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ECONOMIC COMMISSION FOR EUROPE

**Capacity building for SMEs, developing and transition countries through  
Electronic Business and Internet?**

**The UN/CEFACT and OASIS<sup>1</sup> ebXML<sup>2</sup> initiative**

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Overview

The purpose of this paper is to demonstrate the contribution of **the United Nations Centre for Facilitation of Procedures and Practices for Administration, Commerce and Transport, (UN/CEFACT)** to capacity building through electronic business and examine how the initiative can enhance the participation of SMEs, developing and transition economies in the global economy.

<http://www.unece.org/cefact>

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1 OASIS: Organization for the Advancement of Structured Information Standards

2 Extensible Markup Language

3 The views in the paper are that of the author and of the secretariat of the UN/ECE Trade Facilitation Section.

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## **1. UN/CEFACT INSTRUMENTS ARE DEVELOPED BY EXPERTS IN SUPPORT OF TWO THIRDS OF WORLD TRADE**

Two-thirds of world trade takes place between member States of UN/ECE, both in terms of merchandise exports and of commercial services. Although under the auspices of UN/ECE, UN/CEFACT is responsible on behalf of the whole of the UN for the development of international trade facilitation instruments in the field of electronic commerce. For well over 30 years, UN/ECE experts have, through UN/CEFACT and its predecessors, been developing instruments such as standards and norms, to make international business easy.

To be effective, standards and procedures in international trade need to be global, not just regional. Member States realized that creating real, practical solutions to trading problems requires the cooperation of all interested parties, public and private, on a global scale. UN/CEFACT was established with the objective of creating a thorough, practical approach to the technical and policy areas of trade facilitation.

### **1.1 In an ideal world, the global trade/supply chain is organized around business processes and the people who perform them**

Commerce is about the marketing and exchange of goods and services between buyers and sellers over borders and distances. Parallel to the physical transport and handling of goods there is a corresponding information flow. In an ideal world, as the electronic commerce technologies and business activities converge, the importance of the organizational structure diminishes. Firms and commerce would be built around the idea of reunifying the tasks into coherent and simple business processes.

However, when we consider for example in the real world the international supply chain of a company between Central America and the United Kingdom, several features stand out: There are more non-value adding activities than in home trade due to the additional number of authorities involved. Much of the time, no value is being added, but costs continue to rise (storage, handling, inspection, certification etc.). It is more difficult to analyse and improve the total trading process because of the number of stages and parties involved. Uncertainties in how long an activity is going to take are high. In our example of a food export supply chain, there are as many as 27 processes between 40 different parties which take 12 weeks as compared to 6 weeks in domestic trade. Can the new technologies provide opportunities to make the overall trading process more effective so that products reach the customers quickly, reliably and at competitive cost?

### **1.2 The institutional framework for international Commerce**

All commerce should only take place within an organized framework, according to established

rules, custom and usage, adhered to by the key players, the traders. In order for a seller to find a buyer, for a sales contract to be signed (electronically or otherwise), for the goods to be shipped by the producer and received by the consumer, for the payment to be made within the contractual deadline, the many phases of the transaction have to take place within a pre-established system, on the basis of a functioning legal framework.

This framework can be structured into the **macroeconomic** level (country A to country B), the inter-governmental level (government of country A to government of country B) and the **microeconomic** level (A private company in country A to a private company in country B). While the macroeconomic view of commerce focuses on providing a legal framework for the flow of trade and services between countries (WTO, OECD), the microeconomic view focuses on the transactions between those engaged in commerce, i.e. the trader-to-trader relationship. It is at the microeconomic level that most trade facilitation tools (e.g. developed by the ICC or UN/ECE) and technical standards (ISO) are developed and implemented on a voluntary basis.

However it is appreciated within UN/CEFACT's expert groups that both of these are **equally vital** for the facilitation of electronic commerce on an international basis.

## 2. IMPLICATIONS OF ELECTRONIC COMMERCE

Underlying the work of UN/CEFACT is the understanding that accelerating the growth and scope of world trade can only be achieved through the **convergence** of the **benefits** that can be reaped from the use of Information and Communication Technology (ICT) and the **reduction** of procedural, legal and physical constraints that may inhibit it.

It is the **convergence** of *facilitation of business processes* **and** the opportunities provided by the information and communication technologies – *business relevance of the technology* - which provides for a paradigm shift in electronic commerce - simple transparent and effective processes for global commerce. To stress this paradigm shift, UN/CEFACT prefers to use the term “**ELECTRONIC BUSINESS**” (e-business).

