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ELECTRONIC DATA INTERCHANGE

Preliminary study of legal issues related to the formation of contracts by electronic means

Report of the Secretary-General

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INTRODUCTION

1. The Commission at its seventeenth session in 1984 decided to place the subject of the legal implications of automatic data processing to the flow of international trade on its programme of work as a priority item. 1/ It did so after consideration of a report of the Secretary-General on the Legal Aspects of Automatic Data Processing 2/ which identified several legal issues, namely those of the legal value of computer records, the requirement of a writing, authentication, general conditions, liability and bills of lading.

2. At its eighteenth session in 1985, the Commission had before it a report by the Secretariat on the Legal Value of Computer Records (hereinafter referred to as "the 1985 report"). 3/ This report came to the conclusion that, on a global level, there were fewer problems in the use of data stored in computers as evidence in litigation than might have been expected. It noted that a more serious legal obstacle to the use of computers and computer-to-computer telecommunications in international trade arose out of requirements that documents be signed or that documents be in paper form. After discussion of the report, the Commission adopted the following recommendation:

"The United Nations Commission on International Trade Law,

"Noting that the use of automatic data processing (ADP) is about to become firmly established throughout the world in many phases of domestic and international trade as well as in administration services,

"Noting also that legal rules based upon pre-ADP paper-based means of documenting international trade may create an obstacle to such use of ADP in that they lead to legal insecurity or impede the efficient use of ADP where its use is otherwise justified,

"Noting further with appreciation the efforts of the Council of Europe, the Customs Co-operation Council and the United Nations Economic Commission for Europe to overcome obstacles to the use of ADP in international trade arising out of these legal rules,

"Considering at the same time that there is no need for a unification of the rules of evidence regarding the use of computer records in international trade, in view of the experience showing that substantial differences in the rules of evidence as they apply to the paper-based system of documentation have caused so far no noticeable harm to the development of international trade,

"Considering also that the developments in the use of ADP are creating a desirability in a number of legal systems for an adaptation of existing legal rules to these developments, having due regard, however, to the need to encourage the employment of such ADP means that would provide the same or greater reliability as paper-based documentation,

(a) Recommends to Governments:

(i) to review the legal rules affecting the use of computer records as evidence in litigation in order to eliminate unnecessary obstacles to their admission, to be assured that the rules are consistent with developments in technology, and to provide

appropriate means for a court to evaluate the credibility of the data contained in those records;

(ii) to review legal requirements that certain trade transactions or trade related documents be in writing, whether the written form is a condition to the enforceability or to the validity of the transaction or document, with a view to permitting, where appropriate, the transaction or document to be recorded and transmitted in computer-readable form;

(iii) to review legal requirements of a handwritten signature or other paper-based method of authentication on trade related documents with a view to permitting, where appropriate, the use of electronic means of authentication;

(iv) to review legal requirements that documents for submission to governments be in writing and manually signed with a view to permitting, where appropriate, such documents to be submitted in computer-readable form to those administrative services which have acquired the necessary equipment and established the necessary procedures;

(b) Recommends to international organizations elaborating legal texts related to trade to take account of the present Recommendation in adopting such texts and, where appropriate, to consider modifying existing legal texts in line with the present Recommendation." 4/

3. This recommendation was endorsed by the General Assembly in resolution 40/71, paragraph 5(b), of 11 December 1985 as follows:

"The General Assembly,

... Calls 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; ...". 5/

4. At its nineteenth and twentieth sessions (1986 and 1987, respectively), the Commission had before it two further reports on the legal aspects of automatic data processing, 6/ which described and analysed the work of international organizations active in the field of automatic data processing.

5. At its twenty-first session (1988), the Commission considered the proposal to examine the need to provide for the legal principles that would apply to the formation of international commercial contracts by electronic means and particularly through the medium of visual display screens. It was noted that there currently existed no refined legal structure for the important and rapidly growing field of formation of contracts by electronic means and that future work in that area could help to fill a legal vacuum and to reduce uncertainties and difficulties encountered in practice. The Commission requested the Secretariat to prepare a preliminary study on the topic. 7/

6. At the twenty-second session (1989), it was decided that a preliminary report would be submitted by the Secretariat to the twenty-third session of the Commission. 8/

7. It may be noted that in prior reports to the Commission and in the reports of the Commission, the subject has been considered under the general heading of "automatic data processing" (ADP), which was the term generally used to describe the use of computers for business applications. In recent years, the terminology generally used has changed to "electronic data interchange", especially in the context of the computer-to-computer movement of business information by telecommunications. Throughout the remainder of this report, the term "electronic data interchange" or its acronym "EDI" will be used.

8. A typical application of EDI is the exchange of commercial data in a bilateral relationship between trading partners. It can be realized either by a direct connection between computers of the communicating parties or through the intermediary computer of one or more third party service providers. One significant characteristic of EDI is that the data being communicated is structured into standard formats, permitting the data to be exchanged and processed in the receiving computer without being re-keyed. As international standards have been adopted and are increasingly used for computer network architectures and EDI message formats, the data can be transmitted irrespective of the particular hardware or software used at either end of the transmission.

9. The present report, which constitutes a preliminary and non-exhaustive study on the topic, serves three purposes: the first is to update some of the information initially given about ADP in the 1985 report; the second is to describe briefly some of the legal issues that are related to the formation of contracts by electronic means; the third is to outline some of the solutions that have been or are currently being developed for the purpose of accommodating EDI in the law of contracts. Where necessary, consideration is given to some legal issues that are not strictly linked to the formation of contracts. For example, such issues as the form of invoices (see paragraphs 28 and 40 below) arise from the implementation of contracts formed by electronic means. Nevertheless, they must be addressed in this study as a consequence of their possible impact on the increased use of EDI.

I. THE REQUIREMENT OF A WRITING

A. General remarks

10. Legal rules in many States require certain transactions to be concluded in writing. In the 1985 report that led to the adoption of the above stated UNCITRAL recommendation, the requirement of a writing in national statutes as well as in certain international conventions on international trade law was identified as one major obstacle to the increasing use of EDI. Some of those national statutes are mentioned in the 1985 report 9/ and in the TEDIS study (see paragraphs 32 to 41 below).

