The Impact of EDI on Bills of Lading

A Global Perspective on the Dynamics Involved

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1. INTRODUCTION

This paper aims to give some idea of the **dynamics involved in implementing electronic bills of lading**. The bill of lading is one of the compendium of documents used in carriage of goods by sea. The writer did therefore not attempt to isolate the bill of lading, although the emphasis is clearly placed on substituting the traditional *(tangible)* bill of lading with EDI.

To understand the complexity of adapting existing documentation to EDI, it is essential to place the bill of lading into an EDI context. The electronic transfer of documents is nothing new. It is the statutory requirements and legal rights and obligations associated with the transfer that is currently stretching the boundaries of the law. Most of the legislation dealing with carriage and shipping documentation was drafted in an age where EDI was clearly not envisaged. Consequently, uncertainty exists regarding the legal recognition of electronic documentation.

The **role and function of the traditional bill of lading** is briefly examined followed by the electronic evolution of the bill of lading.

The **technical and legal obstacles** to the implementation of EDI are then reviewed. These include the requirement that the document has to be in writing, signature, negotiability and liability. The admission of computer generated evidence is also dealt with.

Parties wishing to enter the arena of electronic documentation will have to draw up an **interchange agreement** to regulate the various technical and legal issues arising out of the electronic transfer of documents. Various model interchange agreements are examined. The interchange agreement will in many ways be the backbone of the EDI operation. Parties will have to consider the legal and technical issues that might arise in the interchange agreement. A properly drafted interchange agreement will go a long way towards reducing some of the potential problems associated with electronic transactions.

EDI model rules provide for the incorporation of EDI into an acceptable legal framework. These rules will be considered. The emphasis is placed on the **CMI** Model Rules. The **UNCITRAL** Model Law on Electronic Commerce will also be briefly examined. This model law should provide a great impetus towards EDI acceptance and full scale legal recognition.

The paper then focuses on the attempt by various bodies to implement electronic bills of lading. Two prominent examples are given namely **Bolero and SeaDocs**.

Lastly, a brief introduction is given to the impact of the Internet on EDI. This is an exiting development and deserves further discussion.

In conclusion, it is suggested that the traditional bill of lading can be substituted by EDI.

2. THE TRADITIONAL BILL OF LADING

The use of the bill of lading is almost as old as maritime trade itself. One of the earliest references to the keeping of records for cargo shipped on board is found in *The Ordonnance Maritime of Trani* of 1063.[1] The original function of the bill of lading was therefore to acknowledge that the goods have been shipped. The use of the bill of lading became widespread during the 16th century and continued to develop as a respected document in international trade. Growing trade eventually necessitated the transfer of title in the goods before they arrived. It therefore became necessary to endorse the bill of lading to a third party in order to effect transfer of the goods. The bill of lading became a negotiable instrument. *Mitchelhill* reports that the first reported case in which endorsement of the bill of lading is mentioned dates from 1793.[2]

The importance of the traditional bill of lading in international trade is largely self-evident when viewed against its functions. It is-

- Evidence of the contract of affreightment i.e. it contains all the essential terms;
- Prima facie evidence of the receipt issued by the carrier that the goods have been shipped or are received for shipment; and
- A 'quasi negotiable' document which passes the title in the goods.[3]

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[1] Mitchelhill *Bills of Lading* Chapman & Hall Ltd (1982) at 1
[2] *Snee v Prescott*. See supra at 1
[3] See supra note 1 at 27

International traders will almost always enter into a contract of carriage before the bill of lading is issued. The contract of carriage is then evidenced by the bill of lading. It is only possible to exclude this provision by express agreement.[4] Furthermore, the bill of lading will also normally contain the terms of the contract of carriage.

Arguably, the most important function of the bill of lading relates to its negotiability. The bill of lading serves as negotiable commercial paper thereby enabling the transfer of title of the goods while they are in transit. Under English law, the bill of lading is not a truly 'negotiable' instrument because the indorsee of the bill of lading can not receive a better title than the original holder had.[5] However, the bill of lading is a document of title and the holder of the bill of lading is entitled to take delivery of the goods. This is settled law and is reflected in a 1912 House of Lords[6] decision where it was held that:

> *"delivery of the bill of lading when the goods are at sea can be treated as delivery of the goods themselves, this law being so old that I think it quite unnecessary to refer authority for it".*

The fact that the bill of lading is a document of title presents one of the greatest obstacles to the implementation of the electronic bill of lading. The effect will be examined later in this paper.

The traditional bill of lading also has several **disadvantages** in the modern shipping environment. Containerisation and modern vessels have resulted in a speedier carriage of goods. The result is that the goods arrive at the port of destination before the relevant shipping documents. This causes delay and erodes the advantage gained by the expedited voyage. Considerable expenses are also incurred in the issuing and processing of bills of lading.[7]

The issuing of fraudulent bills of lading has also become a matter of international concern. Bills of lading are customarily issued in sets of three, consequently there is scope for the fraudulent use of more than one original to sell cargo on the water. These bills of lading are falsified in a number of ways:[8]

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[4] Pearson v Goschen (1864) 17 CBNS 352
[5] Payne & Ivamy *Carriage of Goods by Sea* 13th Ed. Butterworths London (1989) at 91
[6] Per Earl Loreburn in *E Clements Horst v. Biddel Bros* [1912] AC 18 HL
[7] See infra note 8 at 18
[8] This was observed by K. Bernauw, the national reporter for Belgium at the XIVth International Congress of Comparative Law held in Athens 1994

- Altering the quantity and quality of goods shipped in the bill of lading;
- in spite of the fact that an original bill of lading has been issued, the consignor may fraudulently sell the goods to other buyers during transit;
- the bill of lading can also be counterfeited in order to obtain fraudulent delivery; and
- it is possible to forge the bill of lading in order to obtain payment in a documentary credit.

There are various kinds of bills of lading. The form of the bill of lading will depend on the required function. Mitchelhill[9] lists the following types of documents:

- Bill of lading issued with printed clauses for conventional or through traffic on liner terms;
- Bills of lading issued for goods accepted under 'Combined Transport' conditions;
- 'Short form' or 'blank form' bills of lading;
- Bills of lading issued under a charterparty; and
- Bills of lading issued by a freight forwarder.

Negotiable bills of lading are not always required. The result is that there has been an increase in recent years in substitutes for the traditional bill of lading. One such example is the **sea waybill**. Unlike the bill of lading, the sea waybill is not a document of title. It is intended for use where there is no transfer of goods envisaged. The sea waybill constitutes evidence of the receipt of the goods by the carrier as well as the contract of carriage. It is not necessary for the consignee to produce the document in order to obtain delivery of the goods. The consignee would merely have to produce adequate identification.[10] This document is however not without inherent risks. The buyer who has paid in advance might find that the seller has changed the identity of the consignee. It therefore does not offer the same level of security that a traditional negotiable bill of lading does.

In spite of these obvious shortcomings, the sea waybill increases in popularity. The search for substitutes to the traditional bill of lading clearly reflects the desire of the shipping industry to adapt to modern developments in order to be more efficient and competitive.

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[9] Supra note 1 at 21
[10] Mitchelhill at 49

3. THE ELECTRONIC PROGRESSION OF THE BILL OF LADING

The traditional bill of lading has evolved over time to reflect commercial realities. Maritime commerce has been at the forefront of commercial development since its inception. It is therefore not surprising that the shipping industry has embraced the concept of an electronic bill of lading. Attempts are now afoot to replace the traditional, tangible bill of lading with electronic data.

Containerisation has been the catalyst in introducing electronic data interchange to shipping documentation.[11] Shipping and cargo interests started competing in an increasingly competitive environment. Computers made it possible for shipping documents to be processed quicker and more effectively than the traditional paper based documentation. It was therefore only a matter of time before electronic documentation was introduced in the shipping market. An EDI system would enable the parties to reduce the volume of documentation and the delay caused in transferring the documents.

Yiannopoulos[12] provides a strikingly accurate comment when he reflects on the development of the electronic bill of lading. He suggests that:

> *"The [electronic bill of lading] is not a mere evolution in the form of bills of lading; it is the creation of a new species of bills of lading".*

There are relatively few problems involved in implementing EDI to substitute non-negotiable bills of lading, such as sea waybills. The shipper will electronically provide the booking instructions to the carrier. The carrier will then issue an electronic sea waybill. The cargo can be unloaded as soon as the ship arrives at the port of destination because delivery does not depend on presentation of the document. Banks will also generally accept non-negotiable sea waybills if they meet the conditions stipulated in the letter of credit.

