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联合国国际贸易法委员会
第十六届会议
1983年5月24日至6月3日，维也纳

工作的协调

自动数据处理所涉及的法律问题

秘书长的说明

1. 委员会在其第十五届会议上审议了秘书处提出的两份部分涉及自动数据处理所引起法律问题的报告。一份报告载有电子处理资金过户所引起某些法律问题的论述（A/CN.9/221）。第二份报告载有在运输单据领域里其他组织的工作的论述，特别强调了简化贸易手续运动的效果和制作这些单据时利用自动数据处理的效果（A/CN.9/225）。

2. 关于电子处理资金过户问题

> “委员会决定，秘书处应同贸易法委会国际支付研究小组合作，着手编制一份关于电子处理资金过户的法律指南。……委员会又请秘书处向委员会将来一届会议提出一份关于计算机记录的法律价值问题的一般性报告。”[1]

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[1] 联合国国际贸易法委员会第十五届会议工作报告，《联合国大会正式记录，第三十七届会议，补编第17号》（A/37/17），第73段。

3．关于运输单据问题，“该报告所载关于秘书处应继续监测这方面的发展的建议受到欢迎；还要求秘书处随时通知委员会它将来可能采取的任何行动。”[2]

4．在委员会第十五届会议以后，委员会秘书处收到欧洲经济委员会执行秘书1982年11月23日的来信，这封信是应欧洲经委会和贸发会议联合成立的简化国际贸易手续工作队的要求而发出的。 这封信叙述了工作队在电信传送贸易数据方面的活动，经复制载于附件一。 这封信还附上了1982年9月提交给工作队第十六届会议的文件TRADE/WP.4/R.185/Rev.1。 这份经复制而载于附件二的文件[3]叙述了工作队在从事这些活动时所遇到的法律性质的问题并提出了由主管的国际机构采取行动的建议。

5．文件中所得出的并为工作队所支持的结论是：

> “迫切需要采取国际行动确立有关法律上接受电信传送贸易数据的规则。 既然这主要是个国际贸易法问题，联合国国际贸易法委员会（贸易法委会）似应成为讨论这个问题的主要机构。”（TRADE/WP.4/R.185/Rev.1，第4段）

6．工作队在其第十六届会议上请求欧洲经委会秘书处将该文件送交委员会和其他主管提出的法律问题各个具体方面的国际机构。 该届会议报告还指出，它

> “同意欧洲经委会秘书处在将研究报告送交贸易法委会和其他有关国际组织的秘书处时，应该提及在不发生不应有迟延的情况下寻求适合于一切法律体系的解决办法对世界贸易的重要性。”（TRADE/WP.4/141，第15段。）

7．委员会秘书处对欧洲经委会执行秘书来信的复文叙述了委员会已经在有关自动数据处理引起的法律问题方面所采取的行动。 此外，为了确定委员会作为国际贸易法领域的核心法律机构在这方面可能进行协调的范围，已将复文抄件连同一

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[2] 同上，第104段。

[3] 这份文件是按照从欧洲经委会收到的英文、法文或俄文工作语文文本之一复制而载于附件二的。

项希望提供关于其有关活动的任何情报的要求送交欧洲经委会发过信的各个国际组织。 秘书处收到的复文对这些问题的各种方面表示了广泛的兴趣。

结论

8. 当委员会决定编制一份关于电子处理资金过户的法律指南并请秘书处向委员会将来一届会议提出一份关于计算机记录的法律价值问题的一般性报告时，已经决定就工作队表示关心的一些问题采取某些行动。 此外，委员会还表示它对电信传送贸易数据对制作运输单据产生的效果感兴趣。 同样，其他国际组织在它们专门主管的部门也开展了活动。 然而，对这些活动不进行适当的协调，就可能得出自相矛盾的结果，重要的问题也可能被忽略。

9. 委员会似宜同意简化国际贸易手续工作队的下述意见：文件 TRADE/WP.4/R.185/Rev.1 指出的法律问题对国际贸易是重要的，应在不发生不应有迟延的情况下找出适合于一切法律体系的解决办法。 委员会还似宜同意工作队的下述意见：既然这主要是个国际贸易法问题，委员会似应成为采取和协调必要行动的主要机构。

10. 秘书处打算向第十七届会议提交一份报告，介绍委员会为协调有关这方面的各项活动而可能采取的行动，同时铭记各有关国际组织所主管的领域。

附件一

1982年11月23日欧洲经济委员会执行秘书给联合国国际贸易法委员会秘书的信

亲爱的先生：

为国际贸易确立的规章和惯例中所规定的提供单据的要求，使商业界和有关当局不得不支付高额费用。 他们经常提到，为填写大量表格——大约有一百种不同的单据——所花的费用平均起来占货物价值的百分之十；在这些表格中要填写有关销售、转运、运输、保险、支付货款和满足出口／进口要求的情况。

为了限制这些高额费用，贸易发展委员会这一欧洲经济委员会主要的附属机构于1963年成立了一个工作队来简化国际贸易手续。 该工作队为制作全套贸易单据订立了一个欧洲经委会所推荐而现已在世界范围内采用的标准，从而使采用符合这种标准的贸易单据的企业大大减少了费用。

随着以后技术的发展，过去五年来工作队的注意力已从单据的标准化转向目前国际贸易交易所使用的数据成分标准化和这种数据成分的自动交换。

许多不同种类的数据现在利用传送情报的终端设备自动传送出去，由于这种迅速无误地交流为决策和进一步自动处理所需的情报而产生的经济收益已经完全实现。现在国内和国际正作出巨大的努力来利用由于通过各种不同的电信技术把电子计算机和其他办公室机器连接起来而提高了的生产力。

简化国际贸易手续工作队在其有关贸易数据成分标准化和统一贸易数据成分交换规则的工作中已经找出一些属于法律性质的问题，但是由于这些问题需要在比简化贸易手续更广泛的范围内去解决，因而该工作队不愿对此继续进行研究。 与这些问题相关联的问题中有：

— 在法庭能否允许使用电信传送的数据作为证据？和

— 能否接受结关时使用电信传送的数据？

工作队在其1982年9月召开的第十六届会议上特别提到由丹麦、芬兰、挪威

和瑞典的代表团送交的文件TRADE/WP.4/R.185/Rev.1，在这份文件里指出了工作队在它的工作中所遇到的属于法律性质的主要问题和向主管国际机构提出的行动建议。

工作队请求欧洲经委会将该文件送交该研究报告中提到的国际机构和其他有关的国际组织，

“以便其各该秘书处将文件中提出的问题提交给它们的主管机构，以求就旨在统一关于这类事宜的规则的国际工作达成可能的协议。”（TRADE/WP.4/R.185/Rev.1，第5段）

关于这一点，工作队请求秘书处在传送文件TRADE/WP.4/R.185/Rev.1的函中提到：

“迫切需要对通过传统书面文件以外的其他手段承担义务或者获得权利的商业合伙人给予法律担保。”

并强调

“……在不发生不应有迟延的情况下找出适合于一切法律体系的解决办法对世界贸易的重要性……”

（TRADE/WP.4/141，第15段）

另函寄上几份1982年10月印发的题为“自动贸易数据交换所涉法律问题”的文件（TRADE/WP.4/R.185/Rev.1），如提出要求还可以再寄。

现正将这封信寄交研究报告中指出的组织——即贸易法委会、经合发组织、海关合作理事会和国际商会的秘书处，以便采取可能的行动。这封信的抄本及其附件正寄往下列组织供参考：联合国跨国公司问题中心、万国邮联、国际电联、国际民航组织、海事组织、欧洲运输部长会议、欧洲理事会。资料学机构、统法社和国际空运协会。

您的忠实的，

贾奈兹·斯塔诺弗尼克

（签字）

欧洲经济委员会执行秘书

UNITED NATIONS

ECONOMIC AND SOCIAL COUNCIL

ANNEX II

RESTRICTED

TRADE/WP.4/R.185/Rev.1
21 October 1982

Original: ENGLISH

ECONOMIC COMMISSION FOR EUROPE

COMMITTEE ON THE DEVELOPMENT OF TRADE

Working Party on Facilitation of International Trade Procedures

LEGAL ASPECTS OF AUTOMATIC TRADE DATA INTERCHANGE

(Project 3.2.2 of the Programme of Work)

Transmitted by the delegations of Denmark, Finland, Norway and Sweden

FOREWORD

1. An important legal aspect of work on facilitation of international trade procedures is the acceptability of automatic data transmission to replace the movement of data by traditional paper documents and the resolution of legal insecurity that may arise through utilization of new techniques. The use of modern transmission methods in international trade, transport and payments depends on the legal force given to the information thus transmitted. The problem is more extensive than that of agreement between trading partners alone, since the principle of contractual freedom is limited by specific legal requirements of national or international law.

