STANDARDIZATION

SUPPORTING THE FUTURE OF GLOBAL TRADE

Hanane Becha, PhD Computer Sciences, Innovation & Standards Senior Manager,
UN/CEFACT Smart Container Project Leader

Since the early 1960s, industry-developed technology standards and their adoption by manufacturers have unleashed successive waves of innovation and productivity. Electrical interface, computer, and network standards transformed data usage. Telecom, wireless, and Internet standards have changed the way the world communicates. Global trade and multimodal transportation (MMT) organizations are now turning to standards-based systems and processes to significantly improve efficiency, profitability, and customer satisfaction. The United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) has become a focal point for defining electronic standards that relate to global trade. Together, UN/CEFACT, global governmental agencies, MMT and supply chain (SC) partners, and technology providers are meeting today's electronic trade issues head on.

WHY STANDARDS?

Traditional paper-based trade processes simply do not provide the data or visibility needed for global commerce in a connected world. Cargo owners have limited visibility into their shipments. Maritime, rail, and truck shippers must make critical decisions in short periods of time. Cargo and container traffic volumes continue to increase. Carriers face greater challenges in balancing bookings and trade lane capacity.

Without the ability to generate, deliver, analyze, or share real-time information in standard formats, ecosystem members constantly battle with inconsistencies and unknowns. For example, shipping terms that vary between countries can lead to disputes over who is responsible for payment. Small ordering inconsistencies can create confusion, delay, and added cost as they play out through quoting, invoicing, materials management, and customs documents.

Standards address these, and many other, issues. Shifting the focus from paper-driven processes to process-driven data and workflows is possible with standards and common data-sharing protocol. Standards enable carriers, ports, freight forwarders, BCOs, and other supply chain partners to gain seamless data exchange for increasing agility, supporting decision-making quality, and improving profitability.

SEMANTICS AND SEMANTIC MODELS: THE FOUNDATION

Developing standards is like creating intelligent building blocks that can be reused and combined in any number of ways, depending on the specific users and processes. The foundation is built on semantics. Standard semantics ensure that everyone in the ecosystem means the same things by the same terms. For example, "shipment" is defined as:

