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Defining International Electronic Commerce

*Jeffrey B. Ritter**

Electronic commerce has become a practical reality for thousands of businesses throughout the world. By combining the functional capabilities of computers and telecommunication systems, companies can now exchange information electronically rather than sending and receiving paper documents. In so doing, businesses are achieving remarkable and unparalleled improvements in the accuracy, speed and efficiency with which commercial transactions may be negotiated, confirmed and performed. By eliminating reliance upon paper as the medium through which commerce occurs, new and radically different approaches are emerging regarding how commercial relationships are defined and maintained.¹ Used for international business transactions, the technologies of electronic commerce are confronting and overcoming traditional barriers to international trade presented by geographic, lingual and cultural dis-

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¹ For a detailed analysis of the commercial use of these technologies to conduct sales transactions, see generally *The Commercial Use of Electronic Data Interchange-A Report and Model Trading Partner Agreement*, 45 BUS. LAW. 1645 (June, 1990) [hereinafter ABA Report] and Amelia H. Boss, *The International Commercial Use of Electronic Data Interchange and Electronic Communications Technologies*, 46 BUS. LAW. 1787 (August, 1991). For a general discussion of the issues involved concerning international electronic commerce, see H. THOMSEN & B. WHEBLE, *TRADING WITH EDI: THE LEGAL ISSUES* 109-114 (1989)[hereinafter *TRADING WITH EDI*].

parities between possible trading partners. As a result, facilitating international electronic commerce throughout the global trading community is now fairly considered a project of the highest priority on the international agenda.²

Both the public and private sectors of the international community have recognized that facilitating electronic commerce requires providing attention to understanding, and developing responses for, the legal issues and concerns which arise from the commercial use of the related technologies. The rapid expansion of electronic data interchange (EDI), in particular, has created considerable momentum in the interest afforded to these legal issues. Attention to these issues is built upon a framework of commitments which have been made toward assuring the successful use of the technologies. Commercial parties wish to guarantee that the advantages of employing the technologies of electronic commerce are not undermined by the presence of legal obstacles or uncertainties which might erode confidence in the systems even before being installed and tested. At the same time, governmental authorities wish to assure that the commercial or administrative use of those technologies does not dis-

² The priority and importance of promoting the use of electronic commerce was confirmed in 1985 by the General Assembly of the United Nations when it called “. . . upon Governments and international organizations to take action, where appropriate, in conformity with the Commission’s recommendation so as to ensure legal security in the context of the widest possible use of automated data processing in international trade.” G.A. Res. 40/71, 40 U.N. GAOR, Supp. No. 17 at § 5(b), U.N. Doc. A/40/17 (1985) [hereinafter A/40/17]. In addition, other specific international organizations have recognized the contributing role which electronic commerce can play in promoting the development of a broader environment in which international trade can occur. For example:

United Nations Conference on Trade and Development (UNCTAD): “Recent advances in information technologies offer opportunities for vastly improved trade efficiency. To this end, a concerted effort must be made to accelerate and consolidate the work under way in this domain, such as the use of Electronic Data Interchange (EDI). In the area of trade-related information flows and networks, early multilateral initiatives could lead to rapid improvement in the efficiency of international trade transactions at relatively low cost. Efforts to evolve universally acceptable guidelines should, *inter alia*, give due priority to the development imperative. Otherwise developing countries would be further marginalized in the more profitable currents of international trade.” *Report of the Secretary-General of UNCTAD to UNCTAD VIII*, TD/354 para. 206 (November, 1991) [hereinafter *Report to UNCTAD VIII*].

International Chamber of Commerce: “The ICC believes that the business practice of Electronic Data Interchange (EDI) represents a movement toward vastly-improved levels of efficiency and productivity. In view of the benefits of EDI for business and society as a whole, the ICC has been urged by its members to assist in promoting EDI as well as in identifying and overcoming legal, regulatory and commercial obstacles to full implementation of EDI.” *International Chamber of Commerce*, Document No. 460-10/Int. 33 Rev. (1991).

Commission of the European Communities: “The development of data interchange, essential to the functioning of the internal market, involves the removal of obstacles caused by shortcomings in the standardization of messages, compatibility of networks, legal validity and data security.” Commission of the European Communities, COM(90)475 final [hereinafter COM(90)475].

rupt or prevent the successful performance of their administrative duties and obligations.

Yet, it is only recently that international electronic commerce has acquired a degree of viability and momentum which requires ongoing legal facilitation efforts in the international community to yield meaningful work products. But the rapid pace of change has made it difficult for a sense of the target to emerge — perhaps those involved in the process first need to define better what international electronic commerce is in order then to craft appropriate facilitative responses in the form of conventions, model laws and the like. This article, therefore, represents an exploratory effort toward presenting a functional description of the essential aspects of international electronic commerce. An attempt is made to emphasize particularly those features which have possible significance to those law reform efforts which are underway and those which can be anticipated within the foreseeable future. However, at the outset and in order to define better the focus of the broader task of legally facilitating electronic commerce, some thoughts are offered regarding how the continuing evolution of information technologies interacts with the processes of law reform.

A. Information and the Law

Conducting business requires the creation, storage and communication of information. Irrespective of the complexity of a transaction, the sophistication of the parties, the degree of cultural differences, or the level of industrial or technological development which exists, the making and performance of a contract can only occur through the exchange of information between commercial parties. It is irrelevant whether the exchange occurs orally, in writing or through the use of electronic technologies; what remains inherent to commerce is the fact that goods cannot be traded, and financial settlements cannot occur, without continuing exchanges of information.³

The movement of information, therefore, has always been an essential aspect of commerce. Information must be communicated between the direct commercial participants — e.g., buyer and seller, shipper and carrier, customer and financial institution — and among the dynamic

³ The information exchanges to which this article is addressed are those that occur pursuant to trade in goods. It is beyond the scope of this article to discuss the exchanges of information necessary for trade in services. Indeed, the complexity of the issues attendant to trade in services is evidenced by the protracted Uruguay Rounds of the General Agreement on Trade and Tariffs. For an overview of trade in services, see UNITED NATIONS, CONFERENCE ON TRADE IN DEVELOPMENT, TRADE IN SERVICES: SECTORAL ISSUES, UNCTAD/ITP/26 (1989) [hereinafter TRADE IN SERVICES].

and changing participants performing tasks ancillary to the primary transactions but nevertheless essential to the overall processes of doing business. Government authorities, common carriers, forwarders and other handlers of goods, together with other intermediate parties in the flows of merchandise, services and monies, all are required also to be participants in the flows of information necessary to permit the completion of their respective roles.

As a result, an indispensable aspect of doing business has been the task of developing and maintaining the appropriate capabilities to create, communicate and store the related information. From an historical perspective, the degree to which the management of information has been a part of doing business has been directly proportional to, and has evolved with, the availability of the mechanical means of doing so. Writing, printing and each new method of electronic communication — e.g., telegram, telex, radio, television, facsimile, electronic mail and electronic data interchange — are each, in effect, separate information technologies. Each is a different tool for satisfying the diverse requirements of businesses and governments to engage in the process of moving information.

With the adoption of each new information technology, the functions and objectives of businesses and governments have also experienced fundamental change.⁴ That process continues today, as electronic data interchange begins to emerge as the essential information technology of commerce. The general belief appears to be that EDI will quickly mature to be the required method for conducting business, both on a domestic and international basis, in the near future.⁵ First at the commercial level, and then in the interactions between governments and those which are governed, the tasks of creating, reporting, sharing, evaluating and storing information are expected to occur electronically in accordance

⁴ An extraordinary analysis of the dynamics of the relationships between the various information technologies and our legal systems is presented in M. ETHAN KATSH, *THE ELECTRONIC MEDIA AND THE TRANSFORMATION OF LAW* (1989) [hereinafter KATSH].