11. In general, it can be noted that, where the requirement of a writing is contained in contract law, it may have one of three consequences. In one situation, a writing is required as a condition to the existence or the validity of the legal act it bears. Consequently, the non-existence of a writing entails the nullity of the legal act. In a second situation, a writing is required by law for evidentiary purposes. A contract of that kind can be validly concluded by the parties without a writing being required, but the enforceability of the contract is limited by a general rule that requires the existence and contents of the contract to be evidenced by a writing in

case of litigation. Some exceptions to that rule may exist (see paragraph below). In a third situation, a writing is needed to produce some specific legal result beyond that of merely evidencing the contract. This is for example the case of the air cargo carriage contract under the 1929 Warsaw Convention. 10/ Under this text, the issuance of an air waybill is not required as a condition for entering into a contract for the carriage of goods, but it is required to give the carrier the benefit of the provisions of the Convention providing for limitation of liability of the carrier. That rule will be changed when the 1975 Montreal Additional Protocol No. 4 enters into force. Under article III of the protocol, issuance of an air waybill will no longer be required for the carrier to benefit from the provisions limiting its liability.

12. Among the reasons for the requirement of a writing are a desire to reduce disputes by ensuring that there would be tangible evidence of the existence and contents of the contract; to help the parties be aware of the consequences of their entering into a contract; to permit third party reliance on the document; and to facilitate subsequent audit for accounting, tax or regulatory purposes.

13. What constitutes a "writing" is itself a matter of debate. The word has been defined in some countries, though normally by reference to the mode of imposition on the medium rather than by reference to the nature of the medium itself. For example, under the Interpretation Act 1978 in the United Kingdom, 11/ "writing" includes typing, printing, lithography, photography and other modes of representing or reproducing words in a visible form, whilst section 1-201(46) of the Uniform Commercial Code in the United States provides that "written" or "writing" includes printing, typewriting or any other intentional reduction to tangible form. It is probably the case that whenever a statute uses the word "writing" without a definition, the legislator originally expected the writing to be on a traditional piece of paper or some other physical medium permitting the words to be read directly by humans.

14. The definition of a writing has often been extended to include a telegram or telex, as in article 13 of the United Nations Convention on Contracts for the International Sale of Goods. In article 7(2) of the UNCITRAL Model Law on International Commercial Arbitration, the definition of a writing has been further extended to encompass "telex, telegrams, or other means of telecommunication which provide a record of the agreement". Article 4(3) of the draft Convention on the Liability of Operators of Transport Terminals in International Trade provides that "the document...may be issued in any form which preserves a record of the information contained therein". A similar idea is expressed in the definition of "notice in writing" in article 1(4)(b) of the 1988 UNIDROIT Convention on International Factoring, in which a writing "includes, but is not limited to, telegram, telex and any other telecommunication capable of being reproduced in tangible form".

B. A comparative survey of European legislation: the TEDIS study

15. In 1988, the Commission of the European Communities began to implement the TEDIS (Trade Electronic Data Interchange Systems) programme, 12/ which has as one of its purposes the development of an appropriate legal framework for the increased use of EDI in the twelve member States of the European Communities. 13/ One of the first activities in the legal programme of TEDIS was to conduct a general study of legal obstacles to the increasing use of EDI in the twelve member States of the European Communities, as had been recommended in the 1985 UNCITRAL resolution. The results of this study

of national legislation were published in French in 1989 and an English language version is expected to be published soon. 14/ A similar analysis is to be carried out in the near future concerning the national laws of the member States of the European Free Trade Association, which now participate in the TEDIS programme. The complete study is expected to be released before the end of 1990. In addition, the Commission of the European Communities has contracted for "the production of a report analysing the impact of EDI on contract formation and formulating proposals for the adaptation or the reform of the current legal situation." 15/

16. The findings of the TEDIS study, as well as the documents of a TEDIS-EDI Legal Workshop held in June 1989, 16/ provide a valuable indication of what might be expected to exist in the legislation of States not covered in the study since the twelve member States of the European Communities represent several major legal families. While the specific problems may differ from one State to the next, and there may be certain problems in legal systems outside Europe that will not appear in the various TEDIS reports, those reports constitute a good indication of the legal issues that may arise as the use of EDI becomes more general. In particular, they give an indication of issues that would have to be taken into account in any regional or worldwide unification process.

17. One of the findings of the study 17/ was that, in the European Communities, no country had as yet fully adapted its legislation to meet the specific needs and problems related to the development of EDI. According to the study, the most directly relevant legislation was an Italian statute that dealt with the organization of electronic mail as a public service and determined under what conditions documents transmitted electronically through such service could be granted a degree of legal value. Other legislation that was considered in the study dealt only indirectly with EDI. The issues considered in those national laws were:

- the conditions under which computer records can be admitted as evidence in court, with the same evidentiary value as that of the original documents they purport to reproduce;

- the extent to which accounting records can be held electronically and the conditions under which one could be allowed to store the documents or information on which such accounting was based exclusively on computer;

- the possibility of allowing tax or customs declarations to be submitted by electronic means.

18. The TEDIS study makes it clear that, although efforts have been made at the national level to solve some of the problems arising from the use of EDI, and more specifically those related to the legal value of computer records, many other problems, typically those of contract making by electronic means, remain subject to traditional rules. Those rules would need to be interpreted, developed and updated by case law or national administrative practice in order to fit with an EDI environment. The forthcoming TEDIS report on contract formation is expected to give a clearer indication of the extent to which the traditional rules may remain appropriate in an EDI environment.

19. The current TEDIS study 18/ identifies as the principal legal impediments to the increasing use of EDI the requirement that documents be drawn,

transmitted or stored on signed papers and the legal requirements on evidence. This is essentially the conclusion that was reached as regards computer records in the 1985 report.

1. The requirement to draw, deliver, send or store documents on signed papers

20. The reasons for the requirement to draw, deliver, send or store documents on signed papers are varied and the contents of the requirement itself are subject to considerable variation from one legal system to another.

(a) Application to contracts

21. According to the principle of party autonomy, which exists in most legal systems, parties may conclude contracts by any means they agree upon. If the form, or absence of form, chosen for the formation of the contract provides no physical evidence of the common will of the parties to enter into a contract, the enforceability of the contract may be affected but generally not its validity.

22. As an exception to the above stated principle, the TEDIS study notes that most legal systems distinguish between various categories of contracts, some of which could not be validly concluded through electronic means while others, although they could be concluded, would experience specific difficulties in an EDI context.

23. As an example of such exceptions, under many national laws, there exists a category of contracts whose validity depends upon the fulfilment of some formality. Although this category of contracts is more abundant in civil law countries, it is not unknown to the common law systems. It is often the case that the required formality is the conclusion of the contract in written form. Certain contracts, such as the transfer or mortgage of real estate, or some long-term contracts for the lease of real estate, may be subject to additional formalities such as the existence of a notarized writing. In addition, in certain cases, the contracts may have to be registered with a public authority. For some other contracts, the only required formality consists of the written form of the contract, without any additional statutory specification as regards the form of the writing. In several civil law countries, this category encompasses a variety of contracts including, amongst others, the transfer of registered ships, the mortgage of ships or aircrafts and all contracts concluded for the use of ships. In the current situation where little has been done by most national authorities to allow for such required formalities to be completed by electronic means, those solemnized contracts remain outside the scope of EDI.