2. Amongst important questions asked are the following:

- Can teletransmitted data be accepted for Customs clearance and other purposes such as the procedure for effecting international payments?
- Are teletransmitted data admissible as evidence in Court?
- Does such evidence rank in the same way as a traditional document?
- Does authentication by electronic means equate with a traditional signature?

3. The purpose of this document is to outline what needs to be done - and why - and to suggest, even though to a limited extent, how and where action might be taken. The paper has been prepared on the initiative of the Nordic Legal Committee, with the aid of funds from the Nordic Council of Ministers. It is presented jointly by Denmark, Finland, Norway and Sweden.

4. The document concludes that there is an urgent need for international action to establish rules regarding legal acceptance of trade data transmitted by telecommunications. Since this is essentially a problem of international trade law, the United Nations Commission for International Trade Law (UNCITRAL) would appear to be the central forum. The work could be undertaken in co-operation with the Customs Co-operation Council (CCC), which is actively engaged in establishing rules concerning important aspects of administrative law; with the Organisation for Economic Co-operation and Development (OECD) for aspects related to transborder data flows; and with other international organizations, such as the International Chamber of Commerce (ICC), in the commercial field, to ensure compatibility.

5. The UN/ECE Working Party on Facilitation of International Trade Procedures is invited to take note of the paper and to request the ECE secretariat to transmit copies to the above-mentioned and other relevant international organizations, in order that their respective secretariats may bring forward the problems raised in the paper to their competent bodies for possible agreement on international work aimed at harmonized rules concerning these matters.

Note: In this revised version minor changes have been introduced in paragraphs 11, 44, 72, 101, 105, 120, 126, 137, 138 and 145; a few editorial amendments have also been made.

TABLE OF CONTENTS

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1. INTRODUCTION

1. International trade generates a large number of different procedures - a subject that was addressed by the Nordic Legal Committee some time ago (Cf. NORDIPRO Special Paper No. 1 "The Export Contract as a Management Tool, Oslo, March 1978). Traditionally, the information (data) required for these procedures has been transmitted through paper documents. The more obvious handicaps of this traditional method - which has been estimated to represent a cost of 7-10 per cent of the value of the goods traded - can be summarized as follows:

- too many documents are used or required;
- documents are too complicated and often contain both too many and unnecessary data;
- the same data are repeated in many documents;
- the movement of essential documents takes too long, and frequently leads to severe delays in securing release of goods at destination.

2. During the last decade there have been major developments both in automatic data processing (ADP) and in telecommunications, and further developments are expected. The cost of the necessary equipment is steadily decreasing; the use of ADP is spreading to all areas of society. Naturally, those involved in international trade wish to utilize modern technology to achieve less costly and more effective handling of trade data.

3. All this has led to the creation and growing use of standard trade data elements and their coded representation, as well as standards for interchange protocols and communication systems. It is increasingly apparent, however, that lack of agreed legal solutions, i.e. legal standards - as distinct from purely technical standards - may become a major obstacle in this field of ADP development.

4. Major economic gains would result from a change-over to "non-paper documentation", since many of the difficulties connected with present-day trade and transport procedures could be eliminated. The effects of new methods would extend to other areas also, with secondary savings and other positive results. "Non-paper" data handling would mean:

- fewer errors, since data would be transmitted and controlled by machines, thus eliminating errors which often occur through manual transmission of information;
- better cash flow management, with consequential financial savings;
- availability of data for direct use in traders' own ADP systems, e.g. accounting, stock and production management, and a wide range of in-house statistics;

- higher quality of national and international trade and transport statistics, since these would be based on standardized data governed by exact harmonized definitions;

- fewer misunderstandings (through inaccurate translation) owing to use of international standard data elements and codes;

- swifter turn-around of ships in port, since the necessary data would be available before the arrival of the goods.

5. Developing countries, in particular, would benefit from speedier clearance of ships and of goods, and from simplified procedures and the opportunity for more efficient decision-making offered by the use of standardized data. The argument, sometimes put forward, that developing countries see a disadvantage in computers replacing people is not supported in practice for the following reasons. First, it would not directly affect a great number of people; in fact, ADP would more especially concern qualified Civil Servants - who are in great demand in these countries. Further, the introduction of ADP would be gradual. The importance of automated procedures has already been accepted in many developing countries - and introduced in some of them - particularly in connexion with main export items.

6. It must be stressed that traditional documents would not be completely abolished. They would remain a fact of life in trade with certain countries, or for certain types of transactions. There is nothing dramatic about the introduction of "paperless" procedures in international trade: it can be expected to take place, step by step, when the parties concerned feel assured that it would be to their mutual advantage and would not affect their individual proper interests. In any case, data processed and transmitted automatically may still be made visible on paper (e.g. by print-out). The paper document will thus continue to play its role in international trade procedures at the same time as modern and more efficient methods for production and transmission of data are introduced.

7. The use of ADP in industry and trade is already widespread. Enterprises have developed in-house systems and have secured special permission for acceptance and clearance of data transmitted to certain authorities by automatic means. Certain commercial banks have established the "Society for Worldwide Interbank Financial Telecommunication" (SWIFT), thereby introducing a message-switching system which could be used as a base on which to build a full electronic funds transfer system. Carriers and forwarders are working to develop automated systems for their own purposes, and in many countries trials are being conducted by groups of firms representing different trade interests to test the possibility of a matching full trade data interchange system.

8. The efforts of government officials and national trade facilitation experts within the many international organizations working with the UN/ECE trade facilitation bodies and UNCTAD/FALPRO have also done much to make it possible to replace paper documents by teletransmitted messages.

9. A major step forward was taken in 1972 when the UN/ECE re-organized its Working Party on Simplification and Standardization of External Trade Documents (which had been in existence since 1960) and established the Working Party on Facilitation of International Trade Procedures. In 1975, this Working Party set up several informal task teams to undertake special and urgent tasks. One of the teams was requested to study the legal problems of the use of automatic data processing and transmission of data in international trade. Its main conclusions and recommendations are recorded in the documents listed below:

Introductory paper (TRADE/WP.4/GE.2/R.79);

Overview of legal problems of trade facilitation (TRADE/WP.4/GE.2/R.102);

UN/ECE/FAL Recommendation No. 12 - Measures to Facilitate Maritime Transport Document Procedures (TRADE/WP.4/INF.61:TD/B/FAL/INF.61);

UN/ECE/FAL Recommendation No. 13 - Facilitation of Identified Legal Problems in Import Clearance Procedures (TRADE/WP.4/INF.62:TD/B/FAL/INF.62); and

UN/ECE/FAL Recommendation No. 14 - Authentication of Trade Documents by Means other than Signature (TRADE/WP.4/INF.63:TD/B/FAL/INF.63).

10. It should be noted that the Customs Co-operation Council (CCC) has been actively involved in this UN/ECE work; it has established its own special Working Party on Customs Applications of Computers which is already carrying out important work in connexion with "paperless" procedures in the Customs field.