⁵ A recent article in the *Journal of Commerce* credits EDI with giving businesses that have implemented its use a significant competitive edge over their competitors. *Journal of Commerce*, November 18, 1991, at 9A. The International Data Exchange Association, an international trade association of EDI users, notes record attendance for its Third International Congress of EDI Users (4-6 September 1991, Brussels). *The Third International Congress of EDI Users: Transforming Global Business*, IDEA NEWSL., (INT'L DATA EXCHANGE ASS'N, Brussels, Belgium), Dec. 1991 at 1. Even a brief glance at voluminous proceedings from the Congress demonstrates the depth and diversity of interest in EDI. *The Third International Congress of EDI Users: Transforming Global Business*, Final Program & Proceedings (EDI WORLDWIDE) Sept. 4-6, 1991. *EDI News* compiles information on the use of EDI by different industries. Increasingly, use of EDI is viewed as a business necessity. See, e.g., EDI NEWS, Dec. 11, 1991, at 4-5. Similar sentiments on the necessity of EDI for business were expressed in Jon Pepper, *Getting Service on Track*, in INFORMATION WEEK, November 11, 1991, at 20.

with technological standards which promote the highest possible degree of automated interconnected functions.

New information technologies, as they have been adopted into broad social use, have also been the inspiration for fundamental changes in the scope and function of the law. Our laws, irrespective of differences in our cultural, social or juridical heritages, essentially operate to structure, organize and regulate information.⁶ Statutes, regulations, and administrative and judicial decisions reflect and define our determinations as to what results in particular circumstances are considered fair and rational, and then serve to record and disseminate those determinations. In doing so, our laws function as a framework around which we define, structure and evaluate our personal and commercial behaviors.

The process of determining in what instances it is appropriate to determine what may be fair or rational, and to then decide whether to incorporate those conclusions into "the law", is of course a continuing activity. Legislative, judicial and administrative forums exist for that very purpose. An inherent aspect of the process, however, is that the process does not begin without the presence of one of several possible catalysts. In considering how the laws relating to commercial transactions evolve, two of those possible catalysts are particularly important.

A frequent source of motivation for commercial law reform is the desire of commercial parties to develop and define new methodologies for doing business. As the volume and regularity of new types of transactions increase, viable and acceptable commercial practices evolve which eventually serve as a foundation for defining common rules applicable to the situation.⁷ The development of those rules, particularly when the rules are confirmed by the law, serves to promote further participation in the commercial transactions which are the subject of those rules, by fostering the confidence of the participants in the consequences of their conduct. In that manner, the generally accepted objectives of promoting trade and commerce are also realized.

The second catalyst to consider is the slightly different circumstance

⁶ KATSH, *supra* note 4, at 8.

⁷ For example, consider the use of electronic funds transfers in commercial banking. In the United States, banks developed the capability to move over one trillion dollars daily before any uniform law was adopted governing those transactions. Fred H. Miller & William B. Davenport, *Introduction to the Special Issue on the Uniform Commercial Code*, 45 BUS. LAW. 1389, 1391 (July 1990). The ABA Report, described *supra* at note 2, also discusses the attractiveness of EDI to commercial organizations even in the absence of uniform law. At the same time, substantial progress has occurred in the international development of a model national law governing international credit transfers, *United Nations Commission on International Trade Law*, 20 Y.B. U.N. Comm'n of Int'l Trade L. 20, U.N. Doc. A/CN.9/SER.A/1989.

in which commercial parties desire to embrace new methods of doing business but are restrained from so doing by perceptions, often but not always accurate, that the new methods are prohibited by existing laws. In those situations, the law reform process is challenged to evaluate the reasons for the substance of the existing laws and judge whether those reasons remain valid or applicable with respect to the proposed new method of doing business. If the new approach does not violate the underlying rationale for the existing laws, then reform of the law can permit the new business practice to flourish.

In many situations, of course, changes in commercial law result from the presence of some combination of the two catalysts. Moreover, a third factor, among others, is often present: the desire, from a public policy point of view, to encourage commercial conduct which is considered to be generally beneficial and productive for society at large. In those instances, the development of applicable rules and guidelines defining the relevant principles of fairness facilitates participation in trade. The rule-making removes uncertainties in the minds of possible players as to the consequences of their conduct in certain circumstances.

Each of these factors has been associated with the emergence and commercial use of new information technologies. Each technology has proven to be commercially desirable, its use has challenged existing notions of fairness and, in the final analysis, commercial exploitation has been encouraged as a matter of public policy.⁸ And, in each historical instance to date, changes in relevant domestic and international commercial laws have resulted and continue to result due to the new technology. What is important to recognize is that these catalysts of change share as their premise the desirability of accomplishing law reform in order to accommodate and facilitate desirable commercial practices.⁹

Vastly different economic, political and cultural variances throughout the global community, however, have influenced the speed at which the process of law reform has occurred to accommodate new information technologies. The progress of international efforts has been particularly challenged by those variances, as developed countries and developing countries seek to negotiate balanced solutions. An essential challenge

⁸ An extended discussion of the relationship between law and each new medium of communication appears in KATSH, *supra* note 4, at 49-112. Particular attention is given to the laws of dispute resolution, evidence and intellectual property issues, but the analysis can also be instructive as to matters of commercial law.

⁹ This point was made particularly clear in the program of work on the legal and commercial aspects of electronic commerce recently adopted by the United Nations. UNITED NATIONS, ECONOMICS AND SOCIAL COUNCIL, COMMITTEE ON THE DEVELOPMENT OF TRADE, LEGAL ASPECTS OF TRADE DATA INTERCHANGE, U.N. Doc. TRADE/WP.4/R.697 at § 2 (Dec. 27, 1990).

has been, and will continue to be, producing results which accommodate the limitations of the infrastructures of some countries (permitting a variety of information technologies, at different levels of sophistication, to be concurrently employed) while nevertheless providing a framework which facilitates participation in international trade by the developed countries (through the use of the most advanced information technologies).¹⁰

Yet even before the global community has fully defined and adopted domestic and international commercial laws relevant to the use of paper-based methods of doing business, the emergence of electronic commercial practices is challenging our assumptions of how business may or should be conducted. In doing so, the process of law-making is potentially placed under stress. While development of harmonized international commercial law has been an important priority of the international community for some time, the task today remains incomplete.¹¹ As a result, the rapid progress toward electronic commerce is confronting the law-making process with catalysts for reform even before the essential foundation is in place. New rules generally build upon or revise old rules; however, with respect to international trade, there continues to exist a conspicuous absence of relevant international law, particularly when compared to the substance of commercial law in many developed countries, from which to proceed to accommodate electronic commercial practices.¹²

¹⁰ Negotiating the Vienna Convention on International Sales of Goods (1980) [hereinafter Vienna Convention], for example, was difficult because of the need to recognize and balance differences so as to achieve a universally-acceptable document. See generally, Peter Winship, *Formation of International Sales Contracts Under the 1980 Vienna Convention*, 17 INT'L LAW 1 (1983); John E. Murray, Jr., *An Essay on the Formation of Contracts and Related Matters Under the United Nations Convention on Contracts for the International Sale of Goods*, 8 J.L. & COM. 11 (1988); Alejandro M. Garro, *Reconciliation of Legal Traditions in the UN Convention on Contracts for the International Sale of Goods*, 23 INT'L LAW 443 (1989) [hereinafter Garro]. The current drafting process for UNCITRAL's Model Law on International Credit Transfer also illustrates the difficulties of balancing. *Report of the United Nations Commission on International Trade Law on the work of its twenty-fourth session*, Supp. No. 17 (A/46/17) (10-28 June 1991) (the debate over Article 10 on whether a same day or next day rule is appropriate is indicative; para. 199-201). [hereinafter 1991 UNCITRAL Report]. The opt-out provision reached is similar in nature to the opt-out provision in Article 11 of the Vienna Convention on formation of contracts). See *infra* note 15.

¹¹ For example, a variety of important international projects relating to essential aspects of international commerce remain outstanding. UNCITRAL is currently working to develop laws on Government Procurement, Guarantees and Stand-By Letters of Credit, and International Countertrade. UNCITRAL commenced its work on the laws on Procurement and on Countertrade in 1986; Guarantees and Stand-By Letters of Credit, in 1989. As of June 1991, draft reports on these three issues were still under discussion. 1991 UNCITRAL Report, *supra* note 10, at §§ 291-305.