Shipment (Trade Delivery): an identifiable collection of one or more

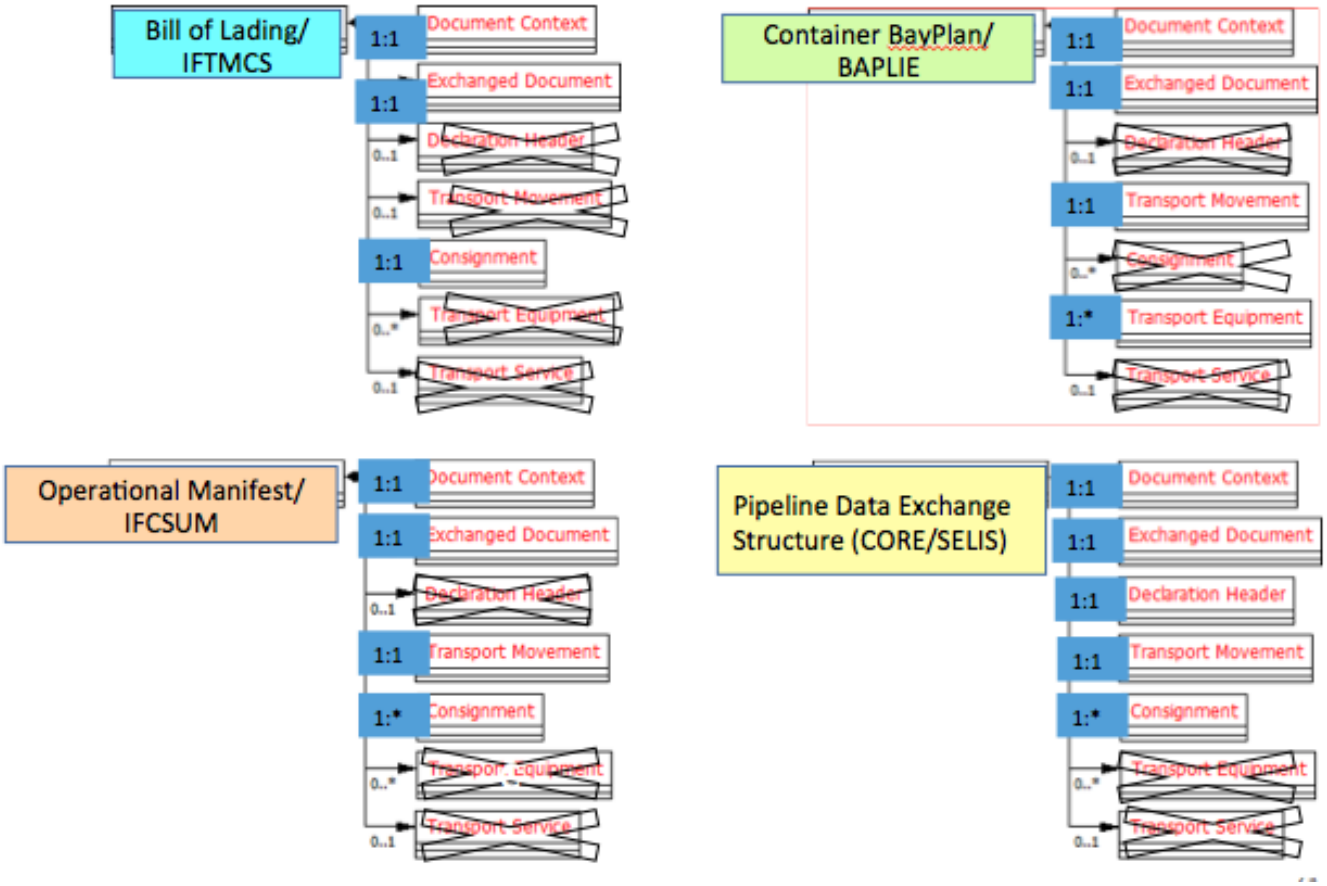

Figure 1. Semantic definitions are used in master messages, which are customized to specific needs.

Trade Items (available to be) transported together from the Seller (Original Consignor/Shipper) to the Buyer (Final/ Ultimate Consignee). Each shipment:

- Can only be destined for one Buyer
- Can be made up of some or all Trade Items from one or more Sales Orders
- Can have only one Customs UCR
- Can form part or all of a Consignment or may be transported in different Consignments

Based on a library of semantic definitions for business process data, UN/CEFACT has created semantic models for specific international supply chain functions—Buy, Pay, and Ship. These semantic models can be reused across business sectors, ensuring that all users mean the same thing, regardless of document or process.

CUSTOMIZATION ADDS CONTEXT

To provide the proper context for specific business sectors and applications, syntax is added to semantic models, and they are combined to create "master message structures" specific to MMT and SC processes. Master messages become the underlying structure for many different electronic processes and workflows, such as invoicing, ordering, quoting, bookings, and bills of lading. Yet, they allow customization for specific processes, as shown in Figure 1.

A FRAMEWORK FOR COLLABORATIVE SERVICES

With master messages established, applications and processes can be connected using Application Programming Interfaces (APIs). These specifications are the glue enabling seamless communication of consistent information, regardless of vendor platform or software services. APIs enable plug-and-play interfaces between systems and processes, enabling users to avoid vendor lock-in, automate critical processes across the ecosystem, and create new services that enable real-time visibility, analysis, and response for global commerce participants. Standards-based messaging and APIs enable seamless communication between MMT and SC systems and processes, as shown in Figure 2.

PRACTICAL BENEFITS

Different members of the supply chain have different requirements for data. Some need real-time snapshots and dynamic updates for up-to-the-minute monitoring. Others need per-booking data to better serve customers. Still others need time-stamped verification of events for legal and compliance reasons. Standards enable data that can be delivered to the right people, at the right time, in the right way:

ASSET KEEPERS

Asset keepers need to know where specific assets are located and how they are used. Complete, timely data improves maintenance investments to balance asset uptime, availability, and safety.

ASSET MANAGERS

Managers also need location and usage data for balancing global supply and demand. Data is essential for forecasting, optimizing asset storage and repositioning, and meeting Service Level Agreements.

COMPLIANCE MANAGERS

Detailed data and the ability to interoperate with global compliance portals enables compliance managers to more easily meet global regulations for shipping documents, validate container weights, customs law, tax law, hazard classes, and others.