11. Other international organizations are also active. Especially interesting, in this connexion, are two UNCITRAL studies concerning Electronic Funds Transfers (A/CN.9/149/Add.3 and A/CN.9/221). This work is important both because interface between the transfer of trade data and finance data is essential and because UNCITRAL, as established by United Nations General Assembly Resolutions, is the co-ordinating body of the United Nations Organization in the field of international trade law.

12. It would therefore appear both appropriate and desirable that UNCITRAL should initiate - or, préferably, undertake and co-ordinate - further international action required to resolve the legal problems of automatic trade data interchange.

13. The aim of the present paper is to outline what needs to be done - and why.

2. THE BACKGROUND

14. World trade is the sum total of a multitude of different transactions - the swift supply of spare parts, the steady delivery of basic commodities, the accomplishment of long-term, complex construction projects - to mention only a few examples. From the legal point of view, all transactions are based on an international contract of sale: the seller in one country undertakes to supply a defined object to a buyer in another country against payment.

15. Since there is a basic common interest in the successful performance of sales contracts, there is a strong need for security. The buyer wishes to have assurance before payment is made that he will receive the goods or service which he has ordered. The seller wishes to have assurance that payment will be forthcoming before parting with the goods or performing the service. Agreed terms for delivery and payment therefore play an essential role in trade transactions.

16. Since goods have to be moved over long distances, specific provisions for transport and insurance have to be made. Further, since the goods may cross the frontiers of several countries, requirements for Customs clearance (outwards, inwards and possibly transit) have to be observed, as well as regulations governing the transfer of payments.

17. A simple model of a trade transaction would therefore reflect not only the international trade contract but also independent and ancillary agreeements of a contractual nature with banks and insurance companies - possibly also with freight forwarders and carriers. It would indicate the flow of goods and payments and also the movement of documents; this in turn would emphasize that international trade gives rise to two interlinked and opposite movements, i.e. that the purchase by a buyer in one country from a seller in another country involves the movement of goods in one direction and the movement of money in the opposite direction. These movements are initiated and controlled by a parallel flow of information, usually contained in documents.

18. From this very simplified description it may be appreciated that the several commercial parties involved in a trade transaction have different interests that must be safeguarded. Thus,

- the seller wishes to be certain of receiving payment;
- the buyer wishes to be certain of receiving the goods;
- the various intermediaries (forwarders, carriers, insurers and bankers) need to be certain that they can perform their services efficiently and to be assured of remuneration.

2.1 Administrative background

19. There is, however, another aspect of trade transactions which must be taken into account. The flows of information, the goods and the payments pass from one country to another. Therefore, the national authorities concerned have to exercise the necessary border controls. This is done on the basis of information which provides the acceptable evidence required to clear the goods and to monitor or control payment. The Civil Servants involved need to be formally satisfied of the legal acceptability of the information for each relevant step in the transaction; and they have to ascertain that the goods have been correctly defined and valued for duties and taxes, that one party has accepted formal responsibility in case of future discovery of errors or fraud, and that satisfactory evidence has been kept for later verification.

20. These considerations are of a nature different from commercial ones, and they are usually defined in formal enactments or, more often, in regulations issued by virtue of national laws. Whereas commercial parties are free to accept agreed standards or procedures, official control procedures can only be changed by law. However, a certain flexibility often exists by way of interpretation, or by amending regulations issued according to law. On the other hand, whereas private parties may agree on security levels that are acceptable in terms of cost, official requirements are of a more formal nature and the rules issued to implement them are often drafted taking into account other (and more abstract) considerations.

2.2 Technical background

2.2.1 Data communication

21. For the purpose of this paper, "data communication" is understood to mean the automatic transmission of messages by electronic or other means in such a manner that the possibility of automatic editing or processing of the text exists, or can be made available, if required.

22. Data communication may take place as direct transmission

- between two or more computers;
- from a computer to a terminal or to a printer - or vice versa;
- between terminals.

23. As the data processing of telex messages is possible at both transmitting and receiving ends, data communication is here deemed to include telex communication.

24. Data communication can also take place by sending the physical data carrier on which information is temporarily or permanently stored, e.g. a magnetic tape, a cassette, or a disk (or the somewhat out-dated punched-card or punched-tape).

25. Except when sending a data carrier, some form of electronic (or optical) communication network is needed to transmit data between hardware units.

26. In all cases, it is necessary to have a pre-determined method of communication providing the machines with the technical possibilities to process the data intelligently.

2.2.2 Different technical solutions

2.2.2.1 Public services

27. Telex has been available as a public data communications service for a long time. Various versions of data-processed telex messages exist. Some computer manufacturers offer direct access to the telex network.

28. Teletex involves using a miniprocessor with primary storage, various types of secondary storage, and printers. Although the main purpose of the teletex is to transmit and store messages, it can be used for other purposes, such as text processing. The teletex machine can be linked to other intelligent devices and can therefore be used as a communication unit in internal data systems.

29. Videotex (also known by other names) is another form of public data communication service that uses normal television sets as receiving terminals.

30. In some countries a public service for transmitting trade data does exist (in Canada, for example) or is being developed (in France). However, at present these are solely national systems.

31. One characteristic of public data communication systems is that a service is available to anyone who is prepared to accept the conditions of the system. Matters relating to liability are often regulated by means of statutes, statutory instruments and/or international conventions. The system is standardized and has an international range. A directory listing subscribers to the system exists and, in principle, each subscriber can reach any other subscriber at any time. The technical quality of the system is guaranteed within certain limits and there are possibilities of implementing certain technical and logical security features. Therefore, it may be possible to lay down certain legal rules as to responsibility of use and misuse.

2.2.2.2 Private data communication

32. Practically all modern computers afford possibilities for data communication, either under their own conditions or under general standardized conditions. Countless data communication systems between parties of various types are thus in operation. The technical quality of these data systems depends on agreements concluded between the parties concerned. As previously mentioned, internal computers can be used in conjunction with public data transmission services.

33. Data communication by sending physical data carriers has also been included under this heading. The exchange of magnetic tapes, for example, can be an economical form of data communication, particularly for mass data communication. With such means of data communication the parties often forgo the time gain that results from direct transmission. On the other hand, the information is usable as it is for further computer processing.

2.2.3 Transmission methods

34. Data can be transmitted by cable, electro-magnetically or optically, or by carrier. The user is uninterested in the medium or media used provided that the system satisfies his requirements regarding cost, efficiency and technical reliability.

2.2.3.1 Public data transmission networks

35. The most commonly-used public data transmission network is the telephone network, which has the advantages of being widespread and of high technical quality (although there are exceptions). Telephone networks use either dial lines or fixed lines; they do not offer data transmission services in the modern sense.

36. The telex network can also be used for data transmission in addition to telex messages. This network often has the same physical properties as the telephone network. Use of the telephone network is often more economic than use of the telex network.

37. In contrast to telephone networks, public data networks offer different forms of data services. However, in many cases not all possibilities are utilized, for cost reasons.

38. Examples of services that can be offered via public data networks are automatic dating, temporary storage, distribution to more than one record, automatic identification of parties and transforming transmission speeds, etc. Interface between different user equipment is handled by the network. The user does not know how his message is transmitted - transmission may take place via satellite, telephone, telex or other media, depending on the traffic volume. Line protocol within the network is standardized.

2.2.3.2 Open commercial networks

39. Where PTT administrations have a communications monopoly, open commercial networks usually offer data processing in one form or another, which makes them more service-oriented than public networks. Commercial networks often use parts of the public networks for data transmission. A number of commercial networks use information satellites as communication links. Identification in the form of code words is always required before contact is established between users of commercial networks.

2.2.3.3 Closed commercial networks

40. A characteristic of these networks is that only subscribers are permitted to use them. The subscribers may represent a particular branch of industry or a local region or any other group of common interest. As participation is strictly on network conditions, the hardware can also be specified. This type of network often uses special data transmission computers with large temporary storage capacities and facilities for packing the data, with the result that extremely high transmission speeds can be attained within the network.