¹² Several completed initiatives have recognized and attempted to accommodate the use of electronic messaging technologies. The Vienna Convention expressly recognizes the validity of a contract, regardless of its form. Article 11 provides "A contract of sale need not be concluded in or evidenced by writing and is not subject to any other requirement as to form. It may be proved by

It is important to emphasize that legally facilitating international electronic commerce will not require an exclusive focus upon commercial laws. To the contrary, the catalysts of change which pressure commercial law reform also impact upon the wide array of administrative functions performed by governments as a part of international trade. Accordingly, licensing, fiscal administration, customs, banking, transport, port operations, product quality and currency exchange control laws must also respond. Otherwise, notwithstanding the development of a commercially viable framework of rules and procedures, the legal environment defined by these intertwined administrative regulatory schemes, and the mandatory nature of their requirements, can effectively deter the broader adoption of electronic commercial practices.¹³

Thus, defining international electronic commerce, and understanding its evolving components in the context of both idealistic visions and pragmatic realism, appears to be an essential predicate to evaluating and considering the contributions, from a legal perspective, of current and foreseeable facilitation initiatives. Constructing that definition should also assist in understanding the strength and direction of the catalysts of change which currently exist and, therefore, possibly suggest the merits of possible future law reform programs.

B. The Essential Elements

International electronic commerce is not simply defined by the absence of paper documents. Indeed, though an important objective of many commercial and administrative users is the elimination of paper, most users will also admit that current implementation efforts remain heavily inter-dependent upon the continued use of paper documents. There are a number of reasons for this result. For example, in many instances, the paper documents are required by internal corporate rules

any means, including witnesses." Article 96 of the Vienna Convention allows a nation to affirmatively opt out of Article 11 if its national laws require a writing. However, the presumption is in favor of the validity of electronic, or other, records.

For a discussion of other accommodation efforts in international conventions and agreements relating to trade and transport, see Gliniecki and Ogada, *The Legal Acceptance of Electronic Documents, Writings, Signatures and Notices in International Transportation Conventions: A Challenge in the Age of Global Electronic Commerce*, 13 *Nw. J. INT'L L. & BUS.* 117 (1992).

¹³ The historical relationship between administrative laws and evolving information technologies is one of the emphases in the analysis provided by Professor Katsh. One of the recurring themes of his critique is the view that, with each new information technology, the functions of government have been transformed. *KATSH, supra* note 4.

Thus, with the new technologies of electronic commerce, one forecast which has not yet been made or tested in any detail relates to the changes which these technologies will possibly effect on the functions of government, or on the scope of administrative interests in different aspects of international trade transactions.

for paper-based records, which are often based upon an unfamiliarity or discomfort with the use of the electronic media, or result from mandatory administrative or commercial practices.¹⁴ Properly defining international electronic commerce perhaps requires, therefore, a more systematic approach. Attention must be given to understanding (a) the identity of the commercial and administrative participants arriving into the international trade transaction as a result of the use of the technologies of electronic commerce, (b) some of the relationships between information and documents in the context of electronic commerce and (c) the technological tools actually required to conduct electronic commerce.

1. An International Trade Transaction.

Describing and accounting for each element of the complete flow of a transaction in international trade is beyond the scope of this article.¹⁵ However, a brief review of the components and the respective functions and relationships of the participants in a model of an international commercial transaction will provide a helpful framework for several portions of the subsequent analysis of this article. Recognizing that each such transaction is inherently a combination of the movement of goods, money and information, the following discussion is offered.¹⁶ Since any transaction is, in the first instance, a series of interconnected commercial arrangements, the primary commercial arrangements—the sales contract

¹⁴ One type of administrative requirement was highlighted in the negotiation of the Vienna Convention *supra* note 10. Signatory nations were provided the opportunity to opt-out of the provisions which permitted a contract for the sale of goods to be evidenced by any means; nations making that election could continue to enforce paper documentation requirements imposed by domestic laws. Indeed, negotiators report that the opt-out provision existed in order for certain countries, which performed customs, taxation and other administrative functions exclusively in reliance upon physical copies of the actual contract, to continue to do business in that manner. See Garro, *supra* note 10.

¹⁵ Working Party 4 (WP.4), in order to facilitate message development, has constructed a series of models of particular components of the international trade transaction, emphasizing the flow of information required, based on commercial and administrative practices. In that manner, the particular elements and segments which are the building blocks for each message ("electronic documents") can be identified.

Under the leadership of the Romanian delegation, a group has been working to develop a model of the overall international trade transaction. The process is, of course, a complex one which will require eventual cooperation and input from a wide spectrum of commercial and administrative trade participants, as well as possible contributions from economists, legal and audit experts and others. NATIONS UNIES [UNITED NATIONS], CONSEIL ECONOMIQUE ET SOCIAL, COMITE POUR LE DEVELOPPEMENT DU COMMERCE, ANALYSE DE LA TRANSACTION COMMERCIALE INTERNATIONALE, U.N. Doc. TRADE/WP.4/R.603/Add.1 (Sept. 16, 1991).

¹⁶ International transactions also can involve the movement of people, either as the subject of the deal (e.g. air transport) or as a resource offered in conjunction with the sale of goods. However, aspects of trade relating to the movement of people have not been considered within the scope of this article; several aspects of the analysis may nevertheless be applicable to transactions involving the movement of people.

and the transport process—are used as the references for the discussion. Several of the ancillary, but often inherent, contracts, interactions with governmental authorities and the like are also highlighted.¹⁷

a. The Sales Contract

Fundamentally, trade involves the purchase and sale of goods. The products may be raw materials or finished products. A substantial portion of international trade, particularly marine shipping, involves the bulk shipment of commodities (oil, grain, aluminum and similar products).¹⁸ Often, an individual shipment of goods involves only one buyer and one seller; however, since one shipment may often involve multiple, sequential owners, particularly with respect to commodities shipments,¹⁹ a transaction may often include overall a number of separate sales contracts which are negotiated, confirmed and performed.²⁰

Each contract can be evidenced by a diverse assortment of commercial documents, varying in content, format and complexity, based on such factors as the nature of the goods, sectoral commercial practices and other variables.²¹ Purchase orders, invoices, shipping notices and bills of lading are, however, the predominant paper-based contract papers. From a legal perspective, the invoice is important in a number of countries to the administration and enforcement of a variety of governmental functions, particularly with respect to auditing the collection and payment of applicable national taxes.²² In electronic contracting, new

¹⁷ The complexity of international trade and the related flow of documents may best be illustrated by reference to an inventory of model definitions recently referred by WP.4 to its rapporteurs on legal questions for review and possible recommendations for revision. UNITED NATIONS, ECONOMIC AND SOCIAL COUNCIL, COMMITTEE ON THE DEVELOPMENT OF TRADE, REPORT ON THE FORTY-FOURTH SESSION, U.N. Doc. TRADE/WP.4/GE.2/85 §§ 13-15. (Oct. 1, 1991) [hereinafter GE.2/85]. The inventory is a document which purports to list and describe all of the paper-based documents used in international trade. UNITED NATIONS, ECONOMIC AND SOCIAL COUNCIL, COMMITTEE ON THE DEVELOPMENT OF TRADE, REPORT ON THE FORTY-FOURTH SESSION, U.N. Doc. TRADE/WP.4/R.758 (1991). Over 250 items are currently included in this publication. The list serves as one of several resources relied upon in directing message development activities.

¹⁸ See Peter Faust, "Shipping Services", in TRADE IN SERVICES, *supra* note 3, at 120 [hereinafter Faust].

¹⁹ Ownership of oil shipments may change hands more than 20 times while in transit between ports.

²⁰ Of course, negotiations may also occur which do not lead to the confirmation of an agreement, but which nevertheless require an ongoing flow of information between the participants to be taken into account.

²¹ Oral sales contracts are, of course, also significant in international trade; as a matter of international law, those contracts may be binding if the terms can be demonstrated. *Supra* note 10. Yet the use of EDI creates a record or audit trail impossible to compare to oral transactions; therefore, oral contracts are not considered here.