24. In those legal systems where the requirement of a writing exists, it varies considerably from one national law to another. There are legal acts that are required to be in writing under the law of one or more of the twelve States but not under the law of other member States. Where such a requirement exists, the same sort of writing is not necessarily required by all national laws; for the formation of one single type of contract, a simple signed writing may be required for evidentiary purposes in one State, whereas a notarized writing would be required for validity purposes in another.

25. In general, the TEDIS study 19/ indicates that a writing is required for validity purposes:

- whenever it is necessary to render a transaction opposable to third parties. The formality in this case is generally that the writing should then be authenticated or registered with some public authority;

- whenever a right is incorporated in a document of title or negotiable instrument and the transfer of the right is operated by the transfer of the document of title or negotiable instrument;

- whenever the legislation is intended to protect one party to a contract who might otherwise be in an inferior position vis-a-vis the other contracting party. This is for example the case of certain contracts for the sale of goods to private consumers. 20/

(b) Extent to which it is an obstacle to EDI

26. The mandatory requirement of a writing as traditionally understood as a condition to the validity of a legal act is, in its pure form, a major theoretical obstacle to the increasing use of EDI: as long as the requirement is maintained, EDI as a means of concluding the contract would be excluded.

27. The study of legal systems in the twelve member States of the EEC shows that, in fact, national rules on the exchange of goods and services are not very formalistic. In practice, the need to create paper documents, or to sign or manually authenticate paper documents for purposes of contract formation, is more to be considered as an exception than as the normal requirement between trade partners who would be directly interested in developing EDI relationships. This is partly due to the rules on evidence in commercial litigation as opposed to the rules on evidence in non-commercial litigation (see paragraphs 32 to 34 below).

28. Except for the special needs of evidence and the record keeping requirements for tax or regulatory purposes (see paragraphs 38 to 41 below), no formal condition is required in EEC member States for concluding or drawing most commercial contracts, or for sending purchase orders, general conditions of sale, invoices or the like.

2. Evidence

29. As regards the law of evidence, the TEDIS study broadly distinguishes between the rules applied to litigation in civil law countries and to litigation in common law countries, and the rules governing the retention of business records for tax and regulatory purposes.

(a) Evidence in civil law countries

30. The TEDIS study 21/ notes that the development of EDI meets legal obstacles in civil law countries due to the uncertain value of a copy, since all computer records and computer printouts are copies of an original, whether the original is a paper document or an electronic message.

31. In those cases where a signed original is required in civil law countries, the requirement is made with a view to constituting evidence acceptable by the courts in case of litigation, and also evidence for

accounting, tax or other regulatory purposes. In both cases, the written evidence must be stored and kept available during the entire period of time when litigation can be initiated, or until such time the public authorities are no longer entitled to contest the facts in question.

32. In those countries where a general rule of civil law (as distinguished from commercial law) is that economic transactions can be proven in litigation only by a writing, there are many exceptions. For example, under the law of those countries, a writing is generally not required for transactions of a small amount. It is also the fact that, where a written document that is not the contract itself contains some material in relation with the substance of the contract, it can generally be admitted as evidence. Yet another exception may exist where it is impossible for a party to obtain written evidence of the contract. 22/ It must be pointed out that the general requirement of a writing is considered as an evidentiary requirement of civil law and not of commercial law, where evidence of contracts can be presented to a court in any form.

33. The consequence is that the requirement of a writing does not affect EDI as used for most trading contracts. Since the determination of which rule on evidence applies depends upon the status of the defendant, the rule of civil law applies when a party who is not a merchant is the defendant and the rule of commercial law applies when the defendant is a merchant. In this context, the characterization of the plaintiff as a merchant or as a non-merchant is irrelevant.

34. Even when the civil law rule applies, in many countries the requirement of a written evidence is considered not to be mandatory. It is therefore generally possible for the parties to agree beforehand that contracts they enter into will be evidenced by means other than a writing.

35. The TEDIS study concludes that:

> "- In some member States which, as did Luxembourg, passed specific legislation expressly allowing computer records to be produced in litigation, and giving to such records the same evidentiary value as that of the documents they purport to reproduce, the law of evidence is no longer an obstacle to the development of EDI.
>
> "- In other member States where no specific legislation on electronic documents has been passed and where the requirement of a writing for evidentiary purposes is not a mandatory rule, private EDI networks have developed and should be able to continue to develop in the future, provided that agreements, which could take the form of general conditions applying to all individual transactions concluded within the network, contained an appropriate provision that the record of the transactions would be admitted as evidence.
>
> "- An analysis of the law of evidence in 'continental' legal systems shows that the rule of the signed writing required as evidence of a legal act has very large exceptions which make it rarely applicable to EDI economic transactions. The requirement of a writing for evidentiary purposes in civil law countries would lead to difficulties only in the fields of credit (particularly consumer credit) and insurance, since an insurance contract which has not been agreed upon in writing can generally not be asserted against the insurance company." 23/

(b) Evidence in common law countries

36. The TEDIS study 24/ states that in the common law, the rules of evidence that have a direct impact on EDI are the "hearsay evidence rule" and the "best evidence rule". According to the hearsay evidence rule, subject to certain exceptions, a document is not admissible as evidence for the purpose of proving the truth of the matters stated in the document. According to the best evidence rule, only the original documents should be presented as evidence. 25/ As in civil law countries, there is general agreement that a computer printout is not an original. Both of those rules in their pure form would be serious obstacles to the increasing use of EDI. To overcome them in the United Kingdom, section 5 of the 1968 Civil Evidence Act expressly allowed the use of computer printouts as evidence.

37. The general conclusion of the TEDIS study on evidence in litigation was that, while there were no major obstacles to the development of EDI in civil law countries, and therefore no need for fundamental changes of the rules, the common law countries showed theoretical difficulties which made it necessary to adopt statutory law to meet the needs of EDI.

(c) Evidence in accounting and tax law

38. The conclusions of the TEDIS study 26/ are very different as regards the requirement of a writing for accounting or tax purposes.

39. In some member States, such as Luxembourg, legislation has been revised so as to admit accounting records to be kept exclusively on computers and to admit computer storage of documents or data on which accounting records or a tax declaration is based. In some others, such as Belgium, difficulties arising from the requirement of a writing have been solved by public authorities through codified administrative tolerance. In some other member States, such as Italy, legislation authorizes individual agreements to be concluded with the public authorities permitting one or both of those two uses of the computer.