2.2.4 Transmission techniques

41. Apart from the data transmission hardware and the networks, both technical and logical rules are needed for data transmission. The most frequently occurring technical problems are the use of language or code and the type and speed of transmission. At the logical level, agreement must be reached on how transmission should be commenced and terminated, which control character should be used and, above all, how the information should be identified (if it is not printed out).

2.2.4.1 Closed systems (bilateral/multilateral agreements)

42. In a closed transmission system, the parties can of course make any agreement which they choose. Closed data communication systems between two, or only a few, parties are often efficient because the system can be designed to satisfy the needs of the parties and adapted to the hardware at their disposal. Problems may arise when it becomes necessary to link another party to the system when one or more of the participants wishes to contact an outside party or another closed system. However, in the short term, closed systems for a special purpose are often both efficient and economical. Security presents few problems, since the parties agree on a level that they consider to be both satisfactory and economic.

2.2.4.2 Open communication systems

43. Telex and teletex are typical examples of open communication systems, whereby, in principle, any subscriber is able to contact any other subscriber within the system. Open communication systems require strict technical standards and flexible data structures. If the information in an open system is to be machine-readable, a compromise between flexibility and standardization is necessary. To avoid the problems that arise in respect of technical compatibility, data transmission can - in theory at least - take place via exchanges whose principal purpose is to convert the message into a technical form suitable for the addressee's hardware. A serviceable model for this is the teletex. The data network also has possibilities, at least to a certain extent, for interfacing between hardware with different technical facilities.

44. Open data communication systems pose a security problem that must be solved before data communication can become operational on a large scale. Such security methods - of a legal or technical nature - are described below in sections 3.1.3, 3.2.2 and 3.2.3, and form the basis of the theories of 3.3.3.

2.3 Legal background

2.3.1 Documentary functions

45. Traditionally a trade document consists of a piece of paper bearing data of various kinds. Because of its lasting physical existence the paper functions as a carrier of data (information); documents thus have an informative function.

46. A trade document can also constitute evidence (documentary evidence). The evidence is the paper per se and the evidential content is the data carried on the paper. Documents therefore also have an evidential function.

47. Furthermore, legal systems have given to certain documents the characteristic that the paper document itself and the rights represented through it are so closely linked that it is reasonable to assume that the paper symbolizes the right. The document then has a further, symbolic function which today is related to an original paper document. Bills of lading and Bills of exchange are typical examples of documents with symbolic function.

48. The functions which are connected with documents used in international trade and transport can be fulfilled only through exchange of these documents. This exchange, usually across frontiers, is traditionally achieved by mail or by courier.

49. The informative function, the evidential function and the symbolic function of paper documents are a consequence of the physical properties of the paper, of the exchange of documents and of the rules of the legal system concerning documents and their exchange. These rules are, to large extent, based on the physical properties of paper documents.

2.3.2 Factors of insecurity

50. Automatic data processing and data transmission are used as a means to dispense with the paper itself, but not its functions. Yet, although the elimination of paper and the use of other methods for the transmission of data can overcome many of the problems which are connected with paper documents, these other methods, in their turn, present certain aspects of insecurity.

51. These factors (or aspects) of insecurity - which are interlinked - arise mainly for the following reasons:

- the physical characteristics of the paper document are absent;
- existing law is associated, to a large extent, with paper documents and their use;
- legal regulation of the field of ADP and data communication for trade is virtually non-existent;
- the parties involved often lack the necessary technical and legal expertise to make use of the opportunities which are available and to interpret the consequences which arise from the utilization of new communication methods.

52. It may be said that the feeling of insecurity is mainly due to the fact that automated methods are new. Paper documents are well known and the degree of insecurity that they incorporate is generally accepted. Transfer of information by other means is new, and the security of such methods has yet to be proved. It is, therefore, necessary to look into the elements of insecurity in some detail.

53. The paper, and the written characters committed to it, are of a lasting nature. Once committed to paper a text is not easily removed, altered or added to without the paper showing some apparent signs thereof. The paper and its data content still retain their properties when the document has been transferred from one person to another. The holder knows what he has received, and can control its "safe custody".

54. The application of automatic transmission of data does not offer the same sense of security. Entering data from a document into a computer and sending the data content via teletransmission links to the recipient's computer does not enable the recipient to ascertain, from his visual display unit or from any print-out produced, whether any alterations have been made to the input data content. Moreover, the sender of the data can transmit identical data to a third party. The element of control of "safe custody" is lost.

55. The technical elements of insecurity may be overcome by technical means (cf. sections 3.2.2 and 3.3.3.2). Another, and possibly more important, factor of insecurity is caused by the absence of legal rules corresponding to those governing the traditional trade documents and the rights and obligations vested in them.

56. Laws, conventions and usages of international trade are often applicable, in many cases compulsorily, to the traditional documents and their use. Procedural and criminal law often contains detailed provisions applicable to documents.

57. These rules cover the nature of the document, the concept of an "original", its format and detailed contents, and the application and legal implications. Up to the present time, these rules have been established on the basis of traditional paper procedures.

58. Further areas of insecurity may also be identified. For example, traditional communication services such as mail, telephone, telegraph and telex are, to a great extent, regulated nationally as well as internationally. For the new services which are being developed and which will eliminate the traditional paper document, regulation is apparently non-existent.

59. In most countries telephone, telegraph, telex and mail are State monopolies in one form or another. It is currently being studied to what extent the new data communication services will be regulated. If these State monopolies provide the new data transmission facilities, it is important that no new barriers be created. Any uncertainty with regard to private admission to the services and the operation of the necessary ADP and data communication equipment would create insecurity.

60. In certain countries concern over the protection of personal data has placed restrictions on the free flow of computerized data across frontiers. If such restrictions were extended unduly they might interfere with the free flow of data essential for an international trade transaction.

61. Many other factors that create insecurity are linked with current commercial and administrative practice.

62. It would seem necessary to provide an assurance to all the parties concerned, whether commercial parties, public authorities or Courts of law, that documentary functions can be retained in a paper-less system. This assurance must be provided by eliminating the insecurity factors.

3. LEGAL ANALYSIS

63. In this section particular emphasis is laid upon identifying those areas and problems where international efforts would be required.

3.1. Informative functions

3.1.1 The problem

64. How far is it possible to retain the informative function of paper documents in an ADP-based system in a manner that satisfies the need of the parties to achieve the same technical and legal standards as before?

3.1.2 Form and content

65. In principle, it is possible to print out data on paper in whatever format or design may be desired. The information presented on a document can be shown on a screen with approximately the same appearance. From the technical point of view, the A4 format often used for paper documents presents no difficulties in ADP systems.

66. It has been mentioned above that certain legislative texts may be seen to require the use of paper documents. However, most of these texts were issued before paperless trade and transport procedures became practicable. It would seem appropriate to adopt the attitude that ADP is acceptable as long as the functions of the traditional documents are retained.

67. In Scandinavia it may be assumed that the Courts would accept these new procedures provided the documentary functions are retained. However, Court decisions might be different in other parts of the world with different legal systems and traditions.

68. When an appendix to a legal text defines precisely how a document should be presented in order to be valid, Courts consider this to be binding. It is therefore essential that those responsible for the drafting of relevant regulations become aware of the need to leave room for alternative information transmission methods.

69. When utilizing ADP and data communication it is important to avoid the long texts which are characteristic of standard contracts used in international trade and transport. One method is to refer to such texts by an "incorporation clause" in the form of code words - for example, "carrier's conditions" or "ICC rules". The validity of such "incorporation clauses" is being discussed in many fora and is accepted in most instances. (See Kurt Grönfors, "Cargo Key Receipt and Transport Document Replacement", Gothenburg 1979, pp. 18-19; and E. du Pontavice: "Legal Restraints on Trade Data Interchange", ECE document TRADE/WP.4/R.116, para. 7 et seq.)