²² The importance of the invoice is illustrated by the emphasis given by the French government in their facilitation activities; their recent regulatory reforms to permit electronic invoices as a basis

“documents” may also evolve. For example, there is notable commercial use in the United States of a new electronic “document” in lieu of the invoice, called an evaluated receipt settlement; use is increasing particularly among trading partners with active, ongoing commercial relationships.²³

Each buyer and seller, in turn, often require the involvement of their respective financial institutions to complete the transaction, either as a resource of capital or, as a matter of historical practice, to provide the seller with assurances of the buyer’s ability to perform its payment obligations. The sales contracts are often a basis of security for the participating banks, particularly in connection with the issuance of letters of credit to support the transaction.²⁴ Thus, the contract to issue the letter of credit, and the obligations arising under that instrument when issued to make payment against the presentation of qualifying documents, is essential to most transactions.²⁵

A variety of administrative licenses and permits must also be obtained by buyers and sellers. Export licensing requirements, for example, are particularly diverse, existing to promote a diverse array of national trade policies and objectives. Different agencies may issue different types

of support for tax calculations were among the earliest formal legal efforts to administratively accommodate EDI. Decret No. 91-579 du 20 juin 1991 pris pour l’application de l’article 47 de la loi de finances rectificative pour 1990 relatif a la transmission de factures par voie telematique.

²³ Evaluated receipt settlement is a process by which electronic notice that a shipment has been received is automatically processed against lists of pending purchase orders, permitting the buyer to determine immediately the amount of payment due. Invoices from the seller thereby become unnecessary and the tasks traditionally performed by accounts payable departments within businesses can be virtually eliminated.

²⁴ An excellent survey of some of the issues for letter of credit transactions in the environment of electronic commerce was published in Boris Kozolchik, *Is Present Letter of Credit Law up to Its Task?*, 8 GEO. MASON U.L. REV. 285 (1986).

²⁵ The importance of the letter of credit cannot be understated, particularly with respect to trade involving the purchase of goods into developing countries. WP.4 is giving high priority to letter of credit aspects of international trade. Standard message formats needed for the issuing bank to communicate with its customer and other confirming or advising financial institutions are now developed as draft documents. UNITED NATIONS, ECONOMIC AND SOCIAL COUNCIL, COMMITTEE ON THE DEVELOPMENT OF TRADE, REPORT OF THE FORTY-FOURTH SESSION, U.N. Doc. TRADE/WP.4/GE.1/85 §§ 12-13 (Oct. 1, 1991).

Indeed, electronic messages are now the primary means for communication about letters of credit. “According to reliable estimates, 75 percent of today’s requests for issuance, advice, confirmation or negotiation of credits are sent electronically, and the remainder by letter, cable or telex. Similarly, the number of applicants who prepare drafts of letters of credit at their own computers and telecommunicate these drafts to the issuing banks has also increased sharply Finally, an increasing number of letters of credit issued by both banks and non-banks are being communicated directly by the issuer to the beneficiary’s computers, and other letters of credit (still a small number) are communicated to the beneficiary through a non-banking ‘value-added network.’” Boris Kozolchik, “The Electronic Letter of Credit”, (1991)(unpublished draft, on file with the NORTH-WESTERN JOURNAL OF INTERNATIONAL LAW & BUSINESS).

of licenses, based on the content or destination (among other factors) of any particular shipment. Compliance with quota limits is another important element for both the buyer and seller in the process of establishing the initial framework of an international transaction. Additionally, in nations with state trading monopolies, the transaction will have to be channeled through its auspices.

An importing country also maintains a diverse set of administrative rules which regulate the incoming goods. Satisfaction of those rules requires the submission to different administrative authorities of a variety of reports, forms and disclosures, often as a condition to the delivery of the goods into that country. Customs authorities may require documentation in order to satisfy requirements for import licenses (relating to the amount or type of goods); tariff determinations, including application of country- or region-specific preferences; and declarations. Fiscal authorities may need documentation to determine whether any taxes or fees accrued upon import. A Central Bank might need to extend permission for the import, if hard currency reserves are controlled. State trading monopolies may also require documentation to demonstrate that the transaction has been authorized.

b. The Transport Process

In many respects, the documentation relating to the international transport of the goods subject to the sales contract is more vital to the overall transaction. This is true for a number of reasons. First, the sheer volume of information, combined with the number of commercial and governmental parties who receive, process and forward all or portions of that information, overwhelm in complexity the documents which only evidence the sales contract. Second, the formalities associated with any particular transport document, e.g., signatures, number of copies, use of notarial seals and the like, vary widely. Differences in these formalities and in the content requirements for documents with similar functions are significantly dependent upon differences in local or regional customs or administrative practices, many of which are often not recorded in any official or publicly available resource. Finally, language and other cultural variables have also challenged those businesses engaged in the international transport of goods (whether by marine, air, rail or road) to achieve efficiencies in satisfying the official and commercial requirements for appropriate documentation.²⁶

²⁶ WP.4 was initiated originally to provide a forum in which member nations might achieve trade facilitation through the harmonization and simplification of trade procedures, with an emphasis on documentation requirements. Though current efforts focus on EDI facilitation, the need for

The contract of carriage generally has several components, only some of which may be developed by the participants with respect to any particular shipment. First, ocean and air transport are substantially governed by international conventions which define a significant number of commercial terms relating to the obligations of the respective carriers.²⁷ Tariffs on file with government authorities and related sectoral agreements (for example, the various ocean liner conferences) are also relevant.²⁸ Second, master agreements between shippers and carriers often exist. In those cases, the small-print terms and conditions which usually fill the back-side of a bill of lading will be omitted from the actual document completed for a shipment, leaving open only the details on that shipment to be inserted onto a short-form (or "blank-back") bill of lading.

In addition to the shipper and carriers, an assortment of ancillary but indispensable commercial and governmental players are involved with any shipment and with the flow of information relating to that shipment. Warehouse and terminal operators, port authorities, stevedores, customs and fiscal authorities remain vital to the transaction, even assuming the full use of the technologies of electronic commerce. The role of the freight forwarder, and the relationships which result, should perhaps be highlighted. With the continued growth of multi-modal transport capabilities, freight forwarders have increasingly assumed a quasi-carrier relation to the shipper. The shipper may use several modes of transport to deliver the goods, but only deal with one forwarder, leaving to the forwarder the tasks of selecting, routing and pricing the various alternatives. However, the forwarder also remains, to the carriers, a primary party vis-a-vis the shipment itself, responsible for consolidating the goods of different shippers into that shipment.²⁹

Finally, each transaction will be insured, with evidence of that in-

harmonization of paper-based documentation requirements has not been forgotten. Recently, the Working Party approved an international layout key for paper-based cargo insurance documents. GE.2/85, *supra* note 17, at §§ 10-11.

²⁷ Air transport is governed by the *Convention for the Unification of Certain Rules Relating to International Transportation by Air* (Warsaw Convention) (1933), and marine transport is governed by either the *Hague Convention on the Unification of Certain Rules Relating to Bills of Lading* (1924), or *The United Nations Convention on the Carriage of Goods by Sea* (1978). See also, Gliniecki and Ogada, *The Legal Acceptance of Electronic Documents, Writings, Signatures and Notices in International Transportation Conventions; A Challenge in the Age of Global Electronic Commerce*, 13 NW. J. INT'L L. & BUS. 117 (1992).

²⁸ See generally Faust, *supra* note 18.

²⁹ One of the value-added aspects of the forwarder, at least historically, has been its ability to efficiently track and realize the commercial implications of the highly diverse bodies of information impacting upon the arranging and pricing of international transportation. See generally, TRADING WITH EDI, *supra* note 1.

insurance being vital both to the terms of the sales contract and to the documentation requirements of the transport process itself. A paper-based form of a certificate of insurance intended for use in connection with international trade, providing relevant information in a standard layout, has only recently been adopted at the international level.³⁰ Behind each contract of insurance will also often exist a continuing re-insurance market, through which the risks of any contract are shared and allocated among insurers. Indeed, reinsurance contracts are generally a combination of pre-existing master agreements and memoranda relating to a particular contract; as a result, EDI has tremendous relevance and the insurance industry has already seen commercial implementation occur.³¹

2. *The New Participants.*

Electronic commerce, whether transacted within or across national boundaries, is distinguished from traditional paper-based commerce by the existence of a different cast of characters. Of course, in many respects the participants are the same. As highlighted by the preceding discussion, the prototype of an international trade transaction may involve over 50 different players associated with the negotiation, confirmation or performance of the primary contracts making up the framework on which the transaction occurs.³² Each of these parties, in turn, assumes essential functions with respect to the content of the flow of information relating to the transactions. Few players merely receive and then forward transactional data. More often, each party is responsible for the creation and forward distribution of new bits of information, which combine with existing information to provide subsequent players with an adequate basis of information on which to rely.³³ Like the assembly line for

³⁰ GE.2/85, *supra* note 17, at §§ 10-11. At the same time, EDI message formats for such information are under development.