40. In some States where no such solutions have been implemented, the obligation to keep written accounting records or the obligation to maintain supporting data exclusively on paper constitutes an obstacle to the development of contract formation or implementation through EDI. For example, in Danish law, no general rule determines the form of an invoice. Therefore, an invoice can be validly transmitted by electronic means. However, the data that is supposed to be evidenced by the invoice can be taken into account, according to the rules on accounting and tax, only if a paper original or a certified copy of the paper original is kept. Under French law, a similar practical obligation to deliver written invoices results from price control regulation.

41. In most legal systems where documents can be kept on microfilm or can be computer recorded, the paper originals must generally be kept for a certain period of time and the computer documents must at all times be available and capable of being reproduced in human readable form through a printing device. The TEDIS study does not make it clear whether those legal systems distinguish between a copy of the entire document (including, for instance, manuscript signatures), obtained by recording it in digital form and a simple reproduction of the contents of the original document obtained by re-keying the text into a computer.

C. The report of the American Bar Association 27/

42. A study was initiated in 1987 by the Electronic Messaging Services Task Force under the auspices of the American Bar Association (ABA) to examine the effects of electronic commerce upon fundamental principles of contract law and related legal issues. A first report on "Electronic Messaging" was released in 1988 28/ and the final Report on Electronic Commercial Practices, incorporating a Model Electronic Data Interchange Trading Partner Agreement and commentary, was published in 1990. A presentation of the final report was made to the international EDI community at the thirty-first session of the Working Party on Facilitation of International Trade Procedures of the Economic Commission for Europe in March 1990. 29/ This report, which concentrates on the legal issues related to the sales contract under the law of the United States of America, constitutes a valuable attempt to identify and solve, amongst others, the problems that may arise in a common law country which has maintained the traditional requirement of a writing contained in the Statute of Frauds. The original 1677 Statute of Frauds was passed in the United Kingdom with a view to reduce the frauds involved in contracts at a time when the law of evidence was undeveloped. Among other evidentiary rules, it required certain types of contract to be evidenced in prescribed written modes. This requirement in regard to a contract for the sale of goods is set out in section 2-201 of the Uniform Commercial Code as follows:

> "A contract for the sale of goods for the price of $500 or more is not enforceable unless there is some writing sufficient to indicate that a contract has been made between the parties and signed by the party against whom enforcement is sought."

43. The report also notes that the United States has ratified the United Nations Convention on Contracts for the International Sale of Goods and that, as a result, no writing is required for contracts of sale subject to that Convention.

44. The report notes that the definition of "writing" and of "signature" can be of particular importance (see paragraph 13 above). Potential difficulties can be overcome either by a mutual agreement that, in respect of future EDI communications constituting an offer or acceptance of a contract, the parties will not assert a defence based upon the Statute of Frauds, or by a special provision in their trade agreement that the parties agree to consider EDI communications as "written" and "signed" messages. However, one of the important findings of the report is that, even when EDI users enter into communication agreements with one another, they seldom address the problems resulting from the Statute of Frauds. Since EDI is currently used mainly between trading partners with a long-term relationship, a failure to address the Statute of Frauds problems has apparently not led to serious difficulties or, at least, those difficulties have not resulted in litigation. However, such problems can be expected to arise when EDI is used more widely and in a more open environment.

45. The report notes that, although a number of exceptions to the application of the Statute of Frauds have been recognized by the Courts, no case law exists regarding EDI. After analysing commercial practices, the authors of the report conclude that:

> "The issue is whether the records of EDI communications, which are increasingly relied upon by businesses themselves, are acceptable within the 'signed writing' concepts of the Uniform Commercial Code and related

case law. Alternatively, in light of the repetitive nature of the use of EDI to complete commercial transactions and the mutual efforts of trading partners required to structure and maintain appropriate communication systems and security procedures, the issue may be whether either trading partner may be estopped from asserting the Statute of Frauds against the other to avoid the enforcement of any underlying contract for the sale of goods. Several members of the Task Force were reasonably confident the Statute of Frauds would not, under either analysis, preclude enforcement." 30/

46. On this point, the report concludes that there is a need for trading partners to adopt some form of a bilateral agreement governing their EDI relations and to make sure that this agreement addresses the Statute of Frauds issues.

47. It was pointed out in the ABA Report that:

"The failure of the Uniform Commercial Code to specifically accommodate the electronic communication of data has not been fatal to either the continued growth of electronic commercial practices or the continued vitality of the Code itself. ... Yet the existence of a less than ideal fit ... has had an impact upon adoption of EDI in commercial use." 31/

This remark may be applied to most national legislation where legal issues may have to be reconsidered with a view to the accommodation of EDI.

II. OTHER LEGAL ISSUES RELATED TO THE FORMATION OF CONTRACTS

A. Acknowledgement of receipt of messages

48. A significant feature of EDI is that a prompt and reliable acknowledgement that a message has been received is possible for an insignificant cost. At some greater cost, resulting from more extensive computer processing, it is possible to verify that the message has been received intact without communication errors. At a still greater cost, encryption techniques are available that permit, in a single operation, the verification of both the non-alteration of the message and the certain identity of the sender (see paragraphs 55-56 below).

49. Several of the rules and model communication agreements recently developed include special provisions encouraging systematic use of "functional acknowledgements" and verification procedures. Acknowledgement of receipt merely confirms that the original message is in the possession of the receiving party and is not to be confused with any decision on the part of the receiving party as to agreement with the content of the message. Nevertheless, an acknowledgement of receipt serves to eliminate many of the problems that have long been debated when contracts have been concluded by distant parties.

B. Authentication of messages

50. Although an authentication procedure required by law must be in the form prescribed, an authentication method required by the parties can consist of any mark or procedure they agree upon as sufficient to identify themselves to one another.

51. The 1985 UNCITRAL recommendation (see paragraph 2 above) also identified the legal requirements of a handwritten signature or other paper-based method of authentication as an obstacle to EDI. In line with this recommendation and a 1979 recommendation by the ECE Working Party on Facilitation of International Trade Procedures, which had expressed a similar concern, 32/ efforts are being made by the TEDIS group within the EEC to encourage the removal of mandatory requirements for handwritten signatures in national legislation. Similar efforts are being made in a number of other countries.

