UN/CEFACT long experience with standardization of trade information used in modern methods of data transmission and processing

Since the inception of electronic messages, the development of standards in trade and transport have played an important role in facilitating international trade. The UNECE has proposed a number of standards which are today commonplace, such as UN/EDIFACT, code lists, Cross Industry Invoice, eCert, FLUX, and many others. Today the working groups of UN/CEFACT are working on innovative approaches to electronic data exchange which can in turn significantly simplify business processes. Two of these are Reference Data Models and Data Pipelines.

UN/CEFACT aims to be the semantic hub of international data standards and business processes. For this, the UN Core Component Library (CCL) has been developed. This library of data elements contained in electronic messages is like an encyclopaedia of all information, in its business context, that can be exchanged in international trade transactions. This covers all areas of trade from commercial invoices and shipping documents to agriculture certificates and utility declarations. The current library has around 20,000 elements, and is published twice annually. However, in order to use it, it is necessary to download the entire library with all of the elements and all of the associated code lists. This is a very lengthy process. And then once the library has been downloaded, it's necessary to sift through all of the areas of activity of international trade to find the elements which are pertinent to the business operation.

UN/CEFACT's working groups have therefore derived subsets of this CCL library, called Reference Data Models, in order to represent only the information which is pertinent to a specific area of activity such as supply chain or transport/logistics. In this way, this essential tool for international trade is easier to use and more comprehensible. Other Reference Data Models are to come, covering procurement, agriculture and travel/tourism.

These Reference Data Models are coupled with a principle called Data Pipeline. This concept was developed by UK customs and Dutch customs and has been the subject of several EU-funded projects (Cassandra, Core, Selis). The principle of a pipeline is simple: in most transactions, regulatory agencies - and often business partners as well - get very low quality data in electronic exchanges. There is a lack of precision or information is missing. However, given the nature of the international supply chain, this is understandable because when there are multiple intermediaries in the chain, they do not necessarily want to share all the information about their clients or the merchandise. For example, in some cases, the transporter does not know the exact value of the goods being transported (Convention on the Carriage of Goods at Sea) and therefore the quality of data is diminished.

So the pipeline seeks to capture the data as early in the process as possible, from the source of the data. It is then put into a data pipeline carrier, and each subsequent actor on the supply chain adds the information pertinent to their actions on the chain. The seller adds the majority of data concerning the buyer, seller, merchandise and contract of sale. The initial transporter will add the information about the consignor, consignee, itinerary, and means of transport. There may be another transporter adding information on the exporter, importer, and conditions of transport. But each of these actors only adds the information which concerns their activities without repeating the information that preceded.

The standard consisting of the reference data model and the pipeline data carrier sounds like another standard. However, in reality, this is a small revolution. When we talk about electronic data exchange, we often mean electronic versions of paper documents (electronic documents). In the paper world, information is repeated from one document to the next. On each document, the names and addresses of the key actors (buyer, seller, importer, exporter, consignor, consignee) and the merchandise information (nomenclatures, commercial description, packaging, weights) is repeated on practically every document. And this is carried over to the dematerialized version, on electronic documents. Given that there can be manual capture of some data, or multiple computer systems in the chain, there is a large potential of error.

"Snippets" as an important emerging trend in data exchange to further facilitate trade and transport operations

The industry is moving towards event-driven exchanges. Instead of sending a complete document at key moments in the data exchange, smaller segments of information - or snippets - can be exchanged and added to information which is already captured in the system. This corresponds to the spirit of UNECE Recommendation 33's definition of a Single Window which states that "if information is electronic, then individual data elements should only be submitted once." Thinking in snippets instead of full documents demands a change in business processes, but, it has the potential of bringing benefits to trade (simpler data exchanges) and to administrations (better quality of data). This will ultimately further support the World Trade Organization's Trade Facilitation Agreement (TFA), particularly obligations of Member States to make best efforts to implement Single Window systems.

There are further changes that demand thinking in snippets instead of documents. The Block-chain methodology of authentication captures information, encrypts it and distributes it among multiple platforms, creating multiple versions of the same encrypted data and thus ensuring that no information has been tampered as each platform's information must align at all times. This methodology reaps the most benefits if the information which is to be shared is performed in snippets of information rather than full documents. The transaction can develop in a secure environment with little or no chances of falsification or doubt on the data.

The "Internet of Things" (IoT) can also benefit from snippets exchange. IoT is the possibility of a devise to send information to a platform or other actors in order to share certain information. An example of this can be Smart Containers (also a project in development within UN/CEFACT), where a device is attached to the container to detect temperature changes, movement changes, shocks, etc. The device is not sending a full document with each exchange of information, but only a snippet of information which can enhance the information already existing on another platform.

UN/CEFACT is at the forefront of standardizing these processes and providing clear guidance on how to implement these. And all of these results are shared with anyone, worldwide, free of charge on the UNECE-UN/CEFACT website. Beyond supporting the TFA, this also contributes to the UN Sustainable Development Goals (SDGs), for example supporting economic growth (SDG8), reducing inequalities (SDG10) and revitalizing global partnership for sustainable development (SDG17).

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