### 2.1 Business processes

The global trade/supply chain management is commonly thought of as one of the most complex business areas to understand. It has many facets, and depending on where you stand, it looks different. People are used to separate the macro from the micro view, thereby preventing from seeing the global picture. Furthermore, there is a tendency within the supply chain for parties only to be concerned with the one or two facets that involve them, ignoring that an action taken by one party has effects on many parties. This phenomenon is to be found in both business and regulatory bodies in varying amount.

Establishing effective ground rules for the network economy requires the reduction of procedural, juridical and physical constraints that may inhibit it. It is a prerequisite for electronic business. It requires the implementation of trade facilitation concepts and techniques. Clearly, the correct and logical way towards facilitation would be by means of a comprehensive study of all-informational procedural and juridical requirements for the execution of trade; followed by the negotiation of and agreement on international standards for this purpose. However, this would undoubtedly be a task of the greatest complexity, offering few immediate benefits to the trading community. Nevertheless, the new technology and Internet provides an unprecedented

opportunity to improve the total performance of the supply chain by maximizing net added value and improving both speed and certainty of the overall business and regulatory process worldwide.

As mentioned, the two types of imperfections, which impede global trade, are the barriers put up by regulatory bodies and sometimes companies and the delay and uncertainties in the process itself. With regard to facilitation issues, this is very much a political agenda at inter-governmental organizations and recommendations are developed by UN/CEFACT. However, it is the view of the Centre that, through the analysis of the delays and uncertainties in the overall process, great benefits can come from using information and communication technologies, both for business and regulatory authorities.

As firms consider more fundamentally how to exploit their competitive advantages throughout the transaction chain in a wide range of locations, great emphasis is being placed on the effectiveness of business processes by which they operate. They do it by simplifying and streamlining their processes. It involves a thorough examination of what information is required for effective decision taking at each stage of the supply chain. “Business process re-engineering”, “managing the virtual enterprise”, “value chain management” are all concepts which have many features in common.

The concept of value chain management is even more all-embracing and aims at improving the profitability and efficiency of a firm by optimizing the speed, certainty and maximising the net added value by all relevant business processes. As such, it can be used to cover business and governmental activities.

## **2.2 Technology**

Characteristic of the organization of trade following the Second World War were non-harmonised procedures and regulations, inordinate information requirements and cumbersome and time-consuming formalities that generated a massive transfer of information along the transaction chain.

Today, exchanging information rapidly and accurately between companies, and between countries is indispensable to maintain a competitive edge. Predefined messages are developed to fulfil a specific business function between independent business partners and provide the essential rules for automated exchange. It reduces the sources of uncertainty in the information exchanged and ensures that all participants can really communicate and understand each other electronically. Aided by electronic communications it reduces the time, hence the transaction cost.

Today, Internet solutions have the potential to provide for the establishment of an open market where SMEs can actively participate. This electronic market can provide for new opportunities for information sharing, service and support, and payment. Transactions not only between businesses, but also between business and governments, business and consumer can be built for specific purposes, defined in time, as opposed to established and permanent business relationships. This open approach can provide for a virtual enterprise model.

### **3. THE UNITED NATIONS CONTRIBUTION TO ELECTRONIC BUSINESS**

The Centre's major contributions to electronic commerce are encapsulated in recommendations for best practices and standards for process related. They can be categorised into instruments in support of establishing the ground rules for the digital marketplace, and work to enhance the information infrastructure for electronic business.

#### **3.1 Establishing ground rules for the digital marketplace**

There are currently 26 UN/CEFACT Trade Facilitation recommendations, five of which have become ISO standards. Some of them have their purpose to reduce the complexity of existing procedures while others strive to harmonise transaction data or the methods used for transmitting the data.

According to UN/CEFACT, the solution to achieve effective supply chains across international markets lies in the use of common business processes, including best practices, based on globally agreed ICT standards. This is achieved by analysing and modelling the business processes, developing recommendations which simplify, harmonize or eliminate practices and procedures used in international trade.

#### **3.2 Enhancing the information infrastructure for electronic business**

As early as 1960, The United Nations Working Party on Facilitation of Trade, now UN/CEFACT, examined the possibility to draw up recommendations with a view to the possible reduction, simplification and standardization of external trade documents. This led to the an international model form which would contain all the data needed in various trade documents and to set them out in certain defined spaces Having agreed on paper size, form design principles and the list of items to be included, the model form was adopted in 1963 known as the United Nations Layout Key for Trade Documents (Recommendation 1).

