

Implementing e-Customs in Europe: An IBM point of view



Overview

This brochure discusses e-Customs in Europe. It overviews the current Customs landscape, identifies drivers that are pressuring European Union (EU) member states towards e-Customs, and discusses the transformational role IBM is playing in this process. That role is further illustrated by two solutions that IBM and IBM Business Partner INTRASOFT International currently offer to European Union (EU) member states – the Excise Movement and Control System (EMCS) and Declaration Management.

IBM is well suited to play a significant a role in the transition to e-Customs in Europe. The IBM Customs, Borders and Revenue Management (CBRM) organisation is dedicated to bringing a strategic framework and leadership expertise to e-Customs solutions. The IBM Customs team of industry experts and solution architects has delivered consultancy services and open solutions in Europe, Asia and the United States. As a market leader in Customs transformation, IBM provides strategic consulting, hardware, software and integration capabilities.

The purpose of the European e-Customs initiative is a more efficient customs environment that will facilitate trade and enhance security.

The present Customs landscape in Europe

The European Union (EU) is the largest Customs union in the world, with an internal market of some 500 million citizens. EU Customs services handle nearly 20% of world imports, some 1,545 million tonnes of sea cargo and 3 million tonnes of air cargo each year. In 2007, EU Customs offices processed 183 million declarations. In addition to collecting over €12 billion annually, EU member states administrations (MSAs) have to guard against smuggling, fraud, environmental contamination and counterfeiting. They protect endangered species, the area's cultural heritage, and intellectual capital rights. And they collect trade statistics to help policymakers detect economic trends. Most of these operations have been document- and paper-intensive – that is, until the coming of the EU's e-Customs initiative.

e-Customs means using digital systems to collect and safeguard Customs duties; to control the flow of goods, animals, personal effects and hazardous items in and out of member states; and to provide security from crime. The initiative aims to replace paper-based customs procedures with European-wide electronic operations, thus creating a more efficient and modern customs environment. The objectives of the e-Customs initiative are to facilitate trade and enhance security at the EU's external borders.

However, e-Customs operations in Europe are challenging because the European Customs landscape is immense and complex. It includes 27 EU member states; countries bordering on, and in frequent commerce with, EU member states; other related trading partners; and the overarching European Commission (EC). Each EU member state has its own legislation to deal with national concerns. Although

many member states already use electronic declarations, many of their existing legacy systems can be monolithic, not fully integrated and not always suitable for the changes demanded by a pan-European e-Customs landscape. Oftentimes, too, there are procedural and financial difficulties aligning national and international directives. Nevertheless, member states are modernising their systems and operational environments to move toward e-Customs.

International drivers towards Customs transformation

In addition to pressures towards e-Customs from inside individual European member states, there are also pressures from the EU itself. The European Commission has guidance in the form of *Customs Blueprints*, with the most recent published in 2007.¹ These guidelines are based on European best practices against which national Customs administrators can measure their own operational capacity. They aim to harmonise Customs regulations and procedures among EU member states and their trading partners by offering assistance in reconciling a country's existing situation with blueprint standards and thus providing a basis for Customs reform.

More importantly, the European Union has also published the "Multi-Annual Strategic Plan" (MASP)² which represents the EU's programme for the creation of a simple and paperless environment for customs and trade. This programme incorporates a number of different initiatives including modernisation of customs legislation and IT solutions.

National and international drivers are moving European Union member states to implement e-Customs initiatives.

MASP is binding and requires member states to implement specific systems that will transform current operations incrementally from the present through to 2013. This transition could be achieved by simply developing the appropriate applications and plugging them into existing environments; however, some member states have taken this opportunity to change current systems, architecture and environments to better accommodate MASP applications. An important goal is to make all member state customs administrations act as one by enhancing information exchange and interoperability between member states administrations and the trading community.

In brief, then, the situation is this: EU member states are pressured nationally and internationally towards the e-Customs initiative. Nationally, there is need for efficiency and cost savings as well as information exchange and interoperability between national administrations. Internationally, there are the directives of the European commission as well as the need for European-wide communications and interoperability. Both pressures are pushing member states to a more homogeneous e-Customs landscape built on solutions that offer flexibility, interoperability, cost efficiency and security. A projection of a future e-Customs landscape is shown in Figure 1.