³¹ See "US, European Insurers Anticipate Paperless System", J. COMM., December 2, 1991, at 15A.

³² Consider, for example, the following non-inclusive aggregate list: buyer, seller, buyer's bank, seller's bank, export license authorities of seller's country, import licensing authorities of buyer's country, exporting and importing customs authorities, exporting and importing fiscal authorities, state trading monopolies, common carriers (road, marine, rail and air are often involved with any single shipment), freight forwarders, coast guard or other military authorities, port authorities, warehouse and terminal operators, stevedores, insurance carriers, marine tariff authorities, etc.

³³ For example, a purchase order may contain information regarding the buyer, seller, type of good, quantity, price and delivery date. An invoice may incorporate the information from the purchase order and contain additional information as to confirmation, exact delivery date and calculations of total price and taxes due thereunder. A bill of lading may further incorporate information from the purchase order and the invoice and, in turn, include new data about weight of shipment, dimensions of shipment and insurance certification. Similarly, each new document generated as the

a manufactured product, each participant adds to the information flow additional components necessary to achieve the successful completion of the transaction. In doing so, the qualitative value of the bundle of relevant information is enhanced at each step of the process.

In paper-based international commerce, the cumulative physical impact of the information flow can be substantial. One frequently cited statistic proves the point with dramatic effect. It is generally believed that the average ship arriving in a port of entry may carry over 500 pounds of paper documents relating to the goods on board, all of which are required for the subsequent disposition of those shipments by commercial and administrative parties. With electronic commerce, the nature of the information required generally does not change, nor do the needs of the participants for the information; what occurs is a transformation of the means employed to create, store and process the information, and the elimination of duplicative efforts in those activities. Among traditional players, electronic commerce does not alter the basic functions and relationships in place.³⁴ Electronic commerce has introduced to trade, however, new classes of commercial and administrative participants.

a. The Networks.

The networks, also known as value-added service providers, have become part of the transactional environment due solely to the electronic quality of the information.³⁵ In paper-based trade, the functions of networks are performed by existing participants, including the infrastructure of PTTs, overnight courier services and the like. Networks are generally commercial businesses, often operating independent of telecom-

goods move through the processes of international trade may borrow information from prior documentation and may add some new fact to the stock of information to be passed along.

³⁴ Recently, some significant EDI users in the United States have, however, reported that their adoption of electronic commercial practices is influencing the scope and function of product distributors and consolidators. In one instance, a major retailer is predicting that EDI will eliminate the role of the distributor entirely. "Technological Advances Not Always Welcomed by Retail Middlemen", *J. COMM.*, December 15, 1991, at 3B.

³⁵ In addition to networks, other vendors serve as the sources for the other tools required to conduct electronic commerce (a summary of these tools appears in section B.4. of this article). As international electronic commerce continues to expand, realistic opportunities present themselves for the vendors of the technologies, particularly those vendors with the best products, to establish and expand into international markets, though those vendors may have originally contemplated only the distribution of their products within national boundaries. Although these other product vendors, as a class, are not new to international trade, their indispensability to electronic commerce cannot be understated. Important issues arise regarding the need to provide an adequate and reliable environment in which their products, once developed, may be distributed under terms which assure that these companies may obtain an adequate return on their investment from the international market.

munication common carriers, which perform a variety of services to enhance for their customers the creation, storage and processing of electronic transactional data.³⁶ Many networks are exclusively committed to the movement of EDI information; others offer integrated electronic messaging technologies such as facsimile, electronic mail, telex, etc.

Networks have become indispensable to the current and foreseeable expansion of electronic commerce due to their ability to capitalize on available economies of scale and perform certain essential processes less expensively than generally possible for most trade participants. In most instances, networks operate on a public or generic basis, offering their services to customers signing an agreement. A single, well-identified network can also be the essential facility for a particular market or even the market itself. Examples include local telecommunications networks, postal services and railways.³⁷ In other cases, the networks are closed, limiting movement of information to a particular class of user on specified terms and conditions. For example, networks such as NACHA, CHIPS, CHAPS and S.W.I.F.T. have become critical links in the capabilities of the financial sector to foster electronic funds transfers.³⁸ Another exam-

³⁶ A short list of the basic services that networks provide may include data retention, translation, software licensing and maintenance. See generally Jeffrey B. Ritter, *Private Data Networks*, in *Transnational Data and Communication Report* (July/August 1991) at 15; see also ABA Report, *supra* note 1, at 1707-09.

³⁷ See, Albert Bressand, *Access to Networks and Services Trade: The Uruguay Round and Beyond*, TRADE IN SERVICES, *supra* note 3, at 237-262 [hereinafter Bressand].

³⁸ NACHA, a United States organization, is the National Automated Clearing House Association. It operates the Automated Clearing House (ACH) Network, a nationwide electronic payments system used by more than 17,500 participating financial institutions, 40,000 corporations and millions of consumers. The ACH payments mechanism offers a wide variety of payment options including direct deposit, pre-authorized payment, home banking, point of sale, cash concentration and disbursement, corporate trade payments and check transactions. *A Complete Guide to Rules and Regulations Governing the ACH Network*, at Preface (NACHA 1990).

CHIPS is the Clearing House Interbank Payments System operated by the New York Clearing House. It is one of the two major systems for wholesale wire transfers in the United States. CHAPS is the equivalent for the major London banks. S.W.I.F.T. (Society for Worldwide Interbank Financial Telecommunication S.C.) is the international counterpart of these payment systems. The essential purpose of S.W.I.F.T. is to provide a common, rapid, reliable and secure means of transporting banking instructions internationally. S.W.I.F.T. offers its participants several primary services. It offers standardized message formats enabling automated data handling and eliminating language and interpretation problems between senders and receivers. Its messages employ its own S.W.I.F.T. syntax as well as EDIFACT syntax developed by WP.4 and the International Standards Organization. It provides detailed transaction records allowing for clear audit records and informative operational reports. S.W.I.F.T. brings together an impressive web of global banks; 26,000 banks in 65 countries on all continents, twenty-four hours a day. S.W.I.F.T. is now also open to approved non-bank institutions such as recognized exchanges, securities brokers and dealers and clearing and deposit institutions. Due to the high volume of traffic — more than 1,000,000 messages daily — the cost of running S.W.I.F.T. is only a fraction of similar services provided by telex or cable transmission.

ple is provided by airline computerized reservation systems. Similar sectoral-specific EDI networks, in addition to generic EDI networks, are beginning to conduct business with some degree of success.³⁹

Networks can be analyzed within several other dimensions.⁴⁰ For example, one dimension considers the use of the network. Is it used to receive information in cases in which exclusion from access to valuable information is crucial to a firm's competitiveness? Or is it used by a firm to transmit its own information as part of its business strategy? Another distinction is made based on whether or not the information provided by the networks is in and of itself the final service to the consumer (the case in database and financial services) or is provided by a network to channel

Speed, accuracy and security are assured by S.W.I.F.T. Messages between banks can be transmitted in as little as twenty seconds. Authentication and verification of these messages occurs automatically. All information sent through S.W.I.F.T. is encrypted (i.e., only receiver and sender can decipher messages). *See generally*, SOCIETY FOR WORLDWIDE INTERBANK FINANCIAL TELECOMMUNICATIONS S.C. PUBLIC RELATIONS, A S.W.I.F.T. OVERVIEW (1989) [hereinafter S.W.I.F.T. OVERVIEW]; *see also* S.W.I.F.T., JOIN THE EDI REVOLUTION USING THE EXPERTISE OF S.W.I.F.T. (1991)[hereinafter EDI REVOLUTION].

³⁹ Railinc is owned by the American Association of Railroads. As railroads began using EDI (primarily between themselves), they recognized the need for economical networking services and founded Railinc. It is a value added network specializing in EDI. It operates by subscription agreement and maintains different rates for dedicated communication lines versus dial up lines.