70. Although some persons consider that the use of ADP and data communication may cause problems with regard to laws concerning prescription, it would seem that in practice there is no difficulty in filing "print-outs" in the same way as paper documents are filed in present-day systems.

71. Many present-day concepts and notions will need to be revised as a result of the establishment of paperless procedures. Further questions will be asked. What is meant by a Signature? Must it be a hand-written symbol, or can it be defined as the result of authentication by the use of mechanical or electronic means as provided in the Hamburg Rules? To eliminate possible problems in this context, it will be necessary to inform those involved and to train them. In some instances, information and education may not be sufficient. A solution must then be found by means of legal regulations, possibly based on some form of international instrument. As mentioned above, UNCITRAL would appear to be the appropriate body for this latter task.

72. Present administrative law or practice may also be a hindrance to the establishment of paperless procedures (cf. NORDIPRO Special Paper No.2 "Legal Questions of Trade Facilitation", Oslo, June 1980). The CCC has a central position in this area and, as mentioned earlier, has already done important work to establish international legal standards for automated Customs procedures. It would seem important that co-operation between UNCITRAL and the CCC should continue and be extended in the future.

73. As is implicit in paragraph 20 above, in many countries there exists a kind of legal pyramid. Although there are considerable variations, there is usually a solid core of primary law embodied in formal enactments of a constitutional body. On this base, there is built up a wider body of administrative regulations. These, in turn, delegate powers for a specific authority to lay down more detailed instructions. In this area of fast-moving technical developments it may be advisable to explore the possibility of limiting the primary law to essential matters of principle, since secondary law may usually be more easily amended.

3.1.3 Security methods: risk and responsibility

74. In an ADP system, data can either be in a process of input, storage, transmission or output. During processing data can be the subject of intentional or unintentional "attack". An intentional attack often takes the form of data misuse, i.e. data stored or under transmission are used in a way which is not permitted, or false data are fed in. These "attacks" of error and of fraud duplicate what can, and does, occur with regard to paper documentation.

75. Data misuse - fraudulent or otherwise - can occur in all phases of the data-handling process. The methods to prevent or restrict attacks on the content or use of data are, to a great extent, dependent on whether the attack is intentional or unintentional. Security methods depend on the stage in the data process where the attack occurs.

76. The following text makes a distinction between technical and legal security methods. These two methods should, however, be seen in the same context.

3.1.3.1 Technical security

77. Technical security methods can be classified (with regard to their structure and functions) as:

- physical security;
- organizational security;
- operational security;
- system oriented security.

78. These security measures are not discussed in this paper. However, there is little doubt that a high level of security can be achieved - at a corresponding level of cost - thus protecting the data in the ADP system from intentional or unintentional attacks. Recent frauds involving ADP indicate that absolute security cannot be achieved although it can be asserted that it is perfectly feasible to establish a level of security equal to that in a paper-based system.

79. However, even in systems where costly technical measures have been taken against attack or malfunction, the possibility must be taken into account that breakdowns or accidents with grave economic consequences for the parties involved may occur. Security through legislation may therefore have to be considered.

3.1.3.2 Legal security

80. Methods of security based on administrative instruments and practices or Court procedures have the following purposes: first, they enable the parties to assess in advance, to a greater or lesser extent, the judicial and economic consequences of the use of automatic data transmission procedures and, second, they establish the way in which, and the extent to which, economic losses, which might occur as a result of the use of ADP, should be shared among the parties involved. It should be recalled that the applicability of such rules has an insurance aspect also.

3.1.3.3 Risk and liability

81. International trade procedures involve the exchange between the parties concerned of a great many messages of various kinds - e.g. messages concerning negotiation of contracts, messages constituting parts of contracts (e.g. offers and acceptances), messages containing information necessary for the performance of various parties under contracts, notices under a contract, objections against another party's performance, and declarations addressed to public authorities such as Customs.

82. Errors may occur in the exchange of these messages - e.g. a message may be delayed, or may fail to arrive or may arrive at the wrong place, or its contents may be altered in transmission. These occurrences are well known, and most legal systems have developed rules for dealing with these situations.

83. Obviously, some or most of these rules apply even if new processing and transmission methods are used. However, more detailed study should be made of how such problems may occur and should be dealt with when automatic methods replace manual systems.

84. An important question is to what extent the maker of a statement (e.g. an offer or an acceptance) should be legally bound by it even though the statement has been unintentionally altered in transmission or in the pre-transmission process.

85. A second question is how the risks involved should be apportioned between the parties involved.

86. A third question is whether, and to what extent, a party should be liable vis-à-vis the other parties for losses due to such errors.

87. Detailed evaluation of these and other questions of risk and liability is required based upon an analysis of various national solutions. There may not be a great difference between the rules already applicable for telex messages, telegrams, or leased public lines. However, where private rather than public networks are used for carrying trade data, new aspects of risk and liability may arise and need further study.

88. Another important question is that of liability of the intermediary who provides the transmission service. A contract for trade data transmission may contain clauses limiting the liability of the intermediary. These are, in general, binding upon the parties. If the contract is, on the other hand, rudimentary, liability is implicitly regulated by the rules of the legal system governing the contract. It is, however, not at all certain what these rules are. As regards public networks, the authorities do not usually accept responsibility - often not even in the case of negligence.

89. In respect of goods, the trend is towards imposing mandatory responsibility on the professional producer and trader for damage due to defects. The arguments may be equally strong for similar rules in respect of transmission services.

90. It should therefore be discussed whether such rules should be mandatory or only declaratory, whether the liability should be strict or based upon negligence and, in such cases, who should carry the burden of proof. Another problem is establishment of rules for assessing the damage.

91. A convincing argument is made in UNCITRAL document A/CN. 9/149/Add.3, page 7, for a comprehensive international legal framework for international electronic funds transfer, not least with regard to regulation of liability conditions. It should be stressed that the same conditions would apply to the transfer of other trade data/documents. It would seem reasonable to co-ordinate international efforts in this field also - amongst other reasons because the problems are probably of the same legal character.

92. Another reason is that harmonization with existing rules is required. Usually-accepted arguments would seem relevant, such as which party is the nearest to carry the risk; or who can best counteract an accident or minimize its effect? Not least important is the question of who can most easily insure against a possible loss, or equalize it.

3.1.4 Free flow of information

3.1.4.1 The problem

93. Paper documents can be freely transmitted across frontiers. A condition for retaining this informative function, as well as the evidential and symbolic functions - when data are processed and transmitted by automatic means in international trade - is that such data may be transmitted with equal freedom.

3.1.4.2 Personal data

94. In recent years, many countries have adopted data legislation, in some cases including provisions governing the right to transmit data across frontiers, data export. (Cf. "A business Guide to Privacy and Data Protection Legislation", ICC Publication 384, Paris 1981.) Due to modern ADP and data transmission technology it has become possible to collect, store, process and transmit data efficiently, rapidly and at reasonable cost. It has become possible to monitor very large volumes of data covering a number of individual persons with a large amount of information on each person. ADP technology has made it possible to centralize the registration of such personal information, and to compare, sort and select information and process data from different information systems. It is obvious that this situation can involve a risk to the individual citizen's personal privacy. This is reflected in data legislation now being enacted in many countries, the principal aim of which is to strengthen an individual's control over the use of information pertaining to himself (information which may be classified as "private" or "sensitive").

95. Not all countries have adopted data legislation, however, and among those which have the protection of the citizen's personal privacy varies. This may make it tempting to export data files and personal data to countries having no - or less strict - legislation in this field. This explains why certain restrictions have been placed on the export of data files and personal data to foreign countries.

96. Among those whose work involves the transfer of international trade data by modern techniques there is some apprehension that - for a variety of reasons - legislation introduced to safeguard personal data may be extended to cover data concerning legal entities in such a manner that new barriers to trade will be erected.