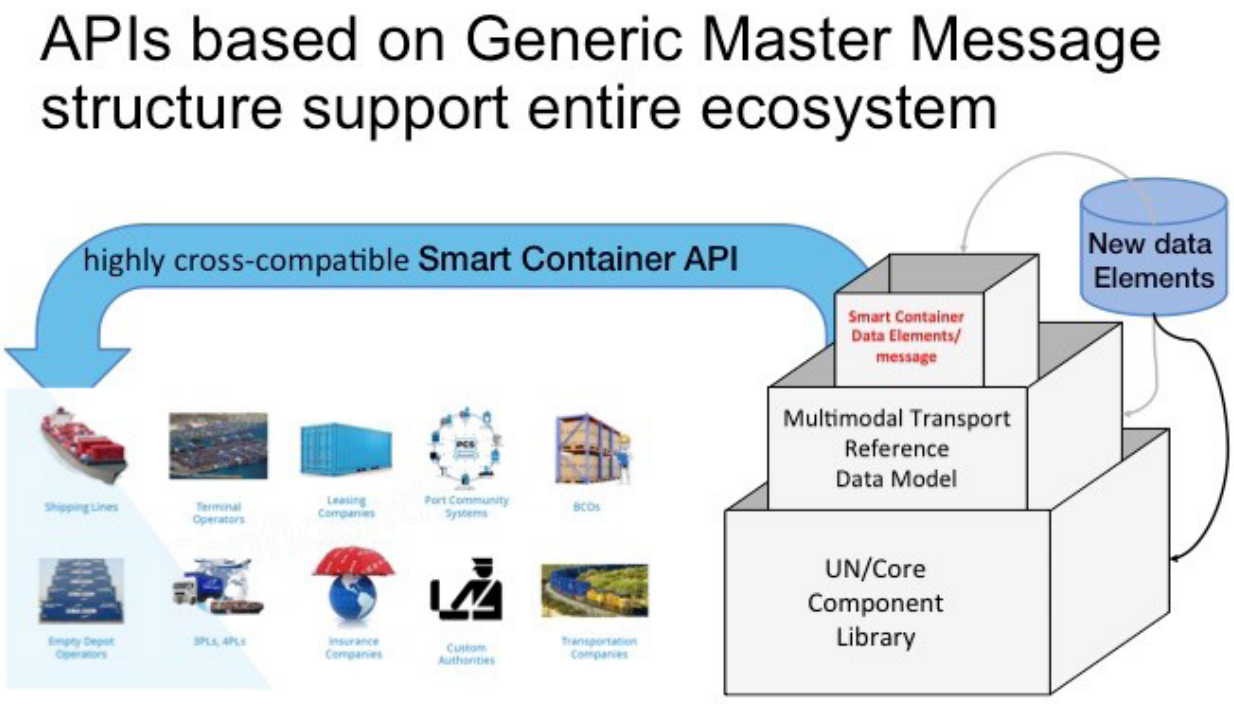

Figure 2. Standards-based messages and APIs simplify processes between infrastructures, enforce secure transactions, enable data sharing, and help organizations achieve new levels of visibility and performance—irrespective of their existing technologies and client connections.

INSURERS & FINANCIERS

Detailed monitoring data substantiates claims for fleet, asset, and cargo insurance. It can help shippers reduce insurance premiums, lower claim management costs, obtain better credit terms, and optimize cash flow.

MARITIME, RAIL, AND TRUCKING OPERATORS

Operators rely on data to improve fleet productivity, identify operational problems quickly, digitally perform brake inspection, and increase overall efficiency.

QUALITY MANAGERS

Detailed data from multiple perspectives is essential for quality managers. Whether they are responsible for asset quality, ensuring cargo quality, or motivating employees—they need in-depth data for quality assurance, remediation, and planning.

SECURITY PROFESSIONALS

Charged with protecting systems, processes, and assets, security professionals need real-time data and alerting capabilities for incident response and remediation. When anomalies occur, such as a container door being opened, they can accelerate investigation. Data gives them the insight needed to strengthen existing security controls and further reduce risk.

SHIPPERS

Shippers care about their cargo—keeping it safe, maximizing its condition, and ensuring on-time delivery or arrival. Data services can give them instant, real-time insight per booking or container so that they can activate contingency plans if necessary.

GETTING THE DATA THAT MATTERS

Standards not only enable global trade participants to improve operations, they offer opportunities for obtaining and using data to enhance efficiency and customer services. Based on industry standards, data can be accessed from desktop or mobile devices and easily incorporated with existing management systems to improve decision-making, add value to existing services, or to create ones.

With the ability to standardize communications across processes, applications and trading partners, global transport organizations can accelerate customs clearance, reduce transit costs, enhance their brands, and improve cash flow. By enabling the services that support each ecosystem member's information needs, standardization creates the foundation for successful global trading.

ABOUT THE AUTHOR

At Traxens, Dr. Hanane Becha is responsible for driving standardization for smart containers for key industries such as maritime and rail freight. She is also CEFACT Transport & Logistics Domain Smart Container Project Leader at the UN Economic Commission for Europe (UNECE), Dr. Hanane Becha received a Ph.D. and an M.Sc. in Computer Science from the University of Ottawa and a B.Sc. from l'Université du Québec.
She worked for the Nortel Strategic Standards development team between 2006 and 2009. She is the editor of multiple documents for the International Telecommunications Union, Standardization Sector (ITU-T).

ABOUT THE ORGANIZATION

Traxens generates, collects, consolidates, enriches and transforms logistics asset data into an easily understandable format, enabling effective decision-making. The company's breakthrough Internet of Things technology provides comprehensive, real-time information for managing logistics assets anywhere in the world. Traxens' solutions digitally transform multimodal supply chains, enabling customers to reduce costs, optimize investments, comply with environmental regulations and deliver premium services to their customers.

ENQUIRIES

Email: contact@traxens.com
Website: www.traxens.com