52. In spite of such efforts, the most common form of authentication required by national laws remains a signature, which is usually understood to mean the manual writing by an individual of his name or initials. Legal systems increasingly permit the required signatures of some or all documents to be made by stamps, symbol, facsimile, perforation or by other mechanical or electronic means. This trend is most evident in the law governing transport of goods, where all the principal multilateral conventions that require a signature on the transport document permit that signature to be made in some way other than by manual signature. 33/

53. However, it can be recalled that, even though manual signature, or its physical reproduction by mechanical or other means, is familiar and inexpensive and serves well for transaction documents passing between known parties, it is far from being the most efficient or the most secure method of authentication. 34/ A manual signature can be forged and a stamp can be applied by anyone into whose possession it comes. The person relying on the documents often has neither the name of the persons authorized to sign nor specimen signatures available for comparison. This is particularly true of many documents relied upon in foreign countries in international trade transactions. Even where a specimen of the authorized signature is available for comparison, only an expert may be able to detect a careful forgery. Where large number of documents are processed, signatures are sometimes not even compared except for the most important transactions.

54. Some new techniques have been developed to authenticate electronically transmitted documents. As regards identification of the transmitting machines, telex and computer-to-computer telecommunications often employ call back procedures and test keys to verify the source of the message. Where cryptography is not forbidden by law, an algorithm can be used for the coding of the text, the reading of which requires application of the corresponding decoding key. For example, such a system is used by the the Society for Worldwide Interbank Financial Telecommunications S.A. (S.W.I.F.T.), which recently adopted a new authentication algorithm. The secret key is intended to be long enough and the algorithm is said to be "sufficiently resource-hungry" to discourage any one from attempting all the possibilities. 35/ Techniques combining several keys can also be used as a means of identifying the operator of the sending machine. A text using modern cryptography could not be deciphered by an unauthorized person in a commercially significant period of time.

55. More generally, as regards identification of persons in an EDI context, verification procedures can be based upon one or more of three parameters: what the operator knows (passwords, secret codes), what the operator holds (microcircuit cards) or what the operator is (biometrics). Of the three, biometrics (i.e. the physical characteristics of the operator) is the most exact. Six biometric technologies are currently available: retina scans which record the eye signature of an individual and store it in a microprocessor;

thumbprint or fingerprint identification systems; hand geometry systems which measure, record and compare finger length, skin translucency, hand thickness or palm shape; voice verification devices which record voice patterns and inflections; signature verification devices which trace either the static or dynamic characteristics of a person's signature; keystroke dynamics which identify individuals by their typing patterns and rhythms. All of these biometric products compare the stored templets with fresh patterns or scans to allow or deny access to the secured mechanism. 36/

56. Electronic forms of authentication using computers offer one major advantage over visual comparison of manual signatures. The procedure is so rapid and relatively inexpensive, except for biometric techniques, which are currently too expensive for general commercial use, that every authentication can be verified as a routine matter. There is no need to restrict verification to the most important transactions.

57. An individual document sent by telecommunications can be confirmed by a subsequent signed writing, as has been a customary practice in regard to telegrams and telex. Although in many cases this could be seen as defeating the purpose of EDI, it has been reported that such a practice is common among EDI users. 37/ However, two parties who anticipate communicating frequently by EDI may agree in writing beforehand on the form of the communications and the means to be used to authenticate the documents. It could be expected that such an agreement would be sufficient to allow the use of the record of the EDI message as evidence. A similar agreement may be also required by an administrative organ of the State before it will accept documents in electronic form, whether by telecommunication or by manual transmission of a computer memory device such as a diskette or magnetic tape.

58. It is clear that the fundamental issue at the heart of all aspects of the legal admissibility of digitally transmitted and processed data and information is that of the legal reliability of information and communication technology.

> " 'Legal reliability' actually implies 'demonstrably and unarguably high standards of authorization, operational and access control and management' of use of information and communication technology systems. 'Authorization' further implies 'accurate, precise and dependable identification, verification and authentication technologies and techniques which are, or may become, as legally acceptable as the conventional trust and comfort of a manual signature written in ink on paper' ". 38/

59. However, the extent to which such methods would receive legal recognition in States where signature is required by law for a particular document remains a matter of great uncertainty. Where the law has not been interpreted by the courts or other reliable source so as to consider an electronic form of authentication as a "signature", it is likely that this uncertainty will be overcome only by legislation. A question for consideration is how far such legislation, when specifically permitting or requiring authentication to be made by EDI, should require evidence of conformity with an applicable EDI protocol, at least as a condition of attracting a presumption of authenticity, the onus of proof being shifted to the party asserting the authenticity of the message in cases where the requirements of the protocol are not satisfied.

C. Consent, offer and acceptance

60. The expression of will through distant machines has long been admitted in case law in view of the fact that those machines were closely controlled by human beings. It is to be noted that the quality of the communication that can be offered by EDI technology is such that errors in the transmission of messages are likely to be less frequent than with more traditional techniques. Therefore, the risk of a discrepancy between the message as it is sent and the message as it is received is probably lessened by the adoption of EDI. As regards quality of communication between computers, the use of a common and structured application protocol such as EDIFACT (Electronic Data Interchange for Administration, Commerce and Transport) is essential for the increasing use of international EDI (see paragraph 79 below).

61. In contrast with various traditional communication techniques, including post, telephone and telex, EDI creates new opportunities for the automation of the decision-making process. For example, a purchaser's computer may be programmed to send purchase orders under certain circumstances, and the supplier's computer may be programmed to act upon the orders it receives, both without human intervention. This situation may increase the possibility that, due to the lack of a direct control by the owners of the machines, a message will be sent, and a contract will be formed, that does not reflect the actual intent of one or more parties at the time when the contract is formed. For the same reason, this situation undoubtedly increases the possibility that, where a message is generated that does not reflect the sender's intent, the error will remain unperceived both by the sender and by the receiver until the mistaken contract has been acted upon. The consequences of such an error in the generation of a message might therefore be greater with EDI than with traditional means of communication.

62. As a general rule, one cannot be bound by a contract to which one has not given one's consent. However, in many legal systems, the owner of a terminal, in certain cases, might be bound by contracts to which he had not personally given his consent, 39/ such as in the examples given in the previous paragraph. In the absence of contractual provisions dealing with that situation, the purchaser might be bound on several legal grounds including the risk he assumed in implementing an automatic purchase ordering system and, under some national laws, the apparent will that was expressed in the message. 40/

63. If the author of a contractual offer or acceptance contends that there is a discrepancy between his apparent will as reflected in the electronic transmission and his actual will, some legal systems provide for mechanisms that allow him to establish his actual will in the absence of a fault or of a negligence on his part. Legal rules on error, which to some extent would also apply in the case of fraud, exist in most legal systems, but national laws differ greatly as to whether or not the consequences of the error are to be borne by the person whose message has been altered (see paragraph 76 below).