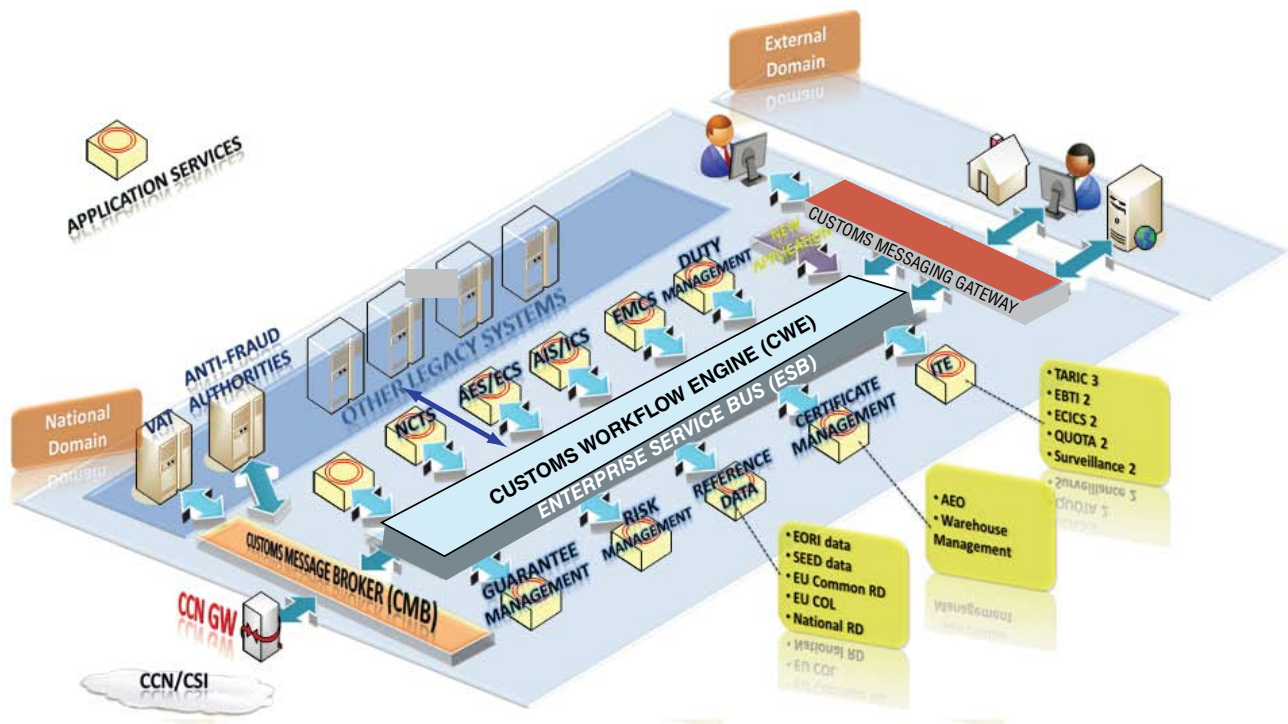


Figure 1. Projection of an e-Customs implementation for a typical EU member state

IBM's role

As a market-leading Customs solutions architect, integrator and service provider, IBM and its Business Partners have the capabilities necessary to not only help implement MASP solutions but to also provide services necessary to transform current systems and architectures. This approach is incremental, introducing solutions that can be integrated seamlessly with existing systems.

To facilitate the transition to e-Customs, IBM has developed a solution framework to be a guide for integrating components on a standard platform. The vision behind the framework, which is shown in Figure 1, is to allow multiple independent providers of solutions to supply content that can be integrated seamlessly into an existing platform. Integration is based on the open principles of a service-oriented architecture (SOA) in which the components offer well-defined services that can be reused across solutions.

The framework consists of:

- A solution map that identifies components and their relationships
- An industry model that captures the industry commonality in a set of standard processes, services and data across the components
- A technical reference architecture that standardises the platform on which components run

The advantages of the SOA-based integration of solutions are extended by customisation options that range from simply adapting business rules, through to implementing standard models, to full control of the components from a standard development environment. This approach supports incremental transformation through a step by step introduction of platform and components that can come from various sources.

IBM Business Partner INTRASOFT International S.A.

INTRASOFT International, S.A., has demonstrated expertise in the Customs sector through the building, integration, deployment and operational management of specific Customs information systems across Europe. The company's offerings cover all facets of Customs requirements, including the provision of technical expertise, computerisation of Customs processes to reflect local and European Union legal requirements, and management consulting for streamlining Customs processes.

