusions and a call to action

The next generation of leading customs administrations will focus on data collection, data sharing and decision making. The information channel is customs' next strategic imperative.

Risk management is a business process that has great promise for the information channel. Yet in most countries, it is underused. Analytics capabilities, on top of data and information management capabilities, will boost the ability to find useful but obscure data. This is because analytics technology excels at dealing with large, complex data and performing near-real time comparisons of trade transactions with historic data to identify deviations from trade patterns. This improved targeting results in better use of customs inspection resources. It can lower operational costs or help reduce administrative burdens because trade may be delayed for inspection less often and because new business models will reduce trade costs for traders.

The big promise of analytics tools for risk management is that they make it possible for customs to identify potentially fraudulent traders and shipments and distinguish them from compliant ones. This, in its turn, can enable customs administrations to develop new business models for interaction with LSPs and traders by relying on openness, information sharing, collaboration and, ultimately, on postclearance control, enabling financial benefits for LSPs and AEOs from major simplifications in trade procedures.

STL is an exemplary strategy for using this capability. Sensors, track-and-trace technologies and access to the data of supply chain partners will help customs administrations identify and act upon breaches of supply chain integrity. Certified traders are often responsible for major trade volumes. Risks not associated with supply chain integrity breaches can be handled in postclearance mode, resulting in major savings in time-sensitive customs inspection staff deployment. Meanwhile, participating traders will enjoy faster operations because of less customs involvement. These two benefits are compelling reasons to implement STL.

The exponential growth of social and mobile media is a fact. Customs administrations that ignore this miss an important opportunity. Social and mobile media are a means to share information and give employees access to imperative information. The power of the social platform lies in the integration of all social tools and collaboration instruments under one umbrella, with a strong search engine assisted by “tags” for profiles, documents, blogs, bookmarks and more.

Finally, all these initiatives share characteristics that make them good candidates for cloud-based solutions: data sharing, location independence, standardized services and scalability. Cloud solutions can help enable the Smarter Planet customs strategy. The fear of externalizing corporate data has so far presented the main barrier to cloud service hosting. Successful cloud-based projects with highly secured government agencies such as the US Department of Defense can help convince clients that data security issues are more a psychological barrier than a technological one. Where this psychological barrier still does not allow the cloud Software as a Service (SaaS) delivery model to host business services on a public cloud, all stakeholders can benefit from a shared or private cloud to offer SaaS and Infrastructure as a Service (IaaS).

This paper is a call to action for customs administrations to adopt a Smarter Planet customs strategy.

1. Turn data and information management into key business and IT competencies.
2. Make extensive use of analytics tools in the risk management process, detect risks as early as possible and support lawful trade.
3. Establish STL to support large volumes of lawful trade.
4. Embrace and promote the usage of social and mobile media.

To learn more about IBM Smarter Planet solutions, see [ibm.com/smarterplanet](http://ibm.com/smarterplanet)

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### From focused COTS solutions to end-to-end business model innovation

Customs processes and supporting systems are necessarily aligned with trade, economic, law enforcement, border security, foreign, and social welfare policies.

As priorities, finding a balance between these missions is different for every nation. International bodies such as the World Customs Organization (WCO) and the European Commission's Taxation and Customs Union Directorate-General (DG/TAXUD) define a set of best practices. Yet as nations implement them, their processes and operations vary widely. An example of this is a comparison of the United States and Sweden. Both countries are often considered among the top ranks of modern customs administrations. But their systems are polar opposites in their functional priorities and supporting applications. Sweden emphasizes trade facilitation and the United States emphasizes law enforcement, including antiterrorism and narcotics interdiction. Both have strong authorization programs, but they are structured differently with varying objectives.

The evolution of customs practices has and will continue to produce different combinations of operational models and systems. Some countries opt for extensive, innovative programs, while others prefer small, incremental changes. When implemented fully by a customs administration the strategy presented in this paper will entail a major evolution in customs operations and a potential revolution in the way customs administrations and the private sector interact. Countries seeking small, incremental progress are likely to implement focused COTS solutions. They include:

- IBM Connections communities
  - IBM SPSS
  - IBM InfoSphere Identity Insights
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### For more information

To learn more about the Smarter Planet strategies for customs, please contact your IBM marketing representative or IBM Business Partner, or visit the following website: [ibm.com/government](http://ibm.com/government)

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