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[11] Diana Faber Electronic *Bills of Lading* LMCLQ (1996) Part 2 May 1996 at 232
[12] Yiannopoulos infra note 14 at 4

The bill of lading is issued by or on behalf of the carrier after the goods have been loaded on board. The holder of the bill of lading is therefore entitled in law to ownership of the goods. However, it can be endorsed to a 3rd party who then becomes the legal holder of the bill of lading and is entitled to take delivery of the goods. It is this *transferability* of the document that presents the real challenge to develop an EDI system for negotiable bills of lading.[13]

The impact of EDI on the traditional bill of lading also has to be evaluated against the formal requirements for a valid bill of lading. Most shipping nations subscribe to the Hague-Visby rules. Most of the international rules applicable to bills of lading were codified in the Hague Convention. This Convention was later amended by the Visby-protocol and became known as the Hague-Visby rules. No express provision is made in these rules regarding the formalities of a bill of lading. The Hague-Visby rules are applicable to any bill of lading relating to the carriage of goods. These rules are set out in the Schedule to the South African COGSA and have force of law in South Africa. Article III(3) reads:

> *" After receiving the goods into his charge the carrier or the master or agent of the carrier shall, on demand of the shipper, issue to the shipper a bill of lading..."*

The implication is therefore that a document has to be issued. Will EDI satisfy this requirement? There is no specific reference to the fact that these documents have to be in writing or on paper. It is furthermore important to inquire into the formalities prescribed by each local forum. In Germany, for example, a bill of lading without a hand-written signature is null.[14] Many other national laws and domestic legislation requires the use of paper documents. These requirements, which could present a serious obstacle to the use of EDI, will be dealt with later in this paper.

In addition to the legal obstacles involved in implementing EDI, several other factors also have to be taken into consideration. These include the technical aspects involved in setting up an EDI network. In order for EDI to be used effectively, it has to provide a secure means of

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[13] See J.B. Ritter & J.Y. Gliniecki *International Electronic Commerce and Administrative Law: The need for Harmonized National Reforms* 6 Harv.J.L. & Tech. 263-264 (1993)

[14] Yiannopoulos *Ocean Bills of Lading:Traditional Forms,Substitutes,and EDI Systems* Kluwer Law International (1995) at 13

transmitting the information. The trading partners will have to feel confident that the electronic messages are private and provide adequate protection against fraudulent misuse.

It is clear that the implementation of the electronic bill of lading holds many challenges. The success of this new *species* of bills of lading will depend on the work and effort of all the interested parties. Ultimately however, a wide scale acceptance will depend on practical results.

If the electronic bill of lading suits to the needs of the modern shipping industry and amplifies the functions of the traditional bill of lading, it will secure its survival in the competitive shipping environment.

4. EDI

The benefits of electronic commerce are widely accepted. Electronic Document Interchange (EDI) in particular has evoked considerable interest in recent years. EDI has been developed to allow computers to copy the relevant elements of data from a pre-existing source within a subsequent message, thereby eliminating re-keying and duplication of activities.[15]

In order to understand the impact of EDI on international trade and commercial transactions, it is necessary to examine how EDI functions. A number of important legal considerations also arise in the process of facilitating electronic commerce. These considerations have been alluded to above, and will be discussed in more detail.

4.1. UNDERSTANDING EDI

A number of definitions have been formulated for EDI. In essence, EDI is:

> *"...the replacement of the paper documents relative to an administrative, commercial, transport or other business transaction, by an electronic*

[15] Jeffrey B Ritter in *Northwestern Journal of International Law & Business* (1992) at 13: 3

message structured to an agreed standard and passed from one computer to another without manual intervention".[16]

EDI, as a means of conducting business, is gaining popularity and acceptance for a number of reasons. These are-

- EDI increases the speed with which business is conducted by eliminating the delay caused by manual (paper-based) documentation. The transfer of documentation is therefore speeded up. It would eliminate the delay caused by cargo arriving at the port of destination before the actual documentation required to take delivery arrives.
- Messages sent by EDI are also accurate since the information is structured to an agreed format. The result is that the message will be rejected if it does not conform to this format. The electronic information would furthermore be verifiable by means of either a 'private key' or electronic signature.
- Digital encryption ensures that the message is authentic. Fraud would therefore be reduced.
- All of these factors ensure that a company trading via EDI would save time and money.

In spite of all these advantages, EDI is not as extensively used as one would expect. One of the reasons for this is the legal uncertainty surrounding EDI. The capital expense involved has also inhibited the development of EDI in some sectors. In spite of this, EDI is poised to have a significant impact on the way business is conducted in the immediate future.

An EDI message consists of several parts. The messages approved for EDI use also have to be incorporated into a message framework. This would then in effect provide *" a language of alpha-numeric codes around which the content of each EDI message is constructed and a 'grammatical' structure through which those codes can be organised".*[17] This message can then be divided into three concentric subparts:[18]

- The first subpart is the message itself, e.g. the electronic version of the bill of lading.
- The transaction set is then made up of segments.
- The segment is then made up of data elements.

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[16] Simplification of International Trade Procedure Board (SITPRO): document (88) 06
[17] Ritter supra note 15 at 22
[18] Id.

The message framework and code list will then translate these conventional terms into a computer understandable unit. This implies that the EDI users will not have to enter a complete new set of data/information into the computer every time a new transaction is conducted.

In order for EDI to function there has to be a combination of technology and management resources to ensure that the data is transmitted correctly and accurately between the computer systems of the various parties.[19] Parties need to ensure that the correct software is utilised to transmit the internal data format to an acceptable EDI format. It might also be required to make use of a third party EDI network.

4.1.1. VALUE-ADDED NETWORKS (VAN)

Although it is possible for EDI users to link their computer systems directly to each other, in practice they would often make use of a Value-Added Network service provider (VAN). These firms specialise in technical assistance. VAN's would also provide technical support and assist in data security and the configuration of the required software.[20]

Computer programmes and data systems are not always compatible with each other. For example: the carrier could use a computer system which cannot process the information received by the computer system of the shipper. In such a scenario, the carrier and the shipper would make use of a VAN. The biggest advantage of a Value Added Network service provider is the fact that it can bridge the gap between these two systems. In other words, the VAN will match the various computer protocols and provide the necessary software. This ensures that data that has been created on one system can be received on the other system.

Most of these networks operate on a generic basis. The network will offer its services to any party entering into an agreement with it.[21] However, it is also possible for networks to specialise and provide their services only to a particular class of users. It would therefore be possible for a network to specialise in the movement of EDI information and documentation

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[19] Kathleen C. Hinge *Electronic Data Interchange- From understanding to implementation* AMA Membership Publication Division (New York) 1988

[20] For more information on the role of Value Added Networks see - http://www.va.gov/publ/standard/edifaq/vans.htm

[21] See supra note 14 at 17-20

exclusive to the shipping industry. In practice however, it is likely that the parties will have to make use of multiple networks because of the vast amount of documentation involved originating from the various sectors in an international trade transaction. In some cases, an additional network might be required to connect the different parties to each other.

The choice of the Value Added Network is crucial to the operation of the EDI transmission. The VAN will control the communication between the various parties and will hence be responsible for the smooth operation of the electronic transfer of the relevant documentation. If the VAN experiences problems or shuts down completely, this will directly affect the transfer of the electronic documentation. Liability issues are also likely to arise under these circumstances and these issues will have to be regulated in an underlying user agreement.

5. TECHNICAL PROBLEMS

There are a number of technical problems associated with EDI. One of these is the fact that electronic documents have to be exchanged according to a certain common standard. A standard data format would therefore be required in order to ensure compatibility between the various systems currently in use.

Furthermore, it is essential for the relevant data documentation to conform to adequate security standards.[22] Opponents of EDI argue that the electronic transmission of data is not secure enough to provide a solid foundation for transmitting the bill of lading on a computer. These are valid concerns and will have to be addressed. However, it is submitted that various techniques exist to secure the data transmission and provide for the integrity of the message. These techniques include encryption and the use of Personal Identification Numbers. Alleviating fears about real and perceived lack of security will be a great challenge to the proponents of EDI.