After 1963, the rapid development of automated data processing the Working Party confirmed that the Layout Key System was indeed suitable for automated data processing as well as traditional methods. It was therefore felt appropriate to recommend it as a basis for the presentation of trade documents, whether these documents were to be processed by automated or by traditional non-automated methods.

Today, exchanging information rapidly and accurately between companies, and between countries is indispensable to maintain a competitive edge. The international standard for business data exchange (UN/EDIFACT) provides the essential rules for automated exchange. It ensures that all participants can really communicate and understand each other electronically. UN/EDIFACT messages are translated into 21 languages. Also I would like to mention the UN Location code (UN/LOCODE), for the identification of trading locations around the world.

Recognizing that the potential exists, within electronic business, for a convergence of all types of information exchange, the UN/ECE, along with ISO (International Organization for Standardization), IEC (the International Electrotechnical Commission) and soon ITU (the International Telecommunication Union), developed a Memorandum of Understanding that establishes a framework for the highest level of cooperation and coordination in their work

related to standards for electronic business. The MoU is open to the participation of International User Groups to ensure that their standardization requirements are met.

### **3.3 Enhancing the physical flow for global commerce**

The vital role of International Standards as the technical foundation for the global market is explicitly recognized in the World Trade Organization (WTO) Agreement on Technical Barriers to Trade. The Agreement urges Governments to make the utmost use of International Standards so as to avoid unnecessary obstacles to the free flow of goods. Trade is facilitated when all, both sellers and buyers, base their products and services on international standards to make them compatible worldwide. National legislative and regulatory work is simplified and accelerated when reference can be made to internationally agreed documents. Moreover, standards developed by consensus among trading partners serves as a *lingua franca* for global commerce.

Examples of the *lingua franca* are the European Agreement concerning the carriage of Dangerous Goods by Road, published by UN/ECE. The Agreement, contracted by 33 European States, provides a means of avoiding environmental disasters. The TIR Convention in the area of transport permits the transit of goods by road through as many countries as necessary without any intermediate frontier checks.

### **3.4 Legal environment**

As stressed in the UNCITRAL Model law on Electronic Commerce, the legal and commercial issues stem from the new medium – electronic communications. It is the “communication of legally significant information in the form of paperless messages that may be hindered by legal obstacles to the use of such messages, or by uncertainty as to their legal effect or validity”.

All trade takes place within a legal framework or "environment" which has practical consequences that limit what can be done. UN/CEFACT does not develop recommendations for international law at the macroeconomic level. It analyzes current legal processes and issues at the microeconomic level – the trader to trader relationship, identifies legal constraints at the intergovernmental level that adversely impact electronic business for traders and recommends possible solutions. The Centre makes recommendations with regard to best practice and the removal of national legal and commercial practice barriers to electronic business. With the objective of contributing to the building of trust between business entities, UN/CEFACT proposes models for a contractual approach of electronic commerce operations that take into consideration the need for a framework of basic provisions to be agreed by business entities combined with the flexibility required to conduct day-to-day commercial transactions.

It works closely with UNCITRAL in order to ensure that the practical needs of users are taken into consideration in intergovernmental recommendations.

## **4. BUILDING THE NETWORK ECONOMY FOR ALL - THE EBXML INITIATIVE**

### **4.1 Organization of the network economy through the access to the**

## information

Today, Internet and the Web offer a global presence to the actors in trade, and marketing has certainly been a first step towards electronic commerce for many organisations. In practice, however, the vast amount of information makes it difficult for sellers and buyers to find each other. One complicating factor is the low degree of organisation of the information which, with the current state of standardisation, implies essentially manual operations, for example, when searching for information.

Suppliers and trading companies commonly provide their product data bases electronically. While it is in the interest of the suppliers that the data bases are well maintained, disadvantages from a purchaser's point of view are that they may have to search many data bases and that the presentation is unstandardised. Large procurement organisations, wishing to guide their purchasers through a standardised interface, build their own data bases, according to their own preferences, populated with extracts from the supplier databases. In established trade relations, suppliers increasingly offer their partners customised presentation profiles by, among other things, showing the contracted product range and prices.

Many value added service providers now try to establish electronic marketplaces, often offering bridges for web and EDI transactions and other intermediary services. In some areas, like the food sector, intermediaries establish common databases for products offered by a group of suppliers.