64. The variety and complexity of national laws as regards the expression and validity of consent in the contract-making process, as well as the revocability of an offer, illustrate the need for parties to conclude a communication agreement dealing with that issue prior to the establishment of an EDI relationship, as is sometimes done for "just-in-time" supply contracts.

D. General conditions 41/

65. As regards general sale conditions, the major problem is to know to what extent they can be asserted against the other contracting party. In many countries, the courts will consider whether it can reasonably be inferred from the context that the party against whom general conditions are asserted has had an opportunity to be informed of their contents or whether it can be assumed that the party has expressly or implicitly agreed not to oppose all or part of their application.

66. Some legal systems permit that,

> "where trading partners have an established history of dealing on known standard terms, the terms may be incorporated into individual transactions by custom or usage, without the exchange of a document on each individual occasion. However, the longer two trade partners deal without actually exchanging formal terms of dealing, the weaker the foundation for that implication of customary usage may become". 42/

In any case, such usage would not exist in the case of a new trading relationship between partners who do not have an "established history" of dealing with each other.

67. EDI is not equipped, or even intended, to transmit all the legal terms of the general conditions that are printed on the back of purchase orders, acknowledgements and other paper documents used by trading partners. A solution to that difficulty is to incorporate the standard terms in a communication agreement between the trading partners. It has been remarked that:

> "one of the most salutary effects that the introduction of EDI could have on business practices would be to require the formulation of mutually acceptable (and therefore more reliable) terms of dealing between important trading partners through the conscious negotiation of new master agreements". 43/

68. One suggestion that has been made where the parties cannot settle on common standard terms is that they attach their respective paper forms to the communication agreement. It is possible for the agreement to provide

> "that each of buyer's purchase order transaction sets will be deemed to incorporate the terms on the back of the buyer's form and that each of seller's purchase order acknowledgements will be deemed to incorporate seller's terms." 44/

Thus, the conflicting standard terms would effectively be exchanged through EDI. While this technique would permit the parties to reach an agreement on the main issues, it would leave the same uncertainty as to the applicable terms of the general conditions as if they had exchanged the traditional paper forms.

E. Time and place of formation of the contract

69. Parties to a contract have a practical interest in knowing, with some certainty, where and when the contract is formed. When the contract is formed, the parties become bound by the legal obligations they have agreed upon and the contract may start producing effects. In different legal systems,

the time when the contract is formed may determine such issues as the moment when the offeror is no longer entitled to withdraw his offer and the offeree his acceptance; whether legislation that has come into force during the negotiations is applicable; the time of transfer of the title and the passage of the risk of loss or damage in the case of the sale of an identified good; the price, where it is to be determined by market price at the time of the formation of the contract. In some countries, the place where the contract is formed may also be relevant for determining the applicable customary practices; the competent court in case of litigation; and the applicable law in private international law. 45/

70. When dealing with the topic of contract formation, most systems distinguish between two situations: in the first one, the parties are in each other's presence and are able to communicate instantaneously or without any significant lapse of time; in the second one, the parties are not in each other's presence and the means of communication utilized to transmit offers, acceptances, modifications, revocations and other messages result in a delay between the dispatch and receipt of those communications.

71. Since a contract requires mutual assent of the parties, many legal systems agree that a contract is formed when both parties are aware of each other's consent. However, when parties communicate through a non-instantaneous or delayed media, such as mailed writings, the party who receives a message cannot verify that the sender's will at the time the message was sent remains the same at the time the message is received. Neither can either party verify in a timely fashion that receipt of the message has occurred and that the message is received without errors.

72. Two main theories, each with a variant, are used to overcome this problem to which no fully satisfactory solution is known. The receipt rule - with its variant: the information rule - states that the contract is formed when the offeror receives notice, or is informed, of the offeree's consent. The declaration rule - with its variant: the dispatch rule - states that the contract is formed when the offeree declares or sends his acceptance of the offer to the offeror. In the case of written mail, many legal systems have adopted some form of the dispatch rule. 46/ It may also be recalled that articles 18 and 23 of the United Nations Convention on Contracts for the International Sale of Goods state that the contract is formed at the moment the indication of assent reaches the offeror.

73. It is generally admitted that, under normal circumstances, a telephone communication is instantaneous, faithful and secure enough for a contract concluded by telephone to be treated as though it had been made in both parties' presence. Indeed, all other communication systems can also be classified by reference to the same three criteria: the degree of instantaneousness, the quality of the dialogue and the security of the communication. 47/

74. Modern means of communication are expressly addressed by some legal systems, and considered according to their degree of instantaneousness. For example, section 64 of the American "Restatement on Contracts (second)" states that

> "telephone or other medium of substantially instantaneous two-way communication is governed by the principles applicable to acceptances where the parties are in the presence of each other".

In other systems, case law considers the particular problem of contract formed by telex. It has been stated that, telex transmission being instantaneous, the expedition rule should not apply to such contracts. 48/ But it has also been suggested that, where communication by telex is not instantaneous (as, for example, where the message is sent out of office hours or at night, or by a third party's telex machine), the time and place of the formation of a contract so made by telex could be resolved only by reference to the intention of the parties, by sound business practice and in some cases by judgment where the risk should lie, and not by applying a universal rule. 49/

75. The question of the time and location of the formation of an EDI contract is identified in the TEDIS study as the one which receives the widest variety of solutions within national legislations in the EEC. The same question is addressed by the ABA report and may be regarded as one important issue to be settled in a communication agreement.

F. Risk of failure of communication

76. A question that is not directly related to the formation of contracts but that needs to be addressed within the contractual framework of an EDI relationship is the determination of which party is to bear the risk of a failure in communication of an offer, acceptance or other form of communication intended to have a legal effect, such as an instruction to release goods to a third party. The question of liability for failures in communication should also be considered in respect of the relations between the communicating parties and those providing the communication network.

III. COMMUNICATION RULES AND AGREEMENTS

77. With paper, most fundamental issues on how to communicate have been understood for a long time, even though they have not always been solved the same way in all legal systems. With telex and telegrammes, there has been no major difficulty in adapting the solutions that had been developed for paper communication, although the solutions vary.

78. EDI is sufficiently different from other forms of communication that a certain number of questions relating to the nature of the communication itself should be considered by parties intending to communicate with EDI. Some are generic questions which include, amongst others, agreement on common message standards. Other communication questions are specific to the nature of the intended contract.