5.1. STANDARDS

Electronic documents have to be exchanged in a standard data format. The computer has to process the data to enable the data to become information that can be understood by the

receiver. **Document content standards** are used for this purpose. These standards will then ensure that the order in which data appears is fixed to a certain common standard.[23]

Unfortunately, the search for a common standard has resulted in two very different standards being developed. In the United States of America the ANSI X12 cross-industry standard (American National Standards Institute Accredited Standards Committee X.12) is widely in use while the United Nations (in co-operation with the International Standards Organisation) has developed EDIFACT (EDI For Administration, Commerce and Trade). EDIFACT[24] consists of:

> *"a set of internationally agreed standards, directories and guidelines for the electronic interchange of structured data, and in particular that relating to trade in goods and services, between independent computerised information systems".*

The EDIFACT language is made up of a comprehensive coded data register. This register basically covers all the words and printed forms used in trade.[25] Furthermore, it provides a common syntax and format that will result in the production of recognisable shipping documents. It would not make a difference if the hardware and the software used are not compatible. Human intervention will therefore not be necessary to process the information. This will enable the bulk of the shipping documentation to be processed at a speedy rate which in turn ensures efficiency and savings in costs. A carrier could therefore send a computerised bill of lading according to an agreed standard (e.g. EDIFACT); the shippers computer will instantly recognise the document as a bill of lading and proceed to conduct computer operations on the document.

The lack of a universally agreed standard should not necessarily be seen as a bar to the growth of international trade or the use of EDI. Some commentators have suggested that a common standard is not desirable in an industry where every sector has its own unique way of communicating and conducting business.[26]

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[22] See infra 5.2
[23] See supra note 14 at 21
[24] See infra note 31
[25] See Bernard Wheble *The EDI handbook* Blenheim Online Publishers London (1988)

In order to ensure the full benefit of a universally recognised standard, it is suggested that parties should specify the standard to be used in the interchange agreement. This would ensure that an added degree of interchange security is obtained. The technical problems relating to a common 'language' or agreed standard can therefore easily be overcome by co-operation of the various sectors involved in the exchange of information by EDI. Other problems however remain, these are:

- Providing the necessary hardware and software service. These services will have to be agreed upon in the interchange agreement.
- Providing adequate backup procedures for emergencies. It is essential to establish the liabilities involved in the event of a communications breakdown.

It is suggested that these technical problems can easily be overcome by drafting a proper interchange agreement to regulate the EDI operations of the parties. However, the greatest area of concern for the parties will be to provide for adequate security.

5.2. SECURITY

In order for traders to be comfortable with the use of EDI, they will have to be satisfied that the system as a whole, and the message in particular, is secure. Security weaknesses will also inhibit the legal acceptance of EDI transactions. Various methods are used to ensure that the electronic data is transmitted on a secure basis. These methods include passwords, encryption, PIN codes and electronic signatures. Encryption will ensure that the data transmission is kept confidential while authentication will provide for data integrity.

5.2.1. PROTECTING THE SYSTEM

The data stored in the computer system is susceptible to tampering. Access to the data will therefore in most cases be restricted to authorised users. The use of an access card is one way of ensuring that only an authorised person uses the system. It is almost impossible (and neither financially viable) to provide a foolproof system. The parties would therefore have to agree to

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[26] Debatista C *Incoterms in Practice* ICC 1995

the level of security needed in order to minimise the risk of fraud or tampering. The need for security has also been recognised by UNCITRAL, stating that:

> *"...it is cleat that the legal reliability of EDI techniques requires that high standards be used to determine legal certainty as to the identity of the sender, its level of authorisation and the integrity of the message".*[27]

It might also be useful for parties to have their system audited by a security expert at various intervals. The security expert should be independent and must ensure that the required security measures have been implemented. This would provide for an added sense of security between the parties.

5.2.2. PROTECTING THE INTEGRITY OF THE MESSAGE

The message integrity can be assured by the process of authentication, i.e. ensuring that the data sent has not been tampered with. Encryption would seem to provide the most security but it must be noted that encryption techniques are prohibited by some governments as reported in a recent Time magazine article.[28] Governments opposing the export of encryption techniques fear that this technology might be abused by criminals and terrorists. Parties would normally agree to the use of encryption in the interchange agreement. One example of a model interchange agreement that provides for encryption is UNCID. Article 9(b) deals with the possibility of parties to agree to use encryption.

An interesting development concerning EDI security has been the approval of a resolution by the American Bar Association (ABA) dealing with legal-security issues involving electronic data interchange and electronic commerce.[29] According to this resolution, the ABA has to:

- facilitate and promote the orderly development of legal standards to encourage use of information in electronic form, including appropriate legal and professional education;
- encourage the use of appropriate and properly implemented security techniques, procedures and practices to assure the authenticity and integrity of information in electronic form; and

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[27] *Electronic Data Interchange* Report of the Secretary General. UNCITRAL 246th Session at Vienna 10-28 June (1991) U.N. Doc. A/CN.9/350 at 23

[28] Time magazine September 1 (1997) at 29

- recognise that information in electronic form, where appropriate, may be considered to satisfy legal requirements regarding a writing or signature to the same extent as information on paper or in other conventional forms when appropriate security techniques, practices, and procedures have been adopted.

As has already been mentioned, cryptography offers a viable means of providing security. However, the costs of implementing these measures are often quoted as an inhibitor. This problem was addressed in a workshop (conducted by the National Institute of Standards and Technology of Gaithersburg, Maryland) on Security Procedures for the Interchange of Electronic Commerce.[30] The cost in implementing cryptographic methods would include software licensing, export filing process, overheads and professional training of staff. It was argued that a premature consideration of costs could eliminate other viable options.[31] The parties would therefore have to evaluate their underlying requirements to determine what level of security is required. Since a bill of lading is a document of title and entitles the holder to claim delivery of the goods, the level of security needed would have to be substantially higher than the security required for a normal receipt.

Security services will have the added benefit of providing services that are not possible to provide with paper-based techniques. An example of such a service is **non-repudiation**. This method ensures that the originator of a document cannot deny the origin of the document, thereby providing irrevocable proof of authenticity.

Digital signatures are limited in some respects. Parties making use of EDI or digital signatures will often have to revert to a trusted third party to provide security assurance. The third party will be required to date-stamp, store and keep an audited data log of the transaction.[32] This would provide proof of the time of origination and content of the electronic document. Once again, the liability issues arising from the use of a third party will have to be worked out in the interchange agreement.

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[29] ABA Resolution no. 115 approved on August 19, 1992

[30] The abridged version of the workshop (NISTR 5247) was obtained from the internet. The workshop was conducted by Michael S. Baum, J.D., M.B.A. who chairs the EDI and Information Technology Division and the Information Security Committee, Section of Science and Technology of the American Bar Assosiation.

[31] Baum *supra* note 30 at 18

[32] Id.

Proper message or data authentication will also enhance the evidential value of the message. The court will have to be sure that the message submitted as evidence is authentic. Admissibility of EDI evidence will be dealt with later.

6. LEGAL PROBLEMS

EDI has been the catalyst for a number of changes in the scope and function of the law. Legal reform has however not always kept pace with technological development. The legal problems involved in implementing EDI on a global basis become apparent when viewed against the relevant statutory requirements imposed by the various jurisdictions. Bills of lading have to meet certain statutory and formal requirements before they become legally enforceable. These requirements will now be examined.

6.1. ELECTRONIC CONTRACTS

Electronic contracting brings new challenges regarding the enforcement and validity of such contracts. Computer documentation, such as the bill of lading, which is transmitted electronically will require an adjustment to legal practice which is mainly geared towards dealing with paper based documentation.

The main problems regarding electronic contracting will be to comply with the statutory or formal requirements of contracts. These requirements, for example that the contract has to be in a written form, were devised and developed mostly before electronic contracting became a reality. It has been argued that:

> *"[The] three main issues relating to electronic contracting concern the legal formalities, the time and place that the contract was made and the admissibility of computer evidence in civil proceedings".*[33]

It is clear that these issues will have to be resolved in order to provide the necessary legal security to facilitate the growing use of electronic contracting. Parties dealing with EDI will

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[33] Bainbridge, D *Introduction to Computer Law* 3rd Edition Pitman Publishing (1996) at 212

need to be assured that the electronic bill of lading is afforded the same statutory recognition as the traditional paper bill of lading.

6.2. ADMISSIBILITY OF EVIDENCE

From a legal point of view, it is important that EDI evidence is admissible in a court of law. Most of the procedural rules dealing with the admissibility of evidence are based on the admission of paper based documentation. The age of the computer revolution has consequently found many jurisdictions ill-equipped to deal with the admission of computer evidence. Unless and until EDI evidence is fully admissible in court, the legal obstacles to the full-scale implementation of EDI will not be resolved. The emphasis of this paper falls on the substitution of the traditional bill of lading in a global environment. It becomes therefore necessary to deal with the admissibility of EDI evidence from both a common law as well as a civil law perspective. Courts would normally apply the rules of the lex fori when dealing with the admission of evidence.[34] The position under current South African law will also be examined.