Linx is an EDI network operated by the Ports of Seattle and Tacoma in the United States. It provides rapid, accurate exchange of information among trade and transport companies to optimize cargo movement throughout the world. 4 *EDI Monthly Reporter* 1 (1991).

The United States Government and 15 Asian Pacific countries in December 1991 proposed a massive Pacific Rim EDI network. The goal is to bring totally paperless communications to the region by the turn of the century. The initiative is being developed by the Asia-Pacific Economic Cooperation (APEC) based in Seoul, South Korea. *Id.*

Global Logistics Venture is a new project proposed by CSX Corp., a transport holding company, and AMR Corp., the parent company of American Airlines. The venture would develop an information based logistics system tailored to transportation customers and providing automated cargo information. Global Logistics Systems, involving Japan Airlines, Cathay Pacific, Lufthansa German Airlines and Air France, is a similar international automated cargo consortium already in operation. "CSX, AMR Discuss Plans For Automated Cargo System," J. COMM., at 2B (Oct. 1, 1991).

Six international carriers have agreed to launch an automated information system aimed at expediting the worldwide flow of cargo traffic. The pact forged in Amsterdam this month by Swissair, Singapore Airlines, KLM Royal Dutch Airlines, British Airways, Air Canada and the Irish carrier Aer Lingus, will lead to a venture linking each other's cargo systems, thus allowing freight forwarders to tap into multiple databases. "Six Global Airlines to Launch Automated Cargo Data System," J. COMM., at 3B (Dec. 23, 1991).

Electronic stock trading has also begun to establish itself as an important example of electronic commerce. The Milan stock exchange is the most recent one to begin electronic stock trading. The Italians believe the new system will make their equity markets more competitive in Europe. Haig Simonian, "Italian Broker Welcomes Sims," FIN. TIMES, January 11, 1991, at 27.

⁴⁰ *See* Bressand, *supra* note 37, at 218-219.

provision of another service.⁴¹

As a practical matter, the movement of a particular electronic message may require multiple networks. For example, a buyer and seller may contract with separate networks. These networks, to meet customer requirements, must then establish the capability to "interconnect" in order for the messages to be moved between the two end customers. Additional carriers of the messages also exist. Local, long-distance and international telephone service providers offer the physical linkages between customers and networks. In most instances, the end users are located in different geographic territories and often lack any direct service relationship with all but the initial local carrier.⁴²

b. New Data Authorities.

The communication of electronic information has also introduced a new type of governmental authority, both to the arena of international trade and otherwise. These officials are devoted to maintaining the privacy and confidentiality of information received, processed and stored both by the government and by those who are moving information as part of the process of commerce. Two distinct roles exist, usually performed by different types of agencies.

First, vested with responsibility to regulate the export of certain classes of electronic information, particularly personal information, data protection registrars operate in ways which have begun to influence the overall strategic process of conducting electronic commerce.⁴³ Several of

⁴¹ Information services may very well be considered as a part of electronic commerce, but they are generally excluded from the analysis of this article.

⁴² Some of the complexities presented at the international level are illustrated by the following example. Assume at some point in this scenario that the property rights of the trading partners (A and D) in the transmitted data (as defined by the national laws of one of the trading partners) are illegally compromised:

-A, located in Country 1, transmits an EDI message to Provider B, located in Country 2, who stores the message and later transmits it to Company D in Country 3.

-Provider B re-transmits the message from its facilities in Country 2 to its facilities in Country 3, since the processing costs are much lower in Country 3. In addition, the lateral hand-off avoids Country 2's prohibition on exporting data to Country 4 (to which data export is prohibited, due to inadequate laws within Country 4 regarding protection of confidentiality).

-Provider B, in Country 2, interconnects with Provider C located in Country 5, who re-transmits back to Company D, in Country 3, while retaining a copy of the transmission in accordance with local data transmission record retention requirements. Jeffrey B. Ritter, *Commercial Attributes of Data Communications Networks: Some Commercial Realities of Transborder Data Flow*, at 10-11, Presentation at the Annual American Bar Association Meeting, Atlanta, GA. (Aug. 12, 1991).

⁴³ A complete discussion of the data protection issue, including the current proposed directive of the Commission of the European Communities, is beyond the scope of this article. See, generally, George B. Trubow, *The European Harmonization of Data Protection Laws Threatens U.S. Participation in Trans Border Data Flow*, 13 NW. J. INT'L L. & BUS. 159 (1992).

these registrars have exercised their authority to prevent the electronic export of certain data relating to the business affairs of multi-national businesses. In doing so, these authorities have achieved gate-keeper status on the flow of information, comparable in many respects to export licensing authorities approving shipments of goods.

Second, governments seeking to minimize paperwork and encourage the use of computers to store and process information have also been required to ensure the privacy and security of that information against possible improper disclosure or abuse.⁴⁴ The coordination and harmonization within any national government of the policies and procedures needed to satisfy those requirements have often required oversight agencies, boards or other officers.

In each of these cases, the new authorities have inherent responsibilities to interact with some or all of the overall flow of information from an international trade transaction. The interaction may occur both with respect to the flow of information among commercial participants and the flow of information into and from the respective national governments and their constituent agencies.⁴⁵

Thus, electronic commerce involves traditional and new players, with the latter being both commercial and administrative in nature. In each case, the roles played by the new participants are essential to the furtherance of both pragmatic and political objectives. Their participation helps the development of the broadest possible infrastructure of relationships through which electronic commerce may occur. At the same time, that infrastructure is complemented and supported by administrative and governmental resources which enhance, and are intended not to detract from, the acceptability of electronic commerce to existing and potential users.

3. Information and Documents.

With EDI, business information moves differently. In eliminating paper, EDI permits the movement of information more quickly and more accurately. Increased efficiency results, both in the process of moving the information and in the primary commercial tasks of moving goods or money. The cumulative effect is to cause us to re-focus our ongoing view

⁴⁴ For example, in the United States, relevant enacted laws include United States Privacy Act, 5 U.S.C. § 552(a) (1982).

⁴⁵ Information also flows between national governments to aid enforcement activities. To the extent the technologies of electronic commerce also permit improved information sharing capabilities among national governments, there may exist a need to assure that the privacy and confidentiality concerns of taxpayers and other reporting persons are satisfied.

of the relationship between those various commodities—goods, money and information—and their respective functions and values within the overall framework of a commercial transaction.

Historically, at least throughout this millennium, paper has been the preferred medium through which to communicate and preserve the information required to conduct business. To proceed forward, those developing the technical standards from which EDI finds its energy have embraced and performed their work around existing paper-based methods of moving information. As a result, electronic commerce has established a bridge between the functions of the computers and the historical commercial functions of paper documents.

With EDI, the flow of factual data normally required for each party to perform its role in a transaction is currently transmitted in paper-equivalent formats. In other words, the information is organized and structured into electronic messages which resemble (and are usually named after) conventional paper documents—purchase orders, invoices, shipping notices, letters of credit, waybills, insurance certificates, customs declarations and the like.⁴⁶ In many cases, different systems or internal computer environments require the re-formatting or machine translation of that data at one or more points in the communication process. However, the essential paper-equivalency of each message remains the same.

It is helpful to emphasize one of the principal objectives of how EDI is intended to work. EDI is designed to permit computers to copy from one message, or other pre-existing sources, elements of data which are required within a subsequent message. In that manner, re-keying and duplication activities are eliminated, with a result of increased accuracy. To accomplish this as a practical matter, the various messages approved for use are supported by an extensive set of message frameworks, dictionaries and code lists. These materials provide, in effect, a language of alpha-numeric codes around which the content of each EDI message is constructed and a “grammatical” structure through which those codes are to be organized.⁴⁷ Computer software programs are then designed to

⁴⁶ In September 1991, the UN/ECE Working Party on Facilitation of International Trade Procedures approved, as UN standard messages within the U.N. Electronic Data Interchange for Administration, Commerce and Transport (EDIFACT) structure, an additional 16 messages. Another 37 messages were presented into the process of development and trial use. UNITED NATIONS, ECONOMIC AND SOCIAL COUNCIL, COMMITTEE ON THE DEVELOPMENT OF TRADE, WORKING PARTY ON FACILITATION OF INTERNATIONAL TRADE PROCEDURES; REPORT OF THE THIRTY-FOURTH SESSION, U.N. Doc. TRADE/WP.4/177 at 2 (1991). Each message may be considered as the functional equivalent of a conventional paper document.