97. ECE document TRADE/WP.4/R.99 analyses Nordic data legislation regarding the export of "personal data" across frontiers. However, this analysis focusses only on "goods"-related information. It is concluded that:

> "...serious problems are unlikely to arise in connexion with the Nordic data legislation when paper-less practices are pursued in international trade."

98. As to electronic funds transfer and the information transmitted across frontiers in systems created for such transfers, it is possible that national data legislation may create certain problems. This especially concerns transmission of credit information between countries. There is a need for further analysis of this problem.

3.1.4.3 Non-personal data

99. The protection of the individual citizen's personal privacy, however, is not the only consideration that could be taken into account when introducing restrictions in the free exchange of information across frontiers. Authorities have recently become aware of the fact that data transmission (for data processing) may lead to problems related to national security, economic independence, cultural independence and the safeguard of national employment.

100. This is described in more detail in a document issued by the ICC (document 191/124, Paris, 1979-03-13, p. 8 et seq.) where, amongst other things, it is stated that:

> "...the ICC recognizes the legitimate aspiration of governments to protect the economic and cultural well being of their citizens and their overriding responsibility to ensure the safety and security of their countries. The Chamber is concerned with ensuring that, in the course of such consideration, national governments do not lose sight of the benefits which float to their citizens from a liberal international economic system and increasing inter-dependence through international trade. The ICC urges the business community to engage in the debate to ensure a proper balance in the interests of the individual citizen throughout the world."

101. A recently-published report by the Organisation for Economic Co-operation and Development (OECD document DSTI/ICCD/81.9) contains suggestions for the development of guidelines for the free flow of information and is relevant for study of present problems. Several other international organizations study different aspects of transborder data flows; a survey is contained in documents TRADE/WP.4/R.200 and Add.1.

3.1.5 State monopoly in the field of telecommunications

102. A pre-condition for replacement of paper documents by automatic data transmission techniques is that the parties involved be given the possibility of obtaining, and using, the necessary technical equipment, at prices which are commercially attractive. It has already been mentioned that in most countries telephone, telegraph, telex and mail services are State monopolies, and in this connexion the question arises as to the extent to which data communications would be regulated by State monopoly. Transmission equipment and the quality of the services made available from official sources might not always be sufficiently user-oriented. These problems have been analysed by the ICC's Commission on Computing, Telecommunications and Information Policies in "The Liberalization of Telecommunication Services - Needs and Limits (ICC document 373-21/1 Rev, Paris, 1982-03-25). There may be a need for further studies in this area.

103. It should be realized that, also in the field of transborder data flows, extended international legal co-operation may be required, since measures intended to safeguard national positions may not be in the best interests of world trade.

3.2 Evidential functions

3.2.1 The problem

104. The essential feature of evidence is the need to verify at a later stage whether a certain event has happened or whether a certain fact is correct. Even so, there may be further questions of procedural law as to whether such verification is admissible and has legal force.

105. A paper document, signed in the traditional manner, can be said to constitute prima facie evidence. When ADP methods are used, instead of manual paper-related procedures, the problem concerning the evidential function is both technical and legal. It should thus be studied whether it is possible to provide technical solutions which result in data processed by automatic techniques retaining the same evidential weight as a traditional document signed in the usual way. Related legal questions are whether the law is a barrier to future developments and whether the parties involved can, and will, accept and use these solutions.

3.2.2 Technical solutions

106. Different technical solutions have been put forward, for example:

- logging;
- print-outs;
- passwords;
- protocols;
- confirmation; and
- cryptography.

3.2.2.1 Logging

107. Logging is a method for internal control within a system through the recording of all or certain parts of incoming and/or outgoing messages. A complete log, which is often kept in a secondary memory of the computer, contains information on sender, receiver, type and content of message, and possibly some checking total ("hash total") - e.g. the total of the numerical values in the message. Logging of certain parts only of a message can be regarded as a register or diary. It is possible to protect the logged data so that they can only be changed by fraudulent means. Practically all medium sized to large sized computers have some form of automatic log built into the operative system, but they may be changed without the change being apparent. If the logging is done by a neutral third party, e.g. through the transmission system itself, the value as evidence is considerably enhanced. Complete logging at both ends of a transmission improves the situation, especially since messages normally carry a time indication down to seconds.

3.2.2.2 Print-out

108. A print-out on paper - produced continuously, if the transmission speed allows, or as soon as possible - is a way of providing a record which can have considerable evidential value; this value is increased if the print-out is combined with logging, and even more so if the functions of print-out and logging are separated and filing takes place in an appropriate and suitable manner. A record can also be preserved through transferring the information to an electronic data carrier, e.g. magnetic tape or disk. However, whereas an ordinary print-out has the advantages of a paper document, electronic data carriers can be the object of erasure or change without showing any signs of the operation.

3.2.2.3 Passwords

109. Protection against unauthorized use of the computer can be ensured by giving the sender of the message a code word, password, without which he will be unable to establish contact with the computer of the receiver. The password is an identification of the sender and may contain codes that indicate the type of message that the sender could transmit. This type of control is customary in present data communications systems; and it gives a certain assurance concerning the identity of the sender. Password procedures may be established in different ways. One type of procedure presupposes only a contact impulse from the sender, upon which the receiver cuts the contact and re-contacts the sender as indicated, before the message can be transferred. Another type of procedure requires mutual logging; at the end of a message the receiver acknowledges by giving his diary log data whereupon he receives the sender's diary log data. Only then is the message valid. The second, more complicated, procedure offers higher value as evidence but is subject to the risk that logging procedures may be tampered with at a later stage without leaving any trace. This, however, calls for technical knowledge and, in certain cases, is the result of collusion between individuals.

3.2.2.4 Protocols

110. A protocol is a rule stating how to act in a given circumstance (cf. protocol for a royal reception, acting according to protocol, protocols to Conventions). In data processing and trade data interchange the term protocol is used to describe agreed rules, e.g. how to represent the data in a commercial invoice (or any other message), how to establish a connexion in a given communication network, etc. Protocols of primary importance for partners in trade relate to the structuring of messages (syntax), the representation of data (data elements) and the alphabetic and numerical characters required (capital and small, latin, greek, cyrillic, arabic, etc.). Processing and transmission protocols are handled by equipment manufacturers and transport service providers (PTTs), respectively. An example of a special protocol is the call-back procedure, through which the authenticity of a calling party is ascertained by the party called. Having been informed of the apparent identification of the caller, the party called terminates the call, identifies the first party in a directory prepared by a third party, and uses that information to call back to the first party.

111. The evidential value of a protocol would seem to be in the fact that it is used routinely for the interchange of messages and establishes an orderly procedure agreed between interchange partners. If errors occur, the message is rejected and an error correction procedure has to be used. Messages conforming to the protocol are more likely to be authentic than those which do not; deviation from the protocol could be an indication that the message has been tampered with.

3.2.2.5 Confirmation

112. Confirmation is a security feature which can be requested by the calling party to ascertain that the called party has received the message. The confirmatory answer may be a simple acknowledgement but in many cases some important data elements are included (repeated); the called party may, to protect himself, send a separate, confirmation message. (The call-back protocol referred to in paragraph 110 may be seen as one type of confirmation.) To ensure optimal security, the protocol should state that the party receiving a confirmation is obliged to check that it conforms to his earlier message and, if not, immediately to advise the other party.

3.2.2.6 Cryptography

113. Cryptography protects data against unauthorized access by making it unintelligible before transmission or storage and by reversing the process upon receipt or retrieval of the data. These processes are called encryption and decryption, respectively, and generally consist of an algorithm that functions with a special key. In modern cryptography, two main categories of encryption methods can be distinguished, based upon key usage. They are:

- Conventional crypto systems. In these systems the same (secret) key used for encryption must be used for decryption.