6.2.1. COMMON LAW

Most common law jurisdictions have similar requirements regarding the admission of evidence. The hearsay rule and the best evidence rule feature prominently in the common law adversarial system.

Hearsay can be defined as *'evidence of statements made by persons not called as witnesses and which are tendered for the purpose of proving the truth of such statements'*.[35] These statements can not be challenged and are therefore generally excluded.[36] The question is now if records of computer evidence such as EDI would also be excluded. It is important to realise that most common law jurisdictions have devised a number of exceptions to the hearsay rule. The result is that most documentary evidence is now admissible in court.[37]

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[34] Forsyth, CF *Private International Law* 2nd ed. Jutta.Publishers Cape Town (1990) at 17
[35] *Estate De Wet v De Wet* 1924 CPD 341
[36] Cf. section 6(3) of the Admiralty Jurisdiction Regulation Act, No. 105 of 1983
[37] Walden *EDI and the Law* Blenheim Online Publishing London 1989

The **English Civil Evidence Act of 1968** makes provision for the fact that statements made in a document produced by a computer are admissible as evidence of any fact stated in those (computer) documents.[38] However, the following conditions have to be satisfied:

(a) The document must have been prepared during a period in which the computer was regularly used to process information for the purposes of any activities regularly carried on over that period;
(b) The information contained in the document, or from which it is derived, was over that period regularly supplied to the computer in the ordinary course of those activities;
(c) The computer must have been operating properly. If it was not operating properly then the reason for the malfunction must not affect the accuracy of the document;
(d) The information contained in the document must either be reproduced or derived from information supplied to the computer during the ordinary course of the activities for which it is used.

The conditions for admissibility are therefore fairly stringent and it is argued that they leave scope for a wide variety of technical arguments.[39] For example, one of the requirements is that the computer was 'regularly' used. However, the Act does not define what is meant by 'regular use' and this creates potential problems. The implication seems to be that a party who uses a computer only once to transmit information would have difficulty proving that the computer was 'regularly used'.

Another potential problem under the Act is the fact that it does not deal with security issues. The South African Computer Evidence Act, which will be dealt with later in this paper, has been subjected to similar criticism.[40]

In the **United States** the admissibility of computer evidence is regulated on the federal level. In conformity with other common law jurisdictions there are also a number of exceptions to the hearsay rule. Computer output is admitted under one of these exceptions designed to admit 'business records'.[41] New Uniform Rules of Evidence have also been promulgated. These rules allow exceptions to the hearsay rule based on the admissibility of 'business records'.

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[38] See section 5 of the Act
[39] See Walden supra note 37 at 17
[40] Act 57 of 1983
[41] Walden supra note 37 at 27

Walden therefore argues that: *"The cumulative effect of rules 803-804 of the Uniform Rules would seem to make all commercial EDI records, whether compiled from human knowledge or automatic recording, admissible in United States litigation".*[42]

The **British** legislature has responded to the growing rate of computer crime by passing the Computer Misuse Act of 1990. Criminal sanctions are imposed in the event of computer misuse. This should indirectly facilitate the use of EDI by imposing a sense of security in business which wants to implement EDI but has hitherto been reluctant to do so because of the perceived lack of security. Sections 1-3 of this Act creates three offences, these being:

- obtaining unauthorised access to a program or data held on a computer;
- doing the above with the intention to facilitate the commission of a further offence; and
- unauthorised modification of the contents of any computer.[43]

Bills of lading fraud should be curtailed with the threat of criminal sanction hanging over any would-be hacker's head.

The **best evidence** rule is also familiar to most common law lawyers. This rule requires a party who wishes to submit the content of a document as evidence in court to produce the original document. A number of exceptions to this rule also exist and the rule has been watered down considerably in some jurisdictions. Furthermore, this rule only applies where the content of the document is in dispute. It appears that secondary evidence would be admissible in most common law jurisdictions as long as the absence of the original can be explained satisfactorily. What is the position regarding the best evidence rule with regard to computer evidence? For example, how would a carrier prove that a bill of lading has been issued to the shipper where the bill of lading was issued by means of EDI? There is no paper document to prove that an original bill of lading was issued.

It seems as if a printout of the original bill of lading would be sufficient to produce the best evidence. This printout does not necessarily have to be the first printout produced but any

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[42] See supra at 28
[43] Carr, IM supra note 14 at 180

printout of the original would suffice. This seems to be the current position, at least in the United Kingdom.[44]

However, difficulties arise in the context of EDI. In an EDI system, a bill of lading would be issued by the carrier via electronic means. In such a scenario there never was a paper document to start with. The data contained in the transmission is also likely to undergo processing before reaching the shipper. The shipper is therefore presented with information that has been electronically altered before reaching him. In these circumstances, it seems hardly possible to talk of an 'original document'.

This problem is however only likely to occur where the carrier and the shipper dispute the content of the relevant bill of lading. In other words, the carrier will issue one copy and the shipper receives an entirely different one. The CMI rules would prevent such an occurrence because of the necessity to acknowledge receipt of the message. Any discrepancies in the message would easily be picked up by the other party and this considerably lessens the risk of agreeing to false information.

The best evidence rule is also applicable in the United States. Courts in the United States seem to have no difficulty in accepting evidence in computer readable form.[45]

6.2.2. CIVIL LAW

Civil law jurisdictions are generally based on the inquisitorial system. This entails that all relevant evidence is usually admissible and the court will then attach the necessary weight to the evidence. The system does not view the trial as a contest between the two opposing parties but rather as an enquiry into establishing the material truth.[46] The court will take into consideration all the relevant factors in assessing the weight to be attached to the evidence. This is not always an easy task.

Consequently, the admission of computer generated evidence would not undergo the same scrutiny afforded to the same evidence admitted in a common law (adversarial) system.

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[44] See Walden supra note 37 at 25
[45] See Walden supra note 37 at 28
[46] Skeen et al *Principles of Evidence* Jutta & Co Ltd.(1997) at 152

However, the court would still be faced with the difficult task of determining what weight should be attached to the evidence.

6.2.3. SOUTH AFRICA

The position regarding the admissibility of computer evidence has received some attention by the legislature. The **Computer Evidence Act** 57 of 1983 (the "CEA"), the **Civil Proceedings Evidence Act** 25 of 1965 (the "CPEA") and the **Criminal Procedure Act** 51 of 1977 (the "CPA") all contain provisions regarding the admissibility of computer evidence.

The Computer Evidence Act imposes a number of requirements regarding the admissibility of computer evidence.[47] Section 2 deals with the authentication of computer print-outs. Section 2(1) makes provision for the authentication of computer print-outs by means of an affidavit. A number of requirements have to be met before the computer print-out is authenticated. These include:

- identifying the computer print-out;
- a general description of the nature, extent and sources of data supplied to the computer;
- a certification that the computer was correctly supplied with data unaffected by any malfunction or disturbance which might have affected the reliability of the computer; and
- a certification that no reasons exist to suspect the reliability of the information reflected by the computer print-out.

It would therefore be difficult to meet these requirements in the event of a computer breakdown. Especially in the context of an EDI system liability issues are bound to arise in the event of a system malfunction. A system malfunction (e.g. a breakdown in the hardware or software) might be fairly commonplace and need not necessarily reflect on the accuracy of the document. Before the print-out can be authenticated it would have to meet the stringent requirements of section 2.

Section 3 deals with the admissibility of the computer print-outs dealt with above. It reads:

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[47] Act 57 of 1983

"In any civil proceedings an authenticated computer print-out shall be admissible on its reproduction as evidence of any fact in it of which direct oral evidence would be admissible".

It is important to note that this Act is only applicable to the admissibility of computer evidence in civil proceedings. The court would have to look at all the relevant circumstances of the case before determining what weight should be attached to the evidence (printout). The Act also gives a number of definitions in order to ease the admission of computer evidence. This was necessitated by the strict requirements laid down in the CPEA.[48] Admission of computer evidence under the CPEA was notoriously difficult. The Act required that the maker of the statement should have personal knowledge of the transaction.