**In the absence of efficient search tools, globalisation effects are limited.** The cost of manual search leads many buyers to return to electronic marketplaces and suppliers that they once have determined to be 'sufficiently' good. These electronic marketplaces are characterised by close partnership, systems integration and the trade is likely to involve products which are characterised by a 'consumption' pattern that is known, well analysed or planned, and a regular supply of often large quantities.

It is expected that, through XML, "the combination of more efficient processing, more accurate searching and more flexible links will revolutionize the structure of the Web and make possible completely new ways of accessing information"<sup>1</sup>. As United Nations, we can only welcome means that allow users and customers to build the global village of user communities of interest that can enhance the participation of SMEs, developing countries and countries in transition to build capacity.

## 4.2 Involvement of parties to the network economy

Electronic commerce has taken off in trade with intangible commodities (music, software, insurance, and brokerage) or where existing physical distribution services are readily deployed. For electronic business and Internet, the development or adaptation of the physical distribution systems – the supply chain - is vital. While much of the development relates to physical infrastructure and distribution channels, some vital components link to information processing.

The supply chain can be defined as the human, organizational and technical infrastructure that allows to direct the global flow of products and information from the customer most

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<sup>1</sup> J. Bosak & T. Bray, XML and the Second-Generation Web, Scientific American, 1999

downstream to the customer most upstream<sup>1</sup>. The infrastructure consists of:

- The backbone for the flow of the goods;
- The backbone for the flow of information, including payments.

Freight forwarders and carriers have customers in many electronic commerce communities and, hence, face the problems of multiple messaging standards and versions of standards. In multi-modal transport, the historic differences in conventions, terminology and practice are reflected in disparate message subsets for information interchange. Although proposals for general unique references exist, only the airlines provide unique international transport document numbers, and this fact makes the tracing of goods in multi-modal transport difficult. Standardisation of goods labels become increasingly important in trimmed logistics systems and the Multi Industry Transport Label offers a starting point for such development, although it is not yet supported by all and, due to its flexibility, prone to grow implementation variants. Additionally, operators in the international supply chain often have to recognise varied levels of the countries' implementation of electronic commerce as well as facing differing electronic procedures and routines introduced by authorities.

There are apparently few barriers to the entrance to electronic commerce on the Web but the real barriers to the entrance of SMEs, developing and transitions countries are the access to the international supply chain. Furthermore, SMEs can have the same complexity of organizational issues in the supply chain management as big companies without having the resources required for the investments in the information systems that can support that management.

How can electronic business and XML contribute to achieve an integrated view of the customer in the total supply chain? How can electronic business and XML open the access to this global logistic infrastructure and the logistic companies competence for SMEs, Developing and Transition countries and act as an amplifier?

It is the view of the secretariat that some of the ground rules required for the involvement of parties to the network economy can be implemented independently of the technological level of development of the countries and are a prerequisite for effective electronic commerce. By securing the interoperability of the horizontal processes of the total supply chain – across the business processes of the firms – through simpler processes and standardization based on the 80/20 rule can electronic business and XML contribute to the ease of use and eliminate or reduce the need for intermediary equipments and services.

Electronic payment is one of the growth areas in electronic commerce as banks have a historical role in building trust between business partners. Many systems are competing but with limited penetration. Common payment methods today involve the use of invoice, credit card, and cash-on-delivery, with EFT/EDI used for inter-bank clearance and for transactions between banks and major traders. For electronic commerce, proposed systems include electronic cheques, stored value solutions (smart card or PC file) and electronic transactions, all using digital security measures to protect value.

It is likely that a number of alternatives will exist to satisfy the various requirements for security levels, integrity, payment transaction cost. The diversity of electronic payment specifications

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<sup>1</sup> F. Spitz, MIRE seminar, Marrakech, 1999

highlights the importance of interoperability between electronic payment mechanisms. Can electronic business and XML contribute to resolve the interoperability issue?

### **4.3 The “Web tone” or the interoperability in the network economy**

When countries adopt international standards and harmonize their technical regulations worldwide, everybody stands to gain. National legislative and regulatory work is simplified and accelerated when reference can be made to internationally agreed documents. Moreover, the multiplication of technical instruments shared by the countries facilitates their economic relations and helps to overcome the factors of division. This vital role of International Standards as the technical foundation for the global market is explicitly recognized in the World Trade Organization (WTO) Agreement on Technical Barriers to Trade.