79. The need for common or compatible message standards is easily met within a closed-user group where parties adhere to a common organization. An example of such a closed-user group is the S.W.I.F.T. system for funds transfers between banks. The S.W.I.F.T. rules specify the standard structured messages that are to be used, as well as such matters as when terminals are to be open to receive messages. However, the need for common standards is not so easily met when the communicating parties do not belong to such a closed-user group. In order to provide for such common standards, the Working Party on Facilitation of International Trade of the Economic Commission for Europe has been developing and will continue to develop the United Nations rules for Electronic Data Interchange for Administration, Commerce and Transport (UN/EDIFACT), which are defined as follows:

"They comprise a set of internationally agreed standards, directories and guidelines for the electronic interchange of structured data, and in particular that related to trade in goods and services, between independent computerized information systems.

"Recommended within the framework of the United Nations, the rules are approved and published by the UN/ECE in the United Nations Trade Data Interchange Directory (UNTDID) and are maintained under agreed procedures. UNTDID includes:

- EDIFACT syntax rules (ISO 9735);
- Message design guidelines;
- Syntax implementation guidelines;
- EDIFACT Data Elements Directory, EDED (a subset of UNTDED);
- EDIFACT Code List, EDCL;
- EDIFACT composite data elements Directory, EDCD;
- EDIFACT standard segments Directory, EDSD;
- EDIFACT UNSMs Directory, EDMD;
- Uniform Rules of Conduct for the Interchange of Trade Data by Teletransmission (UNCID);
- Explanatory material, as appropriate". 50/

80. Both the TEDIS study and the ABA report come to the conclusion that, when EDI is used outside the ambit of closed-user groups, it is desirable to have some form of a framework communication agreement in which the parties agree on the manner in which they will communicate with EDI. Indeed, many efforts that have been or are being made in the legal field for the promotion of EDI involve the production of such communication agreements.

81. The existence of a communication agreement implies a pre-existing relationship between the communicating parties. This is the normal business situation where EDI is most likely to be used at the present time. Nevertheless, it indicates a limitation on the use of such agreements in a truly open environment.

A. The UNCID Rules

82. The first effort accomplished by the international EDI community to harmonize and unify EDI practices resulted in the adoption of the Uniform Rules of Conduct for Interchange of Trade Data by Teletransmission (UNCID) by the International Chamber of Commerce (ICC) in 1987 (ICC Publication No. 452, 1988). UNCID was prepared by a special joint committee of the ICC in which the United Nations Economic Commission for Europe (ECE), the Customs Co-operation Council (CCC), the UNCTAD Special Programme on Trade Facilitation (FALPRO), the Organization for Economic Co-operation and Development (OECD), the International Organization for Standardization (ISO), the Commission of the EEC, the European Insurance Committee, the Organization for Data Exchange via Teletransmission in Europe (ODETTE) and the Secretariat of UNCITRAL were represented.

83. Although the first draft of UNCID was based on the idea of creating a model communication agreement, it was found that, due to the differing requirements of various user groups, the creation of a model communication agreement was an impracticable objective at such an early stage of development of EDI techniques. It was therefore decided to create a small set of non-mandatory rules on which EDI users and suppliers of network services would be able to base their communication agreements. UNCID was also incorporated

into EDIFACT (see para 79 above) as part of the United Nations Trade Data Interchange Directory. Although UNCID constitutes a limited achievement, it also represented a major step in the development of a legal framework for EDI, both because it furnished a basis for preparing individual communication agreements and because it served as a first effort that could later be used to reach a higher level of refinement.

84. UNCID has no implications for the substance of the underlying agreement. It aims "at facilitating the interchange of trade data effected by teletransmission, through the establishment of agreed rules of conduct between parties engaged in such transmission. Except as otherwise provided in these rules, they do not apply to the substance of trade data transfers" (art. 1).

85. UNCID defines some elements of EDI terminology (art. 2). It contains rules that call for the parties to an EDI agreement to provide, among other things, for care in transfering and receiving correct and complete messages (art. 5); identification of the parties throughout the communication process (art. 6); acknowledgement of receipt of a message, if requested (art. 7); verification of the completeness of the received message (art. 8); protection of some or all of the commercial information exchanged (art. 9); maintenance of records of the transmissions and storage of data (art. 10).

86. The introductory note to UNCID indicates that those rules can be considered only as preliminary to further agreements. It outlines

> "certain elements that should be considered in addition to UNCID, when formulating an agreement:
>
> 1. There is always a risk that something may go wrong - who should carry that risk? Should each party carry its own or would it seem possible to link risk to insurance or to the network operator?
> 2. If damage is caused by a party failing to observe the rules, what should be the consequences? This is partly a question of limitation of liability. It also has a bearing on the situation of third parties.
> 3. Should the rules on risk and liability be covered by rules on insurance?
> 4. Should there be rules on timing, e.g. the time within which the receivers should process the data etc.?
> 5. Should there be rules on secrecy or other rules regarding the substance of the data exchanged?
> 6. Should there be rules of a professional nature - such as the banking rules contained in S.W.I.F.T.?
> 7. Should there be rules on encryption or other security measures?
> 8. Should there be rules on 'signature'?
>
> It would also seem important to have rules on applicable law and dispute resolution." 51/

B. Model communication agreements

87. Subsequent to the publication of UNCID, several model communication agreements have been prepared for general use. Particular mention might be made of the EDI Association of the United Kingdom (UK-EDIA) Standard Interchange Agreement, which was issued in March 1988, and the American Bar Association Trading Partners Model Agreement, which was introduced at the thirty-first session of the Working Party on Facilitation of International Trade Procedures of the Economic Commission for Europe in March 1990. 52/ The

two model agreements cover many of the same substantive questions, but each was drafted in the context of the domestic law of the country in question.

88. The TEDIS group within the Commission of the European Communities has begun the preparation of a European Model Interchange Agreement. While this effort takes into account the model agreements that have already been issued, changes are envisaged to take into account the usages and legal requirements of the twelve member States of the European Communities.

89. The draft "Rules for the Electronic Transfer of Rights to Goods in Transit", prepared by the Comité Maritime International (CMI), (Paris, 16 January 1990), constitute a sectoral approach to EDI, with a view to their being applicable in a truly open environment. The draft Rules not only contain substantive rules that address the question of the replacement of the traditional bill of lading by an EDI message, but also contain provisions on communication issues. Those provisions are based upon the UNCID rules and they functionally constitute a communication agreement.

CONCLUSION

90. The Commission may wish to request the Secretariat to complement this preliminary report with a further report to the next session of the Commission. The report to be submitted to the next session might indicate developments in other organizations during the year relevant to the legal issues arising in EDI. The report might also analyse existing and proposed model communication agreements with a view to recommending whether a model agreement should be available for world-wide use and, if so, whether the Commission should undertake its preparation.