It is suggested that the CEA is not a perfect solution. Problems still exist and have to be addressed. For example, the deponent to an authenticating affidavit (as required by section 2[1]) would have difficulty convincing the court that the system functioned properly. Even if he could do so, he would merely be expressing an opinion and various other experts might be required to give evidence as to the proper operation of a particular part of the unit.[49]

In criminal proceedings section 221 of the Criminal Procedure Act would still apply. This section deals with the admissibility of documents which have been drafted in the ordinary course of business. The question is now if the section also deals with the admissibility of computer evidence. The Act does not define what is meant by a document. Under English law a bill of lading would be admissible as a record.[50] In *S v Harper*[51] the court held that section 221 includes the admissibility of computer print-outs. The court reached this conclusion in the light of the relaxation regarding the admissibility of hearsay evidence. It has been suggested that the approach of the court in this case presents a possible solution to the admissibly of computer evidence in the future.[52]

The Law of Evidence Amendment Act was assented to on the 15th of April 1988. Section 3 makes provision for the admissibility of hearsay evidence. Section 3(1)(c) reads:

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[48] See section 34 CPEA
[49] Skeen *Principles of Evidence* Jutta & Co Ltd. (1997) at 212
[50] *R v Jones, Sullivan* 1978(2) ALL ER 718 (CA)
[51] 1981 1 SA 88 (D)
[52] Eiselen, GTS *Elektroniese Dataverwisseling en die Bewysreg* 1992 (5) THRHR at 215

"Subject to the provisions of any other law, hearsay evidence shall not be admitted as evidence at criminal or civil proceedings, unless-
the court, having regard to-

(i) *the nature of the proceedings;*
(ii) *the nature of the evidence;*
(iii) *the purpose for which the evidence is tendered;*
(iv) *the probative value of the evidence;*
(v) *the reason why the evidence is not given by the person upon whose credibility the probative value of such evidence depends;*
(vi) *any prejudice to a party which the admission of such evidence might entail; and*
(vii) *any other factor which in the opinion of the court be taken into account,*

is of the opinion that such evidence should be admitted in the interests of justice."

The court has therefore a wide discretion in allowing hearsay evidence, which includes computer evidence, to be admitted. It has been suggested that section 3 presents a better solution than the strict requirements of the Computer Evidence Act in admitting computer evidence.[53].It must also be mentioned that the South-African admiralty courts were not subject to the same strict admission requirements (regarding hearsay) as the ordinary municipal courts. Section 6(3) AJRA reads:

"A court may in the exercise of its admiralty jurisdiction receive as evidence statements which would otherwise be inadmissible as being in the nature of hearsay evidence, subject to such directions and conditions as the court thinks fit".

It appears therefore that the admiralty court would have a wide discretion in admitting hearsay, and by implication computer evidence. However, it is submitted that legislative reform will still

[53] Eiselen supra note 52 at 218

be necessary to pave the way for the litigation which is bound to ensue once EDI use becomes widespread. This is particularly important given the fact that EDI operates on a broad cross-industry platform and is not limited to a particular mode of transport operation. The admission of EDI generated evidence is crucial to the successful implementation of an EDI system.

6.2.4. THE CONVENTION ON THE INTERNATIONAL SALE OF GOODS

The 1980 Vienna Convention on the International Sale of Goods (hereafter 'the Convention) deals with the sale of goods which have an international character. The Convention would also be applicable to carriage of goods by sea. Section 2 excludes the sale of goods for domestic use. For present purposes emphasis will be placed on the issue surrounding the admissibility of computer evidence. The bill of lading is evidence of the contract of affreightment and the evidential issues that are dealt with will therefore also indirectly affect the status of the bill of lading.

Article 11 if the Convention aims to rectify the situation in a number of jurisdictions where computer evidence would be excluded and provides:

> *"A contract of sale need not be concluded in or evidenced by writing and is not subject to any requirements as to form. It may be proved by any means, including witnesses."*

In terms of Article 96 a Contracting State can contract out of the provisions in the Convention regarding the manner in which the contract can be evidenced. This means that a Contracting state can preserve its own domestic provisions regarding these matters.

6.2.5. THE MULTIMODAL TRANSPORT CONVENTION

The Convention on International Multimodal Transport of Goods was adopted in 1980 by the United Nations.[54] The Convention was necessitated by the growing use of containerisation in international transport. There was a need to interrelate the rules relating to the rights and

liabilities of shippers and carriers with intermodal carriage.[55] It is possible to contractually extend the maritime bill of lading to land carriage, providing of course that there is no conflict with other applicable laws.

The United States, in particular, argued that the documentation should be *'both simple and highly adaptable to electronic data processing techniques'.*[56] The result is that the Multimodal Transport Operator may use electronic means to make a record of the shipping details.[57] Furthermore, a computer printout may be delivered to the consignee of the goods. This printout would then equal a multimodal document. The requirements regarding signature have also been relaxed to include electronic signatures.

However, the carrier would still not be able to substitute the bill of lading with EDI messages under the Convention.[58] The Convention does make it possible to use a EDI message to substitute a non-negotiable document, such as a sea waybill. In terms of article5(4) of the Convention, a Multimodal Transport Operator can issue a non-negotiable document, such as the sea waybill, which in turn can be issued electronically.

The Multimodal Convention highlights the significant shift towards the international acceptance of electronic documentation. The United States delegation felt that:

> *"In essence, ... the objective of giving the Multimodal Transport Operator the choice of using electronic data processing was reached".*[59]

6.3. WRITING

Local laws differ significantly on what documents have to be in a written form. Bills of lading in particular are usually required to be in writing because of their importance in international trade. The bill of lading is a document of title and entitles the holder to take delivery of the

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[54] U.N. Doc. TD/MT/CONF/16 (1980)
[55] *The Convention on International Multimodal Transport of Goods Tulane Law Review* Volume 57 December 1982 Number2 at 195
[56] See supra note 55 at 206
[57] Article 5(4) of the Convention
[58] Jones, P *International Transport Conventions: Obstacles to the Use of EDI* The EDI Law Review 1 (1994) at 279
[59] See Driscoll & Larsen supra note 55 at 224.

goods. The Hague-Visby rules which have been enacted into the South African Carriage of Goods by Sea Act[60] do not explicitly require the bill of lading to be in writing. However, the implication is that the bill of lading is a 'document' and has to be 'issued'. Writing is therefore presumed.

In the absence of any express provisions in the Hague-Visby rules, attention has to be focussed on the courts. It would depend on a proper interpretation of these requirements by the courts to establish if EDI meets these requirements. Writing serves an important function in international trade. UNCITRAL has attributed the following functions to the writing requirement:

> *"to provide that a document would be legible by all; to provide that a document would remain unaltered over time; to allow for the reproduction of a document so that each party would hold a copy of the same data; to allow for the authentication of data by means of a signature; and to provide that a document would be in a form acceptable to public authorities and courts."*[61]

The writing requirements of the various domestic laws can be seen as inhibiting the growth of EDI. This was recognised by the United Nations Commission on International Trade Law (UNCITRAL). The preliminary study of UNCITRAL saw these requirements as a major obstacle to the development of EDI.[62] The UNCITRAL Model Law on Electronic Commerce deals with the writing requirements. Per article 6:

> *" Where the law requires information to be in writing, that requirement is met by a data message if the information contained therein is accessible so as to be usable for subsequent reference "*

Article 6(3) then contain a number of exceptions. Should the Model Law be adopted it would provide a great impetus to the development of EDI. It would be an impossible task to examine the domestic laws of every country where EDI is used. What follows is therefore a brief

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[60] Act 1 of 1986

[61] UNCITRAL *Report of the Working Group on International Payments* 24th session A/CN.9/360 February 1992 at Part III.A.

[62] *Electronic Data Interchange: Prelimenary Study of Legal Issues Related to the Formation of Contracts by Electronic Means*, Report of the Secretary General. U.N. Commission on International Trade Law. 23rd Session, U.N. Doc. A/CN.9/333, 79 (1990) at page19

examination of how the writing requirement is approached in the context of EDI in a number of jurisdictions. These jurisdictions present a significant part of the global shipping trade.

As a general observation, it can be stated that the writing requirement is liberally interpreted by both common law and civil law jurisdictions. In the context of EDI writing can be seen as any message that is capable of becoming paper based.

6.3.1. WRITING: UNITED STATES OF AMERICA

Bills of lading in the United States are governed by the following Acts: The Harter Act of 1893, The Federal Bills of Lading Act of 1916 (Pomerene Act) , and the Carriage of Goods by Sea Act of 1936.[63] The Hague Rules have been enacted into domestic law by the United States COGSA.

The *statute of frauds* in the United States provides that a contract for the sale of goods which is valued at $500 or more has to be evidenced in writing and signed by the party against whom enforcement is sought.[64] The problem is that EDI transactions are not in writing and a human signature is often not required.[65] The whole idea underlying EDI is a paperless system which can function without human intervention and would therefore be cost and time effective. It has been held that telexes suffice to meet the writing requirements of the statute of frauds.[66] In theory it should therefore also be possible to bring EDI within these requirements. The speed and likelihood of this happening will depend on the liberal approach adopted by the courts.