INTRASOFT International's competitive advantages include:

- In-depth knowledge of all business and technical details
- Recognition by all member states' customs authorities as a reliable and reputable contractor
- Efficient operations with DG TAXUD and with the majority of member state administrations in the context of consulting activities and training
- The execution of projects for the development of other national systems (e.g., transit systems and export control systems).

At the end of 2006, INTRASOFT International S.A. employed 600 professionals working in Belgium, Luxembourg, Athens and Romania, 20% of whom have postgraduate degrees, representing 20 different nationalities and mastering more than 15 languages.

IBM is the market leader in helping businesses transform their current systems through SOA into more flexible and open systems for tomorrow. We have done this with clients in many industries including manufacturing, banking and insurance, and we are also doing it with Customs and other Public Sector organisations. IBM can help EU member states move to e-Customs with our robust e-Customs solution framework, built on open systems, supported by IBM's hardware, software, research and integration capabilities. Figure 2 is a solution map Identifying and differentiating typical assets against an architectural view.

Existing e-Customs assets like the Declaration Management System (DMS), the Excise Movement and Control System (EMCS) and MASP components are provided by IBM working in conjunction with Business Partners. Future assets will be developed and provided in the same way. IBM Business Partners have been chosen because of the market-leading qualities of the specific products and services they contribute to populate the e-Customs solution landscape. The framework is open, thus allowing independent providers to add contents both at the platform level and the solution level. It is also open to next-generation components like Automated Export System (AES), Automated Import System (AIS), Single Electronic Access Point (SEAP) and Single Window (SW).

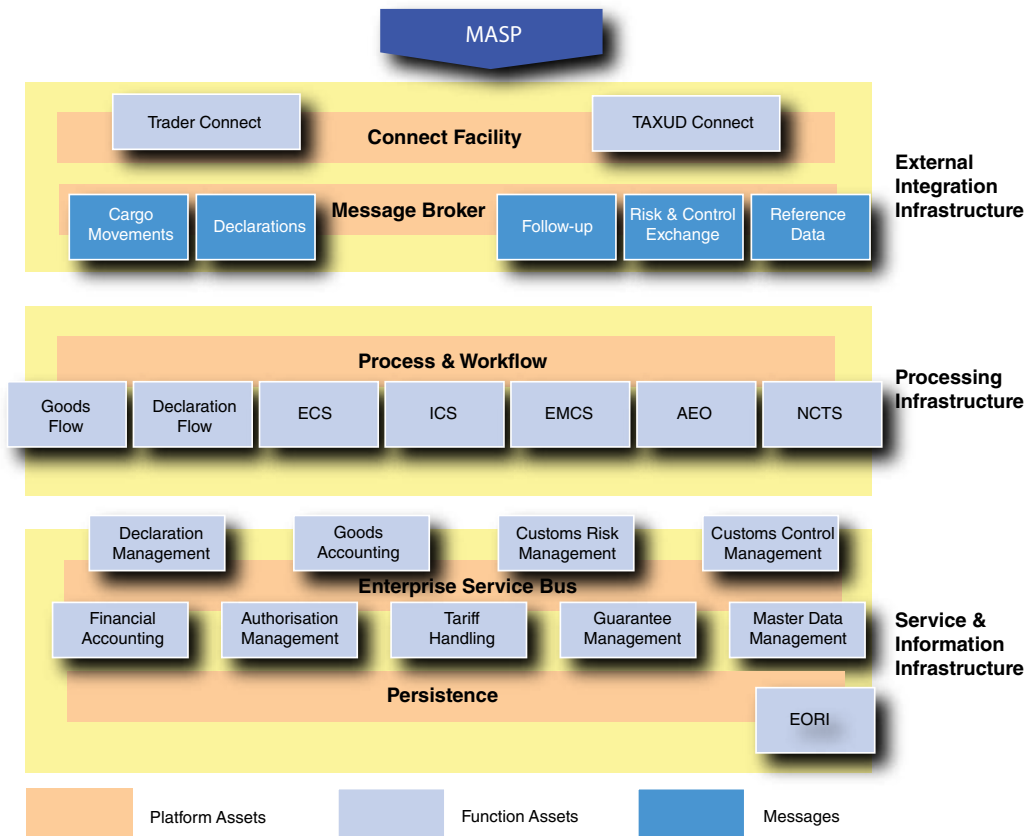


Figure 2. Sample component and platform map

Excise Movement and Control System (EMCS)

A specific example of this approach can be found in implementations of EMCS by IBM and IBM Business Partner INTRASOFT International. EMCS is a computerised system for monitoring movements of excise goods (e.g., alcoholic beverages, tobacco products and energy products) between EU member states under duty suspension. The system will replace paper documentation that has accompanied these movements. Member states are developing their own national EMCS applications, and these systems will be linked to all other member states through a common domain, maintained by the European Commission.