⁴⁷ The structure of the EDI message is governed by a fairly simple, logical scheme. An EDI message can be broken into three concentric subparts, the broadest of which is the message. This is

take advantage of these structures and codes, enabling the machines to find, read and process the information in the correct sequences.

EDI users endeavor to develop each subsequent message, to the extent possible, from the content of prior messages or pre-existing (and pre-formatted) materials. For example, the name of the purchaser set forth in the original purchase order can be automatically located and copied into the proper location within the invoice message which the seller must prepare. The seller's computer can also read the product number included in the purchase order and automatically refer to electronically stored price lists to complete the invoice with the appropriate information. As a result, an EDI user must originate for each new message only those bits of information which are absolutely new to the transaction and may rely on the computers to track and complete the remaining content.

Traditional factual data, therefore, is still a part of the information flow occurring concurrently with the transactional flow of the goods. The data still moves between the players in paper-equivalent formats. But as the method of data exchange changes, the format used in the transmission of the data becomes irrelevant to the succeeding practical tasks of receiving, processing and acting upon the information. In the storage of electronic information, it generally becomes more practical to disassemble the original transmissions and reorganize the data to better meet the administrative needs of the user. In so doing, the user enhances the functional value of its historical records of the information.⁴⁸ Thus, for EDI users, the individual segments of information, and the flexibility to manipulate that information, acquire greater priority than the goal of retaining the format in which such information is received or subsequently transmitted.

As a result, the roles which a "document" may perform as a point of reference within an electronic transaction are placed under stress. One commentator at a recent EDI conference⁴⁹ emphasized that the inherent business functions relating to the record retention will continue to move

the electronic version of the purchase order or customs declaration, for example. The transaction set is made up of segments. The segments of a purchase order include, among others, the order status, date, quantity and type. The segments in turn are composed of data elements, which are the smallest units. The data elements for the purchase order type segment could be "rush order" or "reorder" or "sample" or "job lot" or any of the many similar commercial practices. The code lists and dictionary translate the commercial practices and conventional trade terms into computer-understandable units. See *additionally* U. N. Doc. TRADE/WP.4/R.740/Add.2/Rev.1 (September 1991).

⁴⁸ For example, a record showing total purchases from particular customers, aligned with the average per unit price on those purchases, can be more helpful to ongoing business planning than retaining copies of the original records of the individual purchase orders.

⁴⁹ Jeffrey Sturrock, Address at EDIA Conference, San Diego, CA., (Dec. 14, 1991). Mr. Sturrock is the chair of ASC X12 and former chair of North American EDIFACT Board.

toward a framework of information management in which paper-equivalent concepts are replaced by information-based notions of data segments, data elements and codes. EDI, in particular, invites actors in the information flow to create and move smaller units of information, cumulatively exchanging the same information but in new, dynamic formats. As a result, patterns in how information is stored are also expected to change. This trend has implications for the challenge of legal facilitation of electronic commerce.

Many of the reasons why businesses and governments store and preserve information are related to legal requirements. Indeed, a survey of those requirements is itself a suitable topic for study.⁵⁰ Accounting and audit practices and evidentiary needs, both for dispute resolution and for simply understanding the historical operations of a business, also serve as important influences. But what deserves emphasis is that many of the administrative, official requirements are defined by, and shaped around, paper-based methodologies embracing the use of "documents" as the vessel for the storage of information. Consider the following example.

For legitimate reasons, a government requires retention of information relating to the content of a shipment. That requirement is embodied by a rule requiring retention of a copy of the manually signed bill of lading evidencing the contract of carriage. As a commercial practice, such a bill of lading will always provide the relevant information; thus it is considered an appropriate "holder" of the required information. Yet, electronic commerce introduces the possibilities for the commercial parties' best record of that information to be derived from earlier exchanges of information in new formats or, in the alternative, from electronic bills

⁵⁰ One recent study in the United States, for example, noted that regulatory requirements of the federal government imposed at least 95 different record retention requirements, of which 16 specify requirements for "books", "documents" or "papers", on banks operating in the United States. Edward A. Pisacreta, *Electronic Records: Can Regulation Catch Technology?*, Presentation to the Section of Business Law of the American Bar Association at its Annual Meeting, Chicago, IL. (Aug. 8, 1990). An example of the degree of complexity of record retention requirements in the United States is a treatise entitled Skupsky, *Legal Requirements for Microfilm, Computer and Optical Disk Records*, (Information Requirements Clearinghouse, 1991), which surveys national requirements for records for evidentiary, administrative, and regulatory purposes as they affect electronically, magnetically and optically retained records. The treatise discusses diverse issues relevant to non-paper based records, such as trustworthiness, authenticity, originality and the problem of ease of duplication, evidentiary issues, government contracting requirements and other regulatory requirements.

As an aside, one anthropological view that is worthy of note on the interrelationship between technology, law and record retention holds that the complexity of record retention requirements exists because the technology permits it. In a simpler, pre-information age society, fewer requirements existed because of difficulties in recording and accessing information. However, as technologies capabilities increase, allowing record retention to increase, people become further removed from their past and the legal foundations therein because of pressures of preciseness and demands for newness from the constant flood of information. See KATSH, *supra* note 4.

of lading not satisfying the manual signature or format requirements of the present rule. Thus, the administrative requirement contradicts the direction defined by the users of the technologies of electronic commerce. The required information will still be available and accessible, but not in the format of a "document".

Circumstances will certainly exist where particular requirements for paper-based documents or manual signatures will continue to have defensible rationales. Many of these instances tend to be currently defined by the need to assure authenticity (for example, a signature on a piece of paper confirming the occurrence of an event) or by limitations on government authorities preventing the discharge of their responsibilities other than with the paper document originated by the regulated party.⁵¹ Yet, in all of these instances, many players in the international community seeking to facilitate electronic commerce argue that the rationales will eventually lose their defensible quality.

First, the technologies which are now emerging can produce inexpensively electronic records with attributes of authenticity and security which some commentators consider to have greater credibility than manual signatures on paper documents.⁵² Second, the accessibility of technology to government authorities will, as a practical matter, continue to erode the barrier resulting from the absence of automated processing capabilities within governments. As a consequence, administrative needs for "documents", as compared to administrative needs for "information", can be expected realistically to follow the trends forecasted for the commercial sector. Yet the time required for that evolution to occur cannot be predicted, nor can there exist any confidence that, in the absence of appropriate initiatives, the pace of the evolution within administrative sectors will occur at the same speed of the evolution within commercial sectors.

Thus, trade facilitation work, to the extent it focuses on the administrative needs for information, must be cognizant of the current trends in electronic commercial practices. Regulatory requirements for "documents" should perhaps be re-analyzed through a paradigm that brings attention not to the format in which the information is moved, but to the units of information needed for the government to discharge its administrative responsibilities. At the same time, alternative means of assuring the authenticity and integrity of that information should perhaps be pro-

⁵¹ Article 11 of the Vienna Convention, *supra* note 10, contains a presumption that allows contracts "to be evidenced in any form", but permits a country to affirmatively opt-out if national legislation requires a paper document as evidence of a contract.

⁵² Michael Baum, *INFORMATION TECHNOLOGY AND THE LAW* 126 (2d. ed. 1990).

moted, in order to better assure that trade participants can better adopt and exploit the technologies of electronic commerce.

4. *The Technologies of Electronic Commerce*

Electronic commerce is a disciplined method of doing business. The discipline results from the inherent need of all participants to create, transmit, process and store information electronically in a rational and productive manner. The participants accomplish, through their adherence to the rules, the successful linkage of their independent operations in a manner which permits the efficient flow of the relevant information. However, a practical significance of the discipline is that entry into electronic commerce requires only certain essential technological assets. Yet, without those assets in place and functioning, electronic commerce, as envisioned by the international trade community, is not occurring.

Internally, a business first needs a computer. A large mainframe is not required. There are thousands of businesses successfully conducting electronic commerce with personal computers. Indeed, experts currently face challenges in determining the proper equipment required in light of the continually increasing computing capabilities of personal computers and workstations. Second, a modem is required, in order to permit the sending and receipt of information over accessible telephone lines. Some EDI occurs through the manual delivery of magnetic tapes and disks containing the electronic files and documents. However that practice is declining in developed countries as the quality of telephone systems is increased to move data effectively.