The purpose of the writing requirement seems to be to have some sort of proof that the parties actually entered into an agreement. It is obviously also possible to enter into an oral agreement but problems might arise if one of the parties seeks to disprove the existence of such an agreement in a court of law. Certain (important) documents are therefore required to be in writing The courts, when dealing with the writing requirements, have held that regard must be

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[63] Winship, P supra note14 at 265
[64] U.C.C. Section 2-201 (1993)
[65] Http://www.cl.ais.net/lawmsf/articl3.htm
[66] *Interocean Shipping Co. v. National Shipping and Trading Corp.* 523 F2d 527,538 (2nd Circuit 1975)

had to the economic reality of the present time. Furthermore, in the Uniform Commercial Code[67] writing is defined as:

> *" ...any intentional reduction to tangible form. "*

This definition appears to be wide enough to include EDI. In terms of the Harter Act the carrier has to issue a bill of lading. Once again this implies a document which can be evidenced in a written form. The United States COGSA also applies to bills of lading. It only has the force of law from the time that the goods are loaded on to the time of discharge from the vessel.[68] This period is commonly referred to as *"tackle to tackle"*. The Maritime Law Association of the United States has been preparing amendments to COGSA. These amendments would broaden the definition of 'contract of carriage' to include negotiable and non-negotiable bills of lading *"whether printed or electronic"* [69] This would accommodate the development of EDI in bills of lading.

The Pomerene Act, unlike the other relevant Acts, specifically requires the bill of lading to be in writing.[70] The Pomerene Act does not govern bills of lading issued in a foreign country for shipment to the United States but only governs bills of lading issued for domestic interstate carriage and bills of lading issued by common carriers for outbound carriage.[71] It remains to be seen how a electronic bill of lading is interpreted against the Pomerene Act. Legislative reform will be necessary to conform to these provisions.

6.3.2. WRITING: GREAT BRITAIN

The interpretation Act of 1978 defines writing as:

> *"typing, printing, lithography, photography and other methods of representing or reproducing words in visible form, and expressions referring to writing are construed accordingly".*

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[67] UCC s. 1-201(46)
[68] 46 U.S.C. app. section 1301(e)
[69] Winship, P supra note 14 at 268. The draft referred to is the MLA Draft of the 12th September 1994.
[70] 46 U.S.C. section 81-124
[71] 49 U.S.C. section 80102

This should be a wide enough definition to include electronic transmission such as EDI. The Bills of Lading Act of 1855 was replaced by the Carriage of Goods by Sea Act of 1992. This Act represents a significant step forward in the pursuit of the electronic replacement for the paper bill of lading. In terms of Section 1(5) the Act can be applied to any information technology which corresponds to the issue of a document to which the Act applies. This would include the endorsement, delivery or transfer of the document. The Act anticipated future technological development.

In general it can be said that English law is adopting a liberal approach to the writing requirement. The new COGSA as well as case law seems to support such a view. It was held in Grant v Southwestern & Country Properties Ltd. that: *"the mere interposition of necessity of an instrument for deciphering the information cannot make any difference in principle".*[72] This means that a message would still be held to be a document even though there is no printer or other instrument to decipher the information.[73]

6.3.3. WRITING: JAPAN

In Japan the form of the bill of lading is governed by The International Carriage of Goods by Sea Act, the Law of 13th June 1957 as amended by the Law of 3rd June 1992.[74]

Japanese law requires the bill of lading to be a written document. It seems as if the use of EDI as a substitute for the bill of lading is permitted even though Japan has to my knowledge not enacted any legislation dealing with EDI. However, it must be remembered that a substitute for the bill of lading will only be recognised if the shipper does not demand a bill of lading. If the shipper demands a bill of lading then the formalities (in casu a written document) have to be met.

There is also an acknowledgement that arrangements are necessary to make EDI evidence admissible, especially in light of the writing requirements for bills of lading.

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[72] [1975] Ch. 185
[73] Faber, D *LMCLQ*. (1996) Part 2 May 1996 at 236
[74] See supra note14 at 217-227. This information was obtained by the national reporters of Japan during the XIVth International Congress of Comparative Law, held in Athens in 1994.

6.3.4. WRITING: SOUTH AFRICA

The Hague-Visby rules were adopted into South African legislation by the SA Carriage of Goods by Sea Act of 1986. As has already been mentioned earlier the Hague-Visby rules have no formal requirement that the bill of lading has to be in writing. However, the document has to be "issued". This seems to imply a written document. The question is therefore whether or not a South African court exercising its admiralty jurisdiction would hold that the writing requirement has been complied with in the case of electronic documentation. The South African draft Title to Sue Act makes provision for EDI and will be dealt with elsewhere in this paper.[75]

6.3.5. WRITING: BELGIUM

The Belgium courts have developed a definition for the 'writing' requirement in the absence of any statutory definition. Writing is regarded as:

> *"a technique that consists of recording language by signs that are intelligible to other persons".*

It is therefore argued that encrypted computer language would not meet this requirement.[76] It can furthermore be said that writing is a prerequisite for the existence of a negotiable instrument, such as the bill of lading.[77] It seems as if the paperless form of a negotiable instrument will not become a reality unless such a form is expressly authorised by legislative provision.

Belgium courts adopt a strict approach to the requirement that the document has to be in writing. The Hague-Visby rules imply that the bill of lading is a document and has to be signed by the master. Does this imply a paper document? The Belgian courts have held that it indeed

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[75] See paragraph 6.7.2 infra

[76] This was argued by K.Bernauw, the national reporter of Belgium at the XIVth International Congress of Comparative Law held in Athens,Greece in 1994. For further information see supra note 14 at 115-122

[77] Van Ryn & Heenen *Principes de Droit Commercial* Brussels,Bruylant.(1981) III.p.81,no.79

implies a paper document.[78] This represents a significant obstacle to the implementation of EDI in Belgium. However, legislative reform will most likely be introduced to accommodate the paperless or electronic bill of lading and other similar documentation.

6.4. SIGNATURE

The purpose of the signature requirement is to authenticate the document. Furthermore, when a signature is affixed to a document or a contract of sale it symbolises an intention to be legally bound. The traditional concept of signing a paper document has to be re-evaluated in terms of the electronic bill of lading. In an EDI transaction no 'human' signature is required. It has been suggested that such a transaction can be electronically *signed* by means of algorithms contained within their data streams to authenticate the identity of the sender.[79] This would act as a password which in turn can only be read by the recipient if he is in possession of a electronic 'key'.

The bill of lading is usually signed by the carriers agent at the port of loading, thereby acknowledging the condition and quantity of the goods when they were put on board. The master or his agent also has authority to sign the bill of lading.[80] A bill of lading is also sometimes endorsed to a 3rd party during the carriage. This would also require a signature by the then holder of the bill of lading. There have been a number of suggestions on how to accommodate the signature requirement in an electronic environment such as EDI.

- The first possibility is to revise the laws requiring signature to accommodate the electronic signature. This would involve extensive legislative reform.[81]
- It is also possible to redefine the traditional terms (such as 'signature') to accommodate EDI.[82] The CMI Model Rules on Electronic Data Interchange have adopted this approach. CMI Rule 11 states that the parties may agree that the signature requirements are met by

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[78] De Lamberterie *'La Valeur probatoire des documents informatiques dans les pays de la C.E.E.'* Revue Internasionale de Droit Compare, 1992, at 682

[79] Eric S. Freibrun @ http://www.cl.ais.net/lawmsf/articl3.htm

[80] Payne & Ivamy *Carriage of Goods by Sea* 13th ed. Butterworths London (1989) at 84

[81] UNCITRAL *Preliminary Study* supra note 16 at 51

[82] See supra note 14 at 35

EDI. This option should prove popular given the massive expenditure and delay associated with wide-spread legislative reform.

However, difficulties still exist with replacing the traditional hand-written signature with an electronic signature. The problems involved in implementing electronic signatures are significant. Signature is used to authenticate a document, making it a unique identifying mark. Computers however, are capable of producing identical sets of signatures (or symbols) thereby eroding the confidence associated with manual signatures. It must be noted that these problems can (and must be) overcome in order to implement EDI fully. Walden notes that:

> *"If an electronic equivalent[to the traditional signature] satisfies the core requirement of uniqueness and intention to authenticate, it should be capable of being recognised by the law".*[83]

It is suggested that this is the correct approach, and that such uniqueness is technically achievable.

