Smarter Planet solutions for Customs risk management

by Ziv Baida and Norbert Kouwenhoven

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This article is a call to action for Customs administrations to adopt a Smarter Planet strategy in the area of Customs risk management. Smarter Planet solutions build on the understanding that the world is becoming:

- Instrumented: More sensor data is becoming available with new forms of data collection now including data generated by radio-frequency identification (RFID) tags, data from vessel movements, data from container tracking devices, and data from traders' internal systems.

- Interconnected: Data is shared across Customs administrations, across functional domains within a single agency, among participants in a logistics or supply chain, and Customs employees may have access to location-independent data.

- Intelligent: Analytics tools create insights and knowledge out of the wealth of information, enabling decisions to act upon events that in the past went unnoticed.

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. The survey results pointed out that targeting and selection offer a lot of potential for improving efficiency and effectiveness.

As a consignment is shipped from an exporter in country A to an importer in country Y, it passes via a number of "Customs events" or "Customs processes", including the export declaration, the physical exit from the country or economic zone of export, the potential arrival in, storage in and departure from countries of transit, the physical arrival at the country or economic zone of import, and finally the import declaration.

Traditionally, Customs risks are assessed in each of the above-mentioned steps separately, such that in each step only the information related to that specific step is made available, making it hard to detect risks that span the boundaries of a single Customs event or process. Integrated risk management is a new way to manage Customs risks, namely by connecting the dots between various events, processes and transactions.

Complex event processing technologies tackle exactly this challenge of detecting risks by correlating events of different types occurring across disparate systems, where events may or may not be ordered, where an event presence or absence may be significant, where the actionable event may be derived from real events, where the response process is unstructured and driven by the occurrence of an event or pattern of events, and where time to respond is of the essence.

Analytics is the use of data and related insights developed through applied analytics disciplines – for example, statistical, contextual, quantitative, predictive, cognitive and other models – to drive fact-based planning, decisions, execution, management, measurement and learning. Analytics and complex event processing rely on the availability of a robust, supportive information management platform.

Successful implementation

IBM has implemented a wide range of analytics solutions in practically every industry to detect fraud, such as fraudulent Customs declarations, credit card fraud, money transfer fraud, social security fraud, and healthcare fraud, in order to improve revenue collection, smartly and dynamically assign scarce resources to "hot spots" and enable a wide variety of strategic, tactical and operational decision-making in an era of abundant information.

For example, IBM's implementation of complex event processing technology for a Customs service allowed this administration to detect more complex fraud than before. In other industries, IBM's predictive analyt-

ics helped the Danish tax administration (SKAT) to assess the behaviour of debtors and adjust collection methods, resulting in a reduction in workload for the collections department. It also helped the Memphis Police Department to reduce serious crimes by 27%.

Implementing these capabilities on a solid information infrastructure (sharing and managing data) will improve risk assessment, fraud prevention, and 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.

Secure Trade Lanes and information sharing

Whilst acknowledging that the implementation of analytics-based integrated risk management within the boundaries of a single Customs administration is already a challenge, we strongly believe that the next generation of innovative Customs risk management is bound to rely on a stronger degree of international collaboration and on a stronger degree of information sharing between Customs and private sector actors.

The European Union's Cassandra Project in which IBM collaborates with HM Revenue and Customs in the United Kingdom, the Dutch Customs authorities, GS1 and 22 freight forwarders, port authorities, universities and other organizations, is an incubator for next generation solutions for integrated risk management.

Cassandra builds on the results of its predecessor, namely ITAIDE (Information Technology for Adoption and Intelligent Design for e-Government), a project where IBM implemented the Secure Trade Lane (STL) solution in conjunction with Dutch Customs, offering supply chain visibility for Customs and its supply chain partners, enabling improved compliance monitoring by safeguarding container integrity and providing alerts on container integrity breaches. While Cassandra does not necessarily assume the usage of smart seals for container security, both projects promote and rely on the sharing of supply chain data by legitimate companies with the government, and primarily with Customs.

STL is a true Smarter Planet initiative. It is instrumented – using track & trace devices that send container location information and security alerts, it is interconnected –

enabling businesses and government agencies to share supply chain information through data standardization and a service-oriented architecture (SOA), and it is intelligent – enabling Customs to take action when supply chain integrity breaches occur. Various forms of STLs are possible, for example with varying degrees of information sharing among actors in the chain from exporter to importer and with varying degrees of technological sophistication, such as the use of smart seals for container security, track & trace devices and other sensors.