NOTES

1/ Report of the United Nations Commission on International Trade Law on the work of its seventeenth session, Official Records of the General Assembly, Thirty-ninth Session, Supplement No. 17 (A/39/17), para. 136.

2/ A/CN.9/254.

3/ A/CN.9/265.

4/ Official Records of the General Assembly, Fortieth Session, Supplement No. 17 (A/40/17), para. 360.

5/ United Nations Commission on International Law Yearbook, 1985, vol. XVI, Part One, D. (United Nations publications, Sales No. E.87.V.4).

6/ A/CN.9/279 and A/CN.9/292.

7/ Official Records of the General Assembly, Forty-third Session, Supplement No. 17 (A/43/17), paras. 46 and 47.

8/ Official Records of the General Assembly, Forty-fourth Session, Supplement No. 17 (A/44/17), para. 289.

9/ See A/CN.9/265, Annex, question 11.

10/ The Convention for the Unification of Certain Rules Relating to International Carriage by Air, Warsaw, 12 October 1929, articles 5 to 9.

11/ Interpretation Act 1978, Schedule 1.

12/ Official Journal of the European Communities, L 285, 8 October 1987.

13/ See A/CN.9/292, paras. 24 and 25.

14/ TEDIS - Situation juridique des Etats membres au regard du transfert électronique de données, (Brussels, Commission of the European Communities, 1989).

15/ Official Journal of the European Communities, C 230, 7 September 1989.

16/ The TEDIS-EDI Legal Workshop, (Brussels, Commission of the European Communities, 1989).

17/ TEDIS - Situation juridique ..., (see note 14 supra), pp. 251-252.

18/ Ibid., pp. 254 ff.

19/ Ibid., pp. 256-257.

20/ For example, under some statutes adopted for the protection of private consumers, deferred payment sales and sales contracts concluded at the domicile of the buyer must be made in writing. There generally exists no such requirement for contracts concluded within automatic teller systems or point-of-sale systems.

21/ TEDIS - Situation juridique ..., (see note 14 supra), p.260.

22/ For an example of such a rule and some exceptions, see articles 1341, 1347 and 1348 of the French Civil Code.

23/ TEDIS - Situation juridique ..., (see note 14 supra), p. 263. The translation of the original French text was made by the Secretariat.

24/ Ibid., pp. 265-266.

25/ See A/CN.9/265, paras. 27 to 48.

26/ TEDIS - Situation juridique ..., (see note 14 supra), pp. 263-266.

27/ The Commercial Use of Electronic Data Interchange - A Report, (Chicago, Illinois, American Bar Association, 1990). To be published in The Business Lawyer, vol. 44 (1990).

28/ Electronic Messaging. A Report of the Ad Hoc Subcommittee on the Scope of the UCC, (Chicago, Illinois, American Bar Association, 1988).

29/ See TRADE/WP.4/GE.1/79, paras. 37 and 38.

30/ The commercial use of EDI ..., (see note 27 supra), pp. 69-70.

31/ Ibid., pp. 28-29.

32/ See TRADE/WP.4/INF.63; TD/B/FAL/INF.63; also quoted in A/CN.9/265, note 28.

33/ A/CN.9/225, para. 47.

34/ See A/CN.9/265, paras. 49 to 58.

35/ S.W.I.F.T. Newsletter, April-May 1990, p. 12.

36/ Stephen Castell, "The legal admissibility of computer generated evidence towards 'legally reliable' information and communications technology (IACT)", The Computer Law and Security Report, vol. 5, issue 2, (July-August 1989), p. 6 ff.

37/ The commercial use of EDI ..., (see note 27 supra), p.18.

38/ The APPEAL Study (appendix on evidence admissible in law), (London, Central Computer and Telecommunication Agency, British Treasury, 1988), quoted by S. Castell, (see note 36 supra), pp. 7-8.

39/ For a discussion of the issues of consent in contracts made by electronic means, see Ettore Giannantonio, Trasferimenti Elettronici dei Fondi e Autonomia Privata, (Milano, Giuffrè Editore, 1986).

40/ Bernard E. Amory, "EDI and the conclusion of contract", The TEDIS-EDI Legal Workshop, (see note 16 supra).

41/ Bradley Crawford, "Strategic legal planning for EDI", Canadian Business Law Journal, vol. 16, December 1989, pp. 66 ff.

42/ Ibid., p. 69.

43/ Ibid., p. 70.

44/ See Benjamin Wright, EDI and American Law - A Practical Guide, (Alexandria, Virginia, TDCC: The Electronic Data Interchange Association, 1989), p. 30.

45/ Bernard E. Amory, "EDI and the conclusion of contract", The TEDIS-EDI Legal Workshop, (see note 16 supra).

46/ In France, see Cour de Cassation, Req. 21 March 1932 (Recueil Sirey, 1932.1.278); Com. 7 January 1981 (Bull. civ. IV. 11).

In the United Kingdom, where the normal rule is that an offer is accepted by the communication of the acceptance to the offeror, the Postal administration is considered as the agent of the offeror for the purpose of communicating the acceptance. See Entores, Ltd. v. Miles Far East Corp. (1955), All England Law Reports, p. 493.

In the USA, section 63 of the "Restatement on Contracts (second)" states that "Unless the offer provides otherwise, an acceptance made in a manner and by a medium invited by an offer is operative and completes the manifestation of mutual assent as soon as put out of the offeree's possession, without regard to whether it ever reaches the offeror; ...".

47/ See Bernard E. Amory and Marc Schauss, E.D.I. as a way to perform and conclude contracts, (paper presented to the COMPAT 88 conference on computer aided trade, The Hague, 1988) and "Formación de contratos: comunicación de la oferta y de la aceptación al oferente", La validez de los contratos internacionales negociados por medios electrónicos, (Madrid, Centro de estudios comerciales, Cámara de comercio e industria de Madrid, 1988).

48/ Entores, Ltd. v. Miles Far East Corp. (see note 46 supra), and Brinkibon Ltd. v. Stahag Stahl- und Stahlwarenhandelsgesellschaft mbH (1982), All England Law Reports, p. 293.

49/ Statement by Lord Wilberforce in Brinkibon (note 48 supra), also quoted by S.Harvey and J. Newman in "Contracts by electronic mail: some issues explored", The Computer Law and Security Report, vol. 3, issue 6, (March-April 1988), p.2 .

50/ TRADE/WP.4/171, para. 15.

51/ UNCID, pp. 10-11.

52/ TRADE/WP.4/R.652 and TRADE/WP.4/R.652/Corr.1.