The uncertainty of what is the “right” level of standardization relates to the mode of implementation. Standards can be implemented either on a voluntary basis or made mandatory by government regulations. On the one hand, implementation on a voluntary basis can result in islands of standardization. Clusters of partners using the same “language” are created that can be incompatible with other clusters. On the other hand, the development of mandatory standards runs the risk of creating rigidities which prevent adaptation to new technologies. This is especially true in fast technological development sectors. Furthermore, competition among standards is a good thing in that it generates innovation. However, such competition can be very costly indeed, as Governments and firms may have stakes in particular standards, which may or may not be the “right” one.

To achieve the level of “business language” interoperability required for open and fair trade on Internet, that could be called the “Web Tone”, it is crucial that the “right” level of international standardization is achieved in the ebXML initiative.

Also, the ebXML initiative raises the issue of consensus<sup>1</sup> building. While on one side, the process of consensus building is seen as bureaucratic and overly time consuming, it secures a fair, open and transparent process where all users can “buy in”. As noted by a major industry group concerning the UN/EDIFACT consensus and business agreement process, “it secures that all parties will play according to published rules and therefore do not require any contractual discussions to initiate a business transaction with any other partner worldwide”.

The ground rules of the United Nations are contained in the charter and are reflected in the use of the United Nations emblem. These rules secure a fair, open and transparent process for all. Therefore, through these rules the UN/CEFACT and OASIS initiative will secure capacity building for all.

### **3.5 The network of partners**

The key issue in communicating in an electronic business environment is not of a technological

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<sup>1</sup> General agreement, characterised by the absence of sustained opposition to substantial issues by any important part of the concerned interests and by a process that involves seeking to take into account the views of all parties concerned and to reconcile any conflicting arguments. Note: Consensus need not imply unanimity. ISO IEC Directives, Part.1.

nature. It lies in that fact that the partners are outside the organizational network of the company.

Analyzing the important relationships between the organization and the components of its external environment such as suppliers, banks and regulatory authorities will allow to identify the factors in the external environment that are important to the organization's objectives; assess possible future implications and identify opportunities in using e-business.

Market benefits begin to be obtained when the technology is tied to strategic efforts, that alter, not mirror, previous practices. Trading partners commit to the e-business concept and explore ways of strengthening their relationships to mutual advantage. In this approach to electronic business, Internet and the Web play a key role in promoting the partnership between the organization and its customers and add value to the overall business activities.

To achieve its full potential it requires that all of the stakeholders participate in an open communication across the organization. Changes in business processes are integrated with corresponding changes in the technology, organization structure and culture.

Electronic business is fundamentally inter-disciplinary in nature and requires consideration of the interlinked roles of the partners involved in the supply chain; the necessary cooperation between them and the coordination of policies. This can now be powerfully supported by the application of Internet technology to collaborative planning systems. All those who need to reach agreement to achieve the successful outcome of a supply chain can build up shared data, tracking each stage as any changes occur. Using electronic business and XML, SMEs, developing and countries in transition could therefore build capacity through the cooperation of the companies and by joining the international supply chain.

However, from the above it is clear that electronic business is not only an issue of hardware, software and technology. It is an issue of managing the change required by the organizations, including the social and cultural aspects within the firms and user communities. This change can effectively be facilitated through the use of the new technologies. However, the technology of communication do not automatically facilitate the change management that might be required.

Let me conclude by stressing that there is significant demand, and especially for developing countries and countries in transitions, for guidance on how to keep up with the fast moving world of electronic business, join the International Supply Chain and manage the organizational and management change. There is, therefore, a primary duty on this initiative to meet this demand by providing a component within the framework to achieve it and provide expert advice and assistance to achieve it. By so doing, the initiative would contribute to building the network economy for all and we could speak about UN-XML.

When analysing the Web sites that might show the changes in the organizational and social environment in the article about "mass media – Next media"<sup>1</sup>, F. Rowe was wondering about the name of sites such as "angelfire", "businessangels", "Losangeles digital city" and quoted the answer of Michel-Ange when asked by Jules II: "Why do you hurt so strongly this stone": "To

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<sup>1</sup> E. Monod & F. Rowe, Mass media and next media: Internet et les transformations des pouvoirs, *Systèmes d'Information et Management*, Vol 4, 1999

extract the angel that sleeps inside”.

If you have queries or you would like more information, please contact us:

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