The EMCS asset enables tax and customs administrations to process excise declarations electronically and to achieve optimal excise control for exchanging data on excise declarations among member states (country of dispatch, country of destination, country of transit). The platform takes advantage of open standards and service-oriented architecture. It is modular, separates business logic from services implementation, and comes with a GUI that can be individually customised, distributed and integrated with existing applications. In addition, by reusing the solution, a client can benefit by knowing how to build and integrate a National Excise Application (NEA) that meets the EU requirements but is also flexible enough for specific national functionality. Present IBM and INTRASOFT EMCS implementations meet exactly the specifications and requirements requested by the EC.



EMCS implementations by IBM and INTRASOFT meet exactly the specifications and requirements requested by the European Commission.

MASP implementation in Belgium

The Customs and Excise Department of the Belgian Ministry of Finance selected IBM Belgium to implement the full scope of MASP. A multi-year contract includes application development and maintenance services, IBM WebSphere® software licenses, and taking over the management of their help desk from incumbent service providers.

The short-term scope of the project involves:

- Transitioning to a steady-state corrective and evolutive maintenance of the legacy declaration management system (based on BEA WebLogic and IBM DB2® information management software)
- Implementation and maintenance of the Import Customs System (ICS) Phase 1
- Implementation and maintenance of the Export Control System (ECS) Phase 2
- Implementation and maintenance of EMCS Functional Stage 1 using the EMCS asset developed by IBM and INTRASOFT
- Implementation and maintenance of the Authorised Economic Operator (AEO) Phase 1
- Implementation and maintenance of Economic Operator Registration and Identification (EORI) Phase 1
- Re-engineering of the legacy New Community Transit System (NCTS) to SOA-based architecture as well as maintenance and support
- Transitioning to a steady-state maintenance of Tarbel, the legacy tariff system

The long-term scope includes transitioning to next phases of the customs building blocks plus implementation of Single Electronic Access Point (SEAP) and Single Window concepts.

The solution will be based on an SOA architecture underpinned by WebSphere Process Server and WebSphere Datapower.® The project will be implemented by the combined forces of local Belgian resources together with the IBM Customs Global Delivery Centre in India and INTRASOFT.

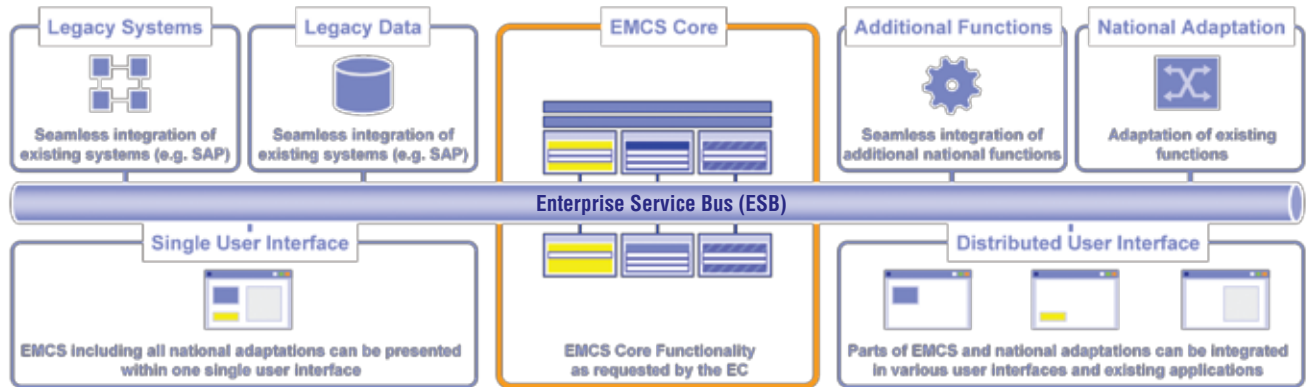


Figure 3. SOA-based EMCS

Figure 3 illustrates a SOA-based EMCS facilitating the movement from legacy systems and data into the new functionality of an e-Customs environment.