- Public key crypto systems. In these systems a public encryption key is used, which is complementary to the secret decryption key, but in such a way that the decryption key cannot be derived from knowledge about the encryption key. (See, inter alia, by Martin E. Hellman: "The Mathematics of Public Key Cryptography", Scientific American, August 1979, pp. 130-139.)

114. The incorporation of a public key crypto system means that, from a technical point of view, it should be possible to "sign" information in a way which satisfies the parties' interest to the same degree as a traditional signature on a paper document. A data print-out which is produced on the basis of such electronically-"signed" data should normally be given the same - or greater - evidential weight and value as a paper document signed in the traditional way. Utilization of public key crypto systems would mean that information could be kept safe from bugging or tapping. The system can be used with any type of transmission network where data are processed in a data processor. It may also be used by successive transmissions, even if further data are to be added. (See also document TRADE/WP.4/R.98.)

115. With paper-borne data, a number of documents of varying content may be called for in order to supply the information needed for official purposes. Frequently, these documents have to be provided not only with an exporter's signature but also with certifications or endorsements by various official or semi-official authorities. This problem - the problem of dual signature/authentication - can be solved by incorporation in public key crypto systems.

116. Until now, however, the public key concept has not been implemented in practice and there have been no trials to determine the applicability of the public key crypto system in the area of trade and transport. It is therefore possible that in practice the system may not prove to be satisfactory. Moreover, the public key concept is not yet under consideration and in view of the rapidity of technical developments, other technical solutions may be produced in the interim.

117. Systematic use of technical security measures would seem to ensure a high degree of security - certainly higher than with traditional paper documentation. Further study and testing of such devices should therefore be given high priority and their validity when used for providing legal evidence should be explored. The need for procedural rules or guidelines facilitating questions of evidence should be looked into.

3.2.3 The legal problems

118. It is stated in UN/ECE document TRADE/WP.4/R.99 that Nordic Law would probably not pose any problems regarding the admissibility in evidence of records kept in computer systems. Such records could, for example, be submitted in the form of a computer print-out.

119. This would also seem to be the general tendency in other countries having civil-law-based legal systems. The legal situation is somewhat similar in certain countries having common law of common law derived legal systems - except, perhaps, in respect of procedural rules for the acceptance of such "evidence". Nevertheless, these differences regarding the acceptability of computer-held information as documentary evidence do create problems. In UNCITRAL document A/CN.9/149/Add.3, page 5 (referred to in paragraphs 11 and 91 above), it is pointed out, among other things, that:

> "although some attempt has been made in a number of common law jurisdictions to resolve these problems either by statute or by pragmatic judicial interpretation of the rules of evidence, it is doubtful whether the underlying problem can be resolved short of some form of international agreement."

120. The Council of Europe Committee of Ministers on 11 December 1981 adopted Recommendation No. R(81)20 to member States on the harmonization of laws relating to the requirement of written proof and to the admissibility of reproduction of documents and recording on computers. This Recommendation is a step in the right direction. Also of interest in this context are papers on "The use as evidence in arbitration matters of documents prepared by computers" (document TRADE/WP.4/R.126) and on "Conferring legal force on documents recorded on magnetic tape or presented as computer print-outs" (document TRADE/WP.4/R.178), both transmitted by the Government of the Union of Soviet Socialist Republics. Comments from the Federal Republic of Germany are contained in document TRADE/WP.4/R.201. It should also be mentioned that the Legal Committee of SIMPROFRANCE has transmitted two extremely valuable documents in this field, namely:

- TRADE/WP.4/GE.2/R.123: Legal Problems and ADP Systems in International Trade; and

- TRADE/WP.4/R.116: Legal Restraints on Trade Data Interchange reproducing an article by Professor du Pontavice entitled "Automatic Data Processing and Foreign Trade Documents".

- In TRADE/WP.4/R.199 the Legal Committee of SIMPROFRANCE commented on the study referred to in paragraph 135 below.

121. When computer-held information is introduced, difficulties would arise if authentication had to be evidenced by the traditional signature method, where the signature is physically connected with the actual paper. When ADP methods are introduced for transmitting data the signed document itself is not sent - only the data contained in the document.

122. Legal requirements often exist regarding the use of a signature on documents used in international trade, although it is not always stated in what form the signature should be present. Many countries require that the signature appear in the form of a handwritten signature. In others, a less formal "signature" is permissible provided it is physically connected with the actual document.

123. It must be taken into account that an "electronic signature", although possibly an even better authentication of the source of the data message than the traditional signature, may not in itself be capable of overcoming the problem of "signature".

124. UN/ECE/FAL Recommendation No. 14, represents a useful initial step towards resolving the problem. It reads as follows:

> ". . . "Recommends to governments and international organizations responsible for relevant intergovernmental agreements to study national and international texts which embody requirements for signature on documents needed in international trade and to give consideration to amending such provisions, where necessary, so that the information which the documents contain may be prepared and transmitted by electronic or other automatic means of data transfer, and the requirement of a signature may be met by authentication guaranteed by the means used in the transmission; and recommends to all organizations concerned with the facilitation of international trade procedures to examine current commercial documents, to identify those where signature could safely be eliminated and to mount an extensive programme of education and training in order to introduce the necessary changes in commercial practice."

125. In June 1981, the CCC adopted a recommendation concerning the transmission and authentication of Goods declarations processed by computer, making it possible for declarants, under certain conditions, to transmit these declarations by electronic or other automatic means.

126. Certain recent international Conventions have introduced rules which open up possibilities for electronic "signatures", as, for example the Hamburg Rules or the United Nations Convention on Multimodal Transport. Such Conventions may, however, be of limited value as they often contain a reservation that the electronic signature cannot be used if it conflicts with the law of the issuing country.

127. There is therefore need to develop an international instrument concerning the requirements that would give an electronic "signature" or authentication of computer-transmitted information the same legal effects as a traditional signature.

3.3 Symbolic functions ("negotiability")

3.3.1 The problem

128. The symbolic function of a document can be defined as the legal effect attached to the possession and transfer of the original document. Certain physical characteristics of paper make it possible to establish an "original document". These physical characteristics are lost when data are processed and transmitted by automatic means, thus creating a problem that must be solved in order to retain the symbolic function.

129. The problem clearly exists in connexion with the Bill of lading. This document has an important symbolic function, and the study of solutions is therefore high on the priority list of those concerned. However, identified problems are regarded as difficult to solve and, in the context of trade facilitation, the advice is often given to avoid, as far as possible, the use of negotiable Bills of lading. Research has shown that this type of transport document is issued far more often than is strictly necessary. UN/ECE/FAL Recommendation No. 12, "Measures to Facilitate Maritime Transport Document Procedures", deals with this matter and recommends, inter alia, that negotiable transport documents be used only when required, and encourages the use of the non-negotiable Sea waybill or other alternative transport documents which do not have to be surrendered at destination to obtain delivery of the goods. Unfortunately, certain governments insist on the continued use of negotiable Bills of lading for import/export or exchange control purposes, and refuse to approve the use of a non-negotiable transport document.

3.3.2 The approach

130. The problem of retaining a document's symbolic function in ADP and data transmission-based systems can theoretically be solved by using two different methods of approach.

131. One possibility would be to refrain from using possession and surrender as legal points of fact in relation to the symbolic function. This would mean abandoning an established legal technique, whilst exploring the possibility of replacing this technique with another having the same legal effect. This approach is judicially complicated but technically relatively simple. It might therefore be called the legal approach.

132. Another possibility would be to use the existing judicial technique with possession and surrender as central features and to explore the possibility of recreating the rights and obligations of the paper document. This approach can be characterized as judicially relatively simple but technically complicated. It might therefore be called the technical approach.

133. Section 3.3.3 describes two theoretical studies which represent the legal and technical approaches. Section 3.3.4 outlines a major research project intended for practical application: the Cargo Key Receipt system. Finally, in section 3.3.5 a suggestion made by INTERTANKO's Documentary Committee is mentioned.