Benefits of Smarter Planet solutions for Customs risk management

Complex event processing and analytics, when applied on top of the information platform (relying on data sharing in STLs as well as without it), may offer a revolution in the risk management or targeting capabilities of Customs. Important benefits will include reduced fraud, improved safety and security, and improved operational efficiency for Customs.

Yet, at least as important is the fact that these solutions make it possible for Customs to identify potentially fraudulent traders and shipments and distinguish them from compliant ones. This, in turn, can enable Customs administrations to develop new business models for interaction with Logistics Service Providers (LSPs) and traders by relying on openness, information sharing, collaboration and, ultimately, on post-clearance control, which will provide financial advantages for LSPs and Authorized Economic Operators (AEOs) who will benefit from major simplifications in trade procedures.

Technology alone is not enough

The IBM executive report, "The Power of Analytics for Public Sector", helps lay the foundation for analytics capabilities within Customs and other border management agencies. IBM's experience in implementing these solutions has shown that well-performing organizations using analytics developed three key competencies: (1) information management, (2) analytics skills and tools, and (3) a data-oriented culture. Change management may therefore
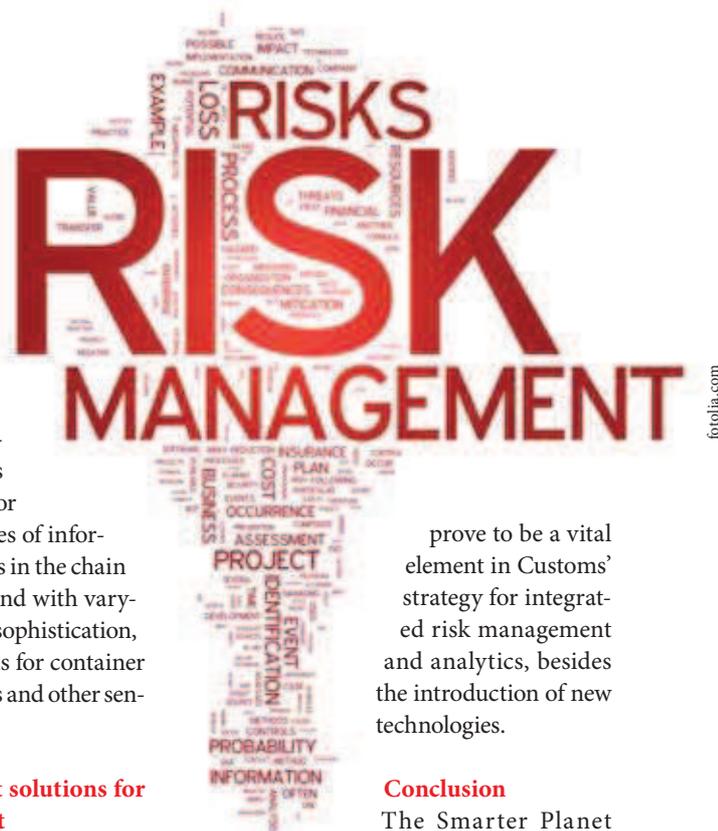
prove to be a vital element in Customs' strategy for integrated risk management and analytics, besides the introduction of new technologies.

Conclusion

The Smarter Planet strategy for Customs works to improve the efficiency and effectiveness of Customs operations and achieve both control and trade facilitation. Past projects demonstrate substantial benefits from the application of analytics and complex event processing technologies for risk assessment, creating new insights out of data and making decisions based on these insights. The case studies described in this article are selected examples.

While the promise of integrated risk management is big, a legitimate concern is the amount of required resources. There is no "one size fits all" response to this concern, as the degree of sophistication should fit the situation of each and every Customs administration. In our paper "Customs 2015: The Smarter Planet Strategy for Customs Administration" we demonstrate that substantial benefits can already be achieved quickly by implementing small, focused, commercial-off-the-shelf (COTS) solutions.

Interested Customs administrations are invited to visit the following links for further details on IBM Smarter Planet solutions:

- http://public.dhe.ibm.com/common/ssi/ecm/en/gvw03042usen/GVW03042US-EN.PDF
- www.ibm.com/smarterplanet

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