Declaration Management

While the MASP is setting requirements on the exchange of data among member states, the processing of import, export and some other trade declarations is a national domain matter and is handled by national Declaration Management Systems (DMS). Thus, DMS is a national system on top of which the related MASP systems are used for interaction with other EU member states when necessary.

The interoperability requirements imposed by MASP on EU member states administrations (MSAs) are fuelling reconsiderations of current Declaration Management

Systems. Some member states are already in the process of replacing their current legacy applications, and others are considering options. It appears likely that within the course of MASP most member states will replace or modernise current DMS applications.

The phasing for common domain applications as defined by DG TAXUD, changing and evolving specifications, and ambitious timelines are driving MSAs towards flexible and resilient architectures and solutions in order to better respond to these emerging and demanding requirements. The required implementations of the Single Window / One-Stop Shop concept and Centralised Customs Clearance will further increase the complexity demands on MSAs' systems. A transition to Enterprise Service Bus/Business Process Management (ESB/BPM) on a SOA infrastructure appears to be the route that will be sufficiently flexible to respond to the timely compliance to with EU directives.

IBM and INTRASOFT are also developing a SOA-based, MASP-compliant DMS to accommodate the requirements of EU member states.

Along with Business Partner INTRASOFT, IBM is developing a SOA-based, MASP-compliant asset for the "Declaration Management System." The asset is built around a number of generic functional areas within the declaration handling process, and a flexible configuration of the process, to accommodate the requirements of various MSAs while complying with the EU MASP requirements.

The system is anchored in three main principles:

- Full compliance with national and EU requirements, supporting the future vision of modern Customs organisations
- An open architecture and extensive set of functionalities that lower risk of acceptance and implementation
- Transparent, attractive total cost of ownership

Examples of other e-Customs offerings

In addition to EMCS and DMS, IBM and IBM Business Partners have been and are collaborating on the following e-Customs assets:

Customs Messaging Gateway, an integrated solution featuring a secure, multi-channel communications and data transformation gateway leveraging IBM hardware, software and services

Customs Message Broker, messaging service through which current legacy systems or newly developed applications can satisfy the information exchange and interoperability requirements between EU member state administrations and DG TAXUD



Risk Management, sophisticated capabilities for the systematic identification of potentially fraudulent Customs declarations, for collecting data and information, for analysing and assessing risk, and for prescribing action and monitoring outcomes

Tariff Management, comprehensive facilities that include administration and maintenance of tariff data; publication of tariff information in various formats; integration of tariff information with Customs applications; validation of commodity codes and tariff measures; and automation of duty calculations to support Declaration Management

Guarantee Management, guarantees issued and accepted as a security of possible Customs debt, which could arise in Customs regimes such as national transit or a common transit

IBM has assets, experience and Partners to help governments and partner organisations address the challenge of the EU e-Customs transformation.

Choose market leadership – IBM

Customs organisations require more than just new technology; they need a comprehensive approach to their business challenges based on a clear understanding of the issues, a deep knowledge of the Customs business, advanced business and technological thinking, and talented professionals who are passionate about what they do.

IBM is committed to supporting and assisting governments and partner organisations as they address the challenge of the e-Customs transformation. We have invested in a dedicated global team of industry consultants, subject matter experts and solution developers, who focus on developing assets and providing solutions and services to Customs organisations within the total supply chain of global trade.

Our solutions combine IBM's unique insight into Customs organisations with leading strategic consulting skills and unparalleled technical assets to help our clients forge a new path to more effective, efficient and responsive operations. Our success is accomplished by building strong relationships with our clients and their partners, by completing complex systems integration projects on time and within budget, by providing consulting services, and by introducing innovative solutions that are backed by IBM's extensive research and development capabilities and underpinned by IBM's broad portfolio of technology offerings.

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¹ European Commission, *Customs Blueprints: Pathways to modern Customs*, (Luxembourg: Office of the Publications of the European Communities, 2007).

² European Commission, "Electronic Customs Multi-Annual Strategic Plan: 2007 Yearly Revision," TAXUD/477/2004 – Rev. 8 EN, Number 3, "Vision and Objectives of Electronic Customs," (Brussels: European Commission, 2007).