Third, access to a telephone system that is capable of moving electronic data is required. Currently, some EDI users are experimenting with cellular transmission or satellite linkages, either of which can bypass the need for reliance on existing telephone systems. Flexibility in this respect is contemplated, as some developing countries have also been considering bypassing the use of traditional wired technologies and moving directly to cellular as a basis for a national transmission infrastructure. However, in any case, the essential infrastructure of a means of electronically moving the data, together with reliable access, is needed.

As noted earlier, substantially all EDI presently occurs through the use of networks. Many companies will, in fact, be customers of more than one network. In some cases, an additional network is required for a user to access directly other players on the second network where interconnectivity between the networks does not exist. In other instances, the second network may offer as additional resources specialized information services or databases available only on an exclusive basis. In many cases,

EDI networks also offer services relating to the storage, retrieval and processing of information which many large companies may choose to perform internally but which smaller companies find desirable to delegate to the networks.⁵³

Software remains — for the individual company, the networks, the telecommunication common carriers and participating government authorities — the last significant tool required for electronic commerce. At each operational link in the flow of information, software is required to create, format, transmit, carry and receive the data. What emerges as the distinctive quality of electronic commerce, however, is that the software programs, and the uses of that software by all of the participants, are developed around common standards defining the elements, segments and formats of the information, including the requisite codes and directories to permit complex trade terms, product references and instructions to be converted into discrete alpha-numeric units of information. It is in the disciplined adherence to these standards that electronic commerce finds its vitality. Merely having software is not sufficient; the software must be designed around, and used to construct and format information in accordance with, published sets of standards.

Much of electronic commerce has, and will continue to evolve on a sectoral basis.⁵⁴ Banks, automotive manufacturers, and transportation companies, to name some early examples, collectively worked to develop industry-specific standards to facilitate the use of the technologies of electronic commerce and achieve the movement of information within their industry. Within major multi-national corporations, information processing standards were constructed to permit internally the same type of efficiencies now possible in trade. Many of these sectoral and proprietary standards continue to exist and will continue to thrive,⁵⁵ however, current momentum supports the development of broader, inter-industry public standards, particularly with respect to international trade. Thus, the EDIFACT (Electronic Data Interchange for Administration, Com-

⁵³ Several large companies have offered their own proprietary networks through which to conduct electronic commerce. For example, a major medical products distributor in the United States developed and installed, through dedicated personal computers, a comprehensive network through which hospitals could place electronic orders. However, as electronic commerce expands, the benefits of maintaining proprietary networks continue to erode, as customers demand interconnectivity of their internal operations with an ever-increasing circle of trading partners, not just particular distributors.

⁵⁴ For a further discussion of the sectoral progression of electronic commerce see *infra* Section C of this article.

⁵⁵ For example, in funds transfer transactions, S.W.I.F.T. has developed for its operations a proprietary set of standards which will continue to be commercially viable for some time. See also *supra* note 38.

merce and Transport) standards under development by the United Nations Economic Commission for Europe Working Party on Facilitation of International Trade Procedures and the communication standards work by the International Organization for Standardization (ISO) (e.g. X.400 and X.500) are indispensable to the continued forward progress of electronic commerce.⁵⁶ The standards have become an essential tool for accomplishing both message development and processing by trade and administrative participants and establishing interconnectivity among the networks and common carriers. Thus, electronic commerce may be defined in part as the standards-based use of the preceding tools to conduct business.⁵⁷

C. The Vision of Open Electronic Commerce

In closing, one observation on how international electronic commerce is expanding as a practical matter is appropriate. A very strong distinction exists between the idealistic visions of international electronic commerce which abound and the realities of current activities and anticipated trends. But in this distinction may be found a functional element which may need to be taken into account as a part of the definitional process.

Those advocating electronic commerce as a strategy of international trade development describe a future of interconnected networks through which the flow of information relating to international transactions occurs seamlessly and with maximum efficiency. Universal adoption of international standards, both as communication protocols and for message development, will permit the emergence, through our computers, of an esperanto language for trade which will be effective in uniting the global trading community. The technological tools, because of comparatively low costs and universality, will permit access into the market for new classes of trade participants and provide a means for possible trading partners to conduct business through exchanges of information, even in

⁵⁶ The ECE Working Party and ISO maintain an active ongoing dialogue to help assure that their respective work activities are coordinated. It is worth noting that S.W.I.F.T., *see supra* note 38, has been active in the development of EDIFACT standards and looks to support an integration of information movement based on EDIFACT with its own proprietary systems.

⁵⁷ By this definition, facsimile machines, telegrams and telexes are excluded. Although these technologies are used today as a bridge to link EDI users to non-EDI users, momentum is so clearly in the opposite direction that to include them within the scope of electronic commerce seems to contradict the spirit of the catalysts for change which exist. Arguably, electronic mail, consisting of unformatted paper-equivalent text, should also be included. However, since an e-mail user does not structure the information around standard-based codes and directories, electronic mail does not support the ongoing automated processing and movement of information, particularly within the corporation, which standard-based communication promotes.

the absence of prior contacts or relationships.⁵⁸

Indeed, this vision is one which will probably prove to be quite accurate over time. But the process of achieving an interconnected global trading community is not occurring under the auspices of this grand vision. Rather, the process is being driven by the need for commercially appropriate solutions within particular trading sectors. S.W.I.F.T. is illustrative, being a network established by banks for conducting the business of moving instructions for the transfer of funds between accounts.⁵⁹ Other proprietary and sectoral initiatives, including those reaching across national boundaries, are being announced at a rapid rate. For example, in December 1991, port authorities announced pilot projects to exchange information, global transport alliances announced the formation of a network to move information with respect to air cargo, and insurance industry groups commenced re-insurance network operations.⁶⁰

A further reality of EDI is that the technology has not yet changed the basic relationships through which commerce occurs. EDI has been, and continues to be, implemented between existing trading partners with long-standing and often substantial commercial relationships. As a general matter, business contacts, product quality, delivery abilities and all of the remaining factors relevant to beginning to do business still make the difference. In this respect, well-defined social and cultural business practices are also especially important to consider. Personal introductions, face-to-face communications and the hand-delivery of purchase orders remain vital features of how certain sectors of the global trading community conduct business. The existence of improved communication technologies will not readily displace those practices.

As a result, it is suggested those considering commercial law reform in support of international electronic commerce should not be distracted into constructing statutes, conventions or model agreements which are intended to support all possible situations within the vision of open electronic commerce. Instead, both the incremental sectoral approach by which international electronic commerce has advanced and the fact that,

⁵⁸ The technologies of electronic commerce, particularly EDI, are perceived as important priorities for neutralizing further marginalization of developing countries resulting from continuing changes in international trade efficiencies. In the *Tehran Final Documents UNCTAD/PSM/CAS/363* at § 4 (December 1991), the Group of 77 expressed its view on technology and marginalization:

"The technological revolution, the increasing globalization of production and trade and the consideration of large economic spaces can lead to a better world for all, provided the international community takes positive action to prevent the marginalization of developing countries and to ensure their active participation in the world economy."

⁵⁹ See S.W.I.F.T. OVERVIEW, *supra* note 38; see also, EDI REVOLUTION, *supra* note 38.

⁶⁰ *Id.*

within those sectoral initiatives, the technologies are adopted predominantly in support of existing relationships, should be taken into account.

Thus, the law-making effort should perhaps orient itself to avoid advancing ahead of actual commercial experience with electronic commerce. Rather those who participate should intentionally seek to trail behind, with the resulting model laws, conventions and other work products sectoral, not universal, in focus. In that fashion, it is more likely that any particular project will be manageable in scope and, therefore, more likely to be completed within a meaningful time period. Such an approach, perhaps more importantly, minimizes the potential risk for broad, sweeping legal reforms, predicated upon general perspectives of the utopian view, to overtake certain commercial sectors not yet experienced with electronic commerce. In those cases, the premature rule-making could have an inhibitive effect, laying down rules which are neither fair nor reasonable for those sectors, thereby confusing rather than facilitating the migration toward electronic commerce.