6.4.1. FUTURE DEVELOPMENTS REGARDING SIGNATURE

There are a number of possibilities for electronically replacing the traditional hand-written signature. These range from systems which are already well established such as the Personal Identification Number (PIN) ,which is widely used by the banking industry to more exotic and futuristic developments such as biometrics.

Encryption systems can provide a viable alternative to the traditional signature. In such a scenario, complex algorithms are used to encode the textual message before it is transmitted. This would provide evidence of the fact that:

- The message or data has been received from a person who is in control or possession of the only key capable of converting the message into the received code; and
- The encoded message has not been tampered with, i.e. it is 'original'.[84]

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[83] Walden. *Evidential issues of EDI* at 34

[84] Nicoll, C *Journal of Business Law* (1995) at 32

However, this system is far from perfect. It does not provide conclusive proof of the 'signature' of the sender because the possibility remains that the message was sent by an impostor. It only proves that the sender had control of the key to encrypt the message. Since the system of single encryption is insufficient to meet the signature requirements the answer must lie elsewhere. It has therefore been suggested by a number of writers and authorities on the subject to use a system of double encryption to provide for both electronic signature and security.[85] This entails using a 'public key' and would function as follows:

The shipper would encode his message using his own private key. This key is unique and only known to the shipper himself. He would then re-encode the message using the carrier's public key. This message is then transmitted to the carrier. The carrier can only decode the message with his own unique private key. This will confirm to the carrier that the message originated from the shipper. The carrier will then decode the message by means of the shipper's public key. The algorithms which make up the 'key' system are very complex and in theory it would be almost impossible to decode the message using unauthorised means. The public key will be registered with a trusted third party who will establish the identity of the person wishing to register his 'electronic signature' by conventional means. This will enable potential receivers of the encoded message to have access to the public key.[86]

Another advantage of this double encryption system is that it allows the route of the message to be retraced, something which is not possible with conventional signatures where the recipient will find it difficult to verify the signature from manually signed communications.[87] It remains to be seen if encryption is accepted as constituting signature by law. It is suggested that there should be no objection to the legal recognition of encryption if it meets the requirements and level of proof required for manual signatures.

The future development of encryption has also aroused the interest of various governments. Time magazine[88] reports that the United States government plans to subject the export of sophisticated cryptography to strict control. The purpose is to prevent this powerful instrument

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[85] Walden supra note 37 at 35-36 and Nicoll supra note 84 at 32-34
[86] See supra 84 at 33
[87] Id. at page 36
[88] Time magazine September 1 1997 at 30

Personal Identification Numbers (PIN) could also be used to provide a electronic signature. The use of a PIN can be illustrated as follows: The shipper would be issued with a PIN card which contains his own personal PIN number. This number is unique to the PIN card. The shipper would then enter his PIN card into the computer and enter his PIN number to send the message. This PIN would then be part of the message. The carrier can then verify the validity of the PIN against that on the card. However, there appears to be some doubt about the level of security of such a PIN system. It has been suggested that security could be increased by using PIN's which are regularly changed in conjunction with SMART cards which would have a built-in 'chip' or integrated circuit.[89] The success of such a system would also depend on legal acceptance of the signature requirements.

The use of **biometrics** to substitute the traditional signature is also a viable, albeit somewhat futuristic, option. Biometric features are unique to each individual and would therefore provide a maximum level of authentication. These systems would include, but are not restricted to, palm and finger printing, voice recognition and retinal scanning.[90] Future technological development should provide even more secure means of authentication and signature.

Lastly, it must be mentioned that digital signatures are increasingly gaining acceptance. The first legislation in the world dealing with the authorisation of digital signatures was passed in 1995. The **Utah Digital Signature Act of 1995**[91] applies to the creation of digital signatures for various documents by providing for two encryption keys. It therefore provides for the legal creation of digital signatures.[92]

6.5. NEGOTIABILITY

A bill of lading entitles the holder to take delivery of the goods. As has already been mentioned, the holder of the bill of lading might want to transfer ownership of the goods. This is done by endorsing the bill of lading to a third party, who then becomes the legal holder of the bill of

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[88] Time magazine, September 1, 1997 at page 30
[89] Walden supra note 37 at 35
[90] Id. at page 36
[91] Utah Code Ann. Section 46-3-101 et seq.
[92] Livermore and Euarjai *Electronic Bills of Lading, A Progress Report* Journal of Maritime Law and Commerce Vol. 28 No. 1 January 1997 at 58

lading. The shipper or consignee can either indorse the bill of lading *'in blank'* or indorse it *'in full'*. Endorsement in blank is effected by the shipper or consignee signing his name on the back of the bill of lading. Endorsement in full refers to the relevant party writing 'Delivery to [or order], X' on the bill of lading, and then signing or stamping the endorsement.[93]

Bills of lading can therefore by mercantile custom be regarded as *negotiable* instruments. As was mentioned earlier[94], this term reflects on the transferability of the bill of lading and should not be interpreted as true negotiability in the sense that the indorsee can obtain better title than the original holder.

Problems arise when it is attempted to substitute a negotiable instrument with electronic data, such as EDI. In contrast, it would still be possible to transfer a non-negotiable bill of lading, but this transfer would not vest proof of title in the holder. A sea waybill would therefore not be subjected to the same statutory requirements imposed on a negotiable instrument. This greatly eases the use of EDI in international commerce. Various statutory requirements and legal rules are in place to regulate the transfer of negotiable instruments. It has been argued that:

> *"the legal regime of negotiable instruments is in essence based on the technique of a tangible original paper document, susceptible to immediate visual verification on the spot"* [95]

This means that writing is often a pre-requisite for a negotiable document of title (like the bill of lading) to be recognised as such. The **CMI** rules 7(d) state that 'the transfer of the right of control and transfer in the manner described...shall have the same effect as the transfer of such rights under a paper bill of lading'. Rule 8.5 of the **Bolero** rulebook attempts to do the same.

Does this mean that the legal obstacles to the electronic transfer of a negotiable instrument have been circumvented? It is suggested that this is not the case. Kozolchyk states that *'..as a general rule, the creation of negotiable documents of title is a prerogative reserved solely for statutory law'*.[96] Mandatory statutory requirements can therefore not be overcome by mere agreement between the parties.

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[93] *Scrutton on Charterparties* 19th Ed. Sweet &Maxwell London (1984) at 184
[94] See *supra* at 5
[95] Bernauw *supra* note 14 at 115
[96] See 121 *infra* at page 240

Chandler[97] suggests that *"the substance of a negotiable instrument is not its signature or its original nature, but the process that inspires confidence in the peace of paper"*

This would lead us to conclude that solutions to the problems associated with the electronic transfer of documents of title can be approached from two angles:

(a) Either **extensive legislative reform** will be required to facilitate the electronic transfer of negotiable documents, at least where the intention is to transfer not only the rights involved, but also ownership and title;
(b) or the **focus** has to **shift** away from the formalities associated with the transfer of the negotiable instrument to the actual process. This would mean that adequate security provisions and authentication procedures would have to be provided in order to instil confidence in the use of EDI.

The latter might prove a difficult proposition indeed: Courts would be reluctant to dispense with the formalities associated with negotiable instruments. After all, an important function of the statutory provisions is to protect third parties from suffering damage arising out of the fraudulent use of these documents. It is therefore suggested that a compromise should be reached.

Legislative provisions relating to the transfer of negotiable documents should relax some of the strict formalities required, e.g. that the document has to be evidenced in paper. In return, reliable guarantees would have to be given to provide for security and authentication in order to protect the transferee of the document of title from prejudice.

Courts would still be able to retain some measure of control by subjecting the registry to close legal scrutiny. Admittedly, this process would require a dramatic re-evaluation of current legal thinking in order to adapt to the changing needs of modern commerce.

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[97] Chandler *Maritime electronic commerce for the 21st Century* Paper presented to the CMI panel on EDI June 10th 1997 at Antwerp, Belgium

6.6. PRIVATE INTERNATIONAL LAW

In an international contract of carriage it sometimes becomes necessary to determine the proper law applicable to the contract of carriage and the bill of lading. The validity of EDI and the electronic bill of lading will inevitably soon be challenged in a court of law. The proper law of the contract will then have to be determined according to the rules of private international law. It has been said that:

> *"The most trivial action of debt, the most complex case of equitable claims, may be suddenly interrupted by the appearance of a knot to be untied only by Private International Law".*[98]

It is beyond the scope of this paper to examine fully the various aspects of private international law. What is attempted instead is a brief introduction to the methods used to determine the proper law of the forum, inasmuch as it becomes directly relevant to the search for the proper law governing the (electronic) bill of lading.