134. The mere fact that the above four projects have been developed over the last few years underlines the great importance attached to problems linked to the symbolic function. Ways are suggested in which to secure harmonized solutions, and the importance of international work in this area is emphasized. It would seem that sufficient material is now available for UNCITRAL and the ICC to carry out a joint study on the subject.

3.3.3 Two theoretical studies

3.3.3.1 The legal approach

135. A study by Knut Helge Reinskou, "Bills of Lading and ADP: Description of a Computerized System for Carriage of Goods by Sea" (Journal of Media Law and Practice, Volume 2, Number 2, September 1981), develops the concept of a document-free system for the transport of goods by sea. Documents to be replaced are Bills of lading, waybills and other documents which are used in documentary credits and other forms of payment settlement. (See also document TRADE/WP.4/R.159.)

136. The fundamental concept is that of a notification/confirmation system. Whenever a right in the goods is created or transferred, the creator or transferer notifies the carrier of the transaction. The carrier registers the change and sends the beneficiary or the transferee a confirmation of his acquired rights.

137. The transport agreement and the confirmation by the carrier contain special clauses which seek to establish the same legal relations as those which characterize the concept of negotiability. A "registering and clause" system is proposed. Under the draft system, a number of messages are exchanged between the participating parties' computers. The study emphasizes that such exchanges demand security and that the necessary level can be achieved by using a public key crypto system.

3.3.3.2 The technical approach

138. In a study by Roger Henriksen: "The Legal Aspects of Paper-less International Trade and Transport" (Copenhagen, 1982), which presents a theory based on the application of a public key crypto system and describes special technical features, it is suggested that the present-day documents be replaced by a concept of "original data content", i.e. something tangible. Possession and surrender of the original data content, such as that of a Bill of lading, shall in all respects be given the same legal effects as the possession and surrender of an original paper document. (See also document TRADE/WP.4/R.98.)

139. Under the present system, it is the wording on the paper (the data content) that determines the type of document that it constitutes, and this should not change when a new technical process is used. The desired legal relationships can be established through the data content.

140. If this is accepted, the symbolic function of a document will be linked with the possession of a text containing the necessary (original) data content and not with the possession of an original paper document as is present practice.

3.3.4 Cargo Key Receipt system

141. The aim of this project is to develop an operative system whereby the banker's need for security in connexion with payment through documentary credit procedures can be safeguarded without the surrender of a traditional Bill of lading or an international waybill. The aim is limited to this: where there is a need to sell a consignment in transit, use of the traditional negotiable Bill of lading is still recommended.

142. The legal solution in this system is based on the international waybill, in many ways a "simpler" document than the Bill of lading, and much easier to imitate in an ADP system.

143. The Cargo Key Receipt system operates as follows:

- The goods are sold Ex Works, FCD (Free carrier named point of departure) or under any similar term of delivery which confers title of ownership to the buyer at the latest when a bank in the seller's country pays him. The sales contract thus stipulates that property to the goods sold shall pass at the moment when a bank at the place of departure pays the seller against his Cargo Key Receipt, in conformity with the instructions of the buyer - he has either arranged for the issue of a documentary credit or has ordered "Cash on Delivery" with instructions to pay against the Cargo Key Receipt.. The buyer, by agreement with his bank, pledges the goods in transit as security and collateral for what he has instructed his bank to pay on his behalf.

- When the sender has delivered the goods to the carrier or his agent at the place of departure, he receives his Cargo Key Receipt, as the first print-out following input of all necessary particulars into the carrier's computer. This contains, inter alia, the following data elements:

  (a) The buyer's bank (financing the sales transaction), named as consignee;

  (b) The consignor's "NODISP" statement, meaning that the seller in his capacity as party to the contract of carriage has irrevocably abrogated from his right of disposal to the goods during the transit;

  (c) The carrier's "CLEAN" statement, meaning that the carrier, after the customary inspection of the goods taken in charge, has made no remarks regarding their condition (such as "2 cases broken", "steel sheets rust marked");

(d) The carrier's "SECURITY" declaration, meaning that he holds the consignment specified on the receipt on behalf of and as collateral for the bank named as consignee.

- All particulars stored in the computer are forwarded from the place of departure to the place of destination by means of telecommunication.

- The authorized bank in the seller's country pays the seller against the Cargo Key Receipt and advises the buyer's bank by means of telecommunication.

- Shortly before the goods arrive at the place of final destination, the carrier sends an arrival notice to the buyer's bank, in its capacity as consignee, with a copy to the buyer, in his capacity as "notify address" only. The buyer then pays his bank against endorsement of the original notice of arrival to him and requests the carrier, by virtue of the endorsed notice, to deliver the goods to him instead of to the named consignee, the bank.

144. Only a modest percentage of all goods carried is sold while in transit from the port of loading to the port of destination. In liner trade, the percentage is even lower. It would therefore be possible to introduce ADP-based systems designed on the basis of the Cargo Key Receipt system; efforts to develop this system are being followed with great interest by those concerned.

3.3.5 The INTERTANKO project - Sale of Cargo through a Clearing House

145. This system is being developed for bulk cargoes, especially for the tanker trade. It is suggested that the "key to the goods" function may be served by a register, based on agreement that all transactions regarding a shipment shall be handled through a central clearing house. Initially agreed between shipper and carrier, all subsequent buyers (assignees) have also to adhere to the system. It is part of the agreement that no Bill of lading will be demanded, and that all transfers of rights to the goods will be effected by telex notification to the central register. All important telexes should be authenticated by cross-checking over the telephone and in writing.

146. This system could function in two ways: either as a central register (or registers) in some principal oil port (ports) or trade centres, or else simply as a private arrangement involving those who will take part in the transaction. In the latter case the register should be kept by a bank, and all payments should be made through that bank. In the case of the central register it needs be considered whether payments shall be made through the register or otherwise.

147. For a fuller description, reference is made to "Delivery of Cargo without presentation of Bills of Lading", report dated 16 November 1980 from the Chairman of the Documentary Committee of INTERTANKO.

4. CONCLUSIONS

148. Automatic data transmission is gradually being introduced for documentation requirements in international trade. These methods comprise important advantages for all parties concerned and the technical, commercial and organizational conditions have already been established. However, the problem of legal acceptability remains, and the lack of legal rules both nationally and internationally leads to a feeling of insecurity which may hinder further developments (see paragraphs 1-7).

149. The problems involved have a bearing on different legal disciplines although it would appear that international trade law is most directly concerned. The co-ordinating body within the United Nations on questions of international trade law - UNCITRAL - which has already initiated studies on the related topic of electronic funds transfer should take this matter up for further action, in co-operation with other organizations, such as:

- the Customs Co-operation Council, on matters of administrative law and questions of transborder data flow (see paragraphs 19-20 and 72);

- the Organisation for Economic Co-operation and Development, on the need for international rules to safeguard the free flow of data for international trade transactions (see paragraphs 99-103);

- the International Chamber of Commerce, on the need for rules on negotiability (see paragraph 134).

150. Attention is also drawn to the more specific conclusions regarding the need to establish certain rules of material law. This is especially important with regard to questions of risk and liability where it would seem vital to take into account existing international instruments and the legal doctrines on which they are based (paragraphs 87-92). Other conclusions that merit attention are those related to the need to avoid too rigorous drafting techniques (paragraphs 68-73), and the need for rules of evidence (paragraph 119) and on authentication (paragraphs 115 and 127).

151. Cryptography and the use of the public key crypto systems might well play an important role in solving some of the main technical/legal problems encountered in this field. It is recommended that the ECE Working Party on Facilitation of International Trade Procedures should study this matter with a view to ascertaining its usefulness for practical application.

152. Although the strong trend towards paperless procedures can be expected to continue and prevail, traditional paper procedures will still be used in many instances and new rules should be compatible with current practices and traditions. The rules should be international and, on the whole, mandatory and should embrace trade, transport and payments as well as administrative law.