Most jurisdictions will seek to enforce the intent of the parties. If a clause on the bill of lading clearly states the law to be applied , courts would generally uphold such a clause as giving expression to the intent of the parties. In Vita Food Products Inc. v. Unus Shipping Co. Ltd.[99], a consignment of herrings from Newfoundland to New York arrived damaged. The consignees sued under the bill of lading, which contained an express clause stipulating that the contract should be governed by English law. There was therefore no real connection with England but the court nevertheless upheld the clause.

However, it is also possible that the intention is not stated. In such a case it will be left to the court to determine the applicable law. Various methods are used.
A court faced with resolving conflict of laws will investigate what system of law has the **closest connection** to the individual case.[100] The court will then seek to identify connecting factors to determine the closest connection. The connecting factor would be *' a privileged fact*

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[98] Harrison, F *Jurisprudence and the Conflict of Laws* at 101-102
[99] [1939] A.C. 277.
[100] De Boer Th. M *The missing link: Some thoughts on the relationship between private international law and comparative law* Boele-Woelki et al. (1994)

representing the key connection between a particular choice-of-law category and the applicable law'.[101]

Courts seeking to resolve conflict of law issues will sometimes look towards the **'most favourable'** law to determine the applicable law.[102] Doubt exists on whether this rule of private international law depends on reference to any law which would achieve the same result in the chosen forum or whether it entails the choice of a foreign legal system if it will achieve the 'most favourable' result. In Germany, a victim of bilocal torts can choose between the law of the place of injury and the law applicable to the place where the wrong was committed, whichever law would provide the best result.[103] It must be mentioned that courts generally guard there jurisdiction jealously and are not easily convinced that the law of another forum should be applied. An exception to this is the doctrine of "**forum non conveniens**".

This doctrine is followed in a number of common law jurisdictions. The doctrine of forum non conveniens was adopted into English law by the House of Lords in the Spiliada-case.[104] The House of Lords examined how the doctrine should be applied. The defendant may apply to the court to have the proceedings stayed on the grounds of "forum non conveniens". It was held that the general burden of proof rests on the defendant to persuade the court to exercise its discretion to grant a stay. A stay will only be granted if there is another forum which is clearly and distinctly more appropriate. The defendant would therefore have to prove that there is:

- another forum;
- which has jurisdiction; and
- is clearly and distinctly more appropriate.

If the defendant succeeds in prima facie proving the above the burden of proof shifts back to the applicant to convince the court that it will be substantially prejudiced in the other forum and the court should therefore not grant a stay of proceedings. The court will then examine the connecting factors which point to the other forum.[105] These connecting factors will include the availability of witnesses, the costs involved and where the parties have their respective

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[101] See 47 supra at page 16
[102] See 51 supra at page 19
[103] See 51 supra at page 20
[104] *The 'Spiliada'* (1987) 1 Lloyd's Reports 1 (HL)
[105] Per Lord Goff supra at 11

residence. In exercising its discretion the court will take all the factors into consideration and make a decision based on 'the interest of all the parties and the ends of justice'.[106] It is therefore important for parties to have regard to this doctrine and choose a forum where the doctrine will not influence their choice of law.

Private International Law differs in the various forums. It is in essence domestic law which aims to resolve conflict of law issues. It therefore become necessary to unify some of the rules of Private International Law. Until recently, English law applied the doctrine of **'the proper law of the contract'** to determine the applicable law.

This doctrine had its roots in the common law. In terms of this doctrine the parties were free to choose the proper law. If no express choice was made , the court would apply an objective test to determine the proper law. English courts looked towards the legal system with which the parties were most closely connected.[107] However, the Contract Act of 1990 has replaced the doctrine of the proper law of the contract to a great extent. The choice of law provisions in contracts have therefore been placed on a statutory footing. This Act incorporates the provisions of the EEC Convention on the law applicable to contractual obligations of 1980 (hereafter the Rome Convention).

The **Rome Convention** aims to establish uniform choice of law rules for contractual obligations throughout the European Community. This Convention can not be acceded to by non-members of the European Community.[108] Nevertheless, it would still be possible for non-members to incorporate the rules of the Convention into their own domestic law. The Rome Convention allows parties the freedom to choose the applicable law.[109] This freedom is subject to a number of limitations- parties have to choose a law which is identifiable and cannot apply foreign law to what is essentially a domestic dispute.[110] Furthermore, in the absence of an express or tacit choice of law, the Rome Convention preserves the 'closest connection' test.[111] This is presumed to be the country where the party resides. However, article 4(4) of the Rome Convention excludes contract for carriage regarding the presumption.

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[106] Id. at page 14
[107] North, at page 458
[108] Article 28(1)
[109] See Article 3 of the Rome Convention
[110] Article 3(3). In such a situation parties would have to preserve the mandatory rules of the forum where all the relevant connections are.
[111] Article 4

If an electronic bill of lading is issued, the courts would have to take the following into consideration: Is the issuing of the electronic bill of lading part of the contract of carriage itself? The bill of lading would then be issued as part of the specific performance under the contract of carriage. On the other hand, if the issuing of the bill of lading does not form part of the contract of carriage, the courts might seek to apply the law of the 'characteristic performer' (arguably the party who issues the electronic bill of lading).[112]

The basic rule is that the law to be applied is that of the country in which the contract was made, providing of course that the parties did not insert a jurisdiction clause into the contract.[113] It therefore becomes important to determine the time at which the contract is made. The contract would normally be made at the time when the offeree communicates his acceptance of the offer to the offerer. Problems can arise when the method of acceptance is electronic. The House of Lords[114] has held that:

> *"No universal rule can cover all such cases; they must be resolved by reference to the intention of the parties, by sound business practice and in some cases by a judgement where the risks should lie".*

Parties should therefore be aware of the rules of Private International Law. In an EDI context, which by its very nature is multinational in application, these rules will play a significant role in determining the applicable law.

6.7. LIABILITY

It has already been mentioned that parties trading with EDI often find themselves in a 'legal vacuum'. In the absence of legislative provisions and statutes dealing with and regulating EDI trade it becomes necessary to determine who would be liable in the event of a breakdown in the system or erroneous transmissions. A distinction has to be drawn between delictual liability and

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[112] W.H. van Boom *Certain legal aspects of electronic bills of lading* European Transport Law (1997) at 19

[113] Bainbridge, D *Introduction to Computer Law* 3rd Ed. Pitman Publishing London (1996) at 215

[114] Lord Wilberforce in *Brinbibon Ltd v Stahag Stahl und Stahlwarenhandelsgesellschaft mbH* [1983] 2 AC 34

liability arising from breach of contract. As a general rule it can be said that there are at least three parties involved in an EDI transaction. These parties[115] are:

- The party from whom the message or transmission originates;
- The party who provides the facilities for the transmission of the message; and
- The party who receives the message.

Each of these parties would have their own responsibilities in an EDI transaction and should therefore attempt to regulate the apportionment of liability in the underlying EDI agreement.

6.7.1. LIABILITY OF THE CARRIER

The **Hague-Visby** rules allow the carrier to limit his liability. Article IV BIS provides:

> *"The defences and limits of liability provided for in these rules shall apply in any action against the carrier in respect of loss or damage to goods covered by a contract of carriage, whether the action be founded in contract or in tort".*

In G H Renton & Co Ltd v Palmyra Trading Corporation of Panama[116] it was held that these words were wide enough to cover not only physical damage but could also cover the loss caused by having to tranship goods to another port because the port named in the bill of lading has been misstated. The question is therefore whether the carrier would be able to limit or even exclude his liability for erroneous messages under the Hague-Visby Rules?

Under the **CMI Rules** the carrier would be responsible for receiving and sending the EDI messages. It could therefore be argued that the carrier would be liable for breach of contract in the event of loss or damage to the goods resulting from failure to provide the correct message or data in an EDI transaction. The CMI Rules make use of a Private Key to ensure the integrity of the transmissions. The procedure is described elsewhere in this paper. Any instruction concerning the goods has to be confirmed by the recipient. This provision ensures that

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115 Mosteshar, S in *Walden* supra note 37 at 49

116 [1957] AC 149, [1956] 3 All ER 957, HL

erroneous messages are kept to a minimum. It seems however that the carrier would attempt to limit his liability under the CMI Rules before being burdened with such a responsibility. These issues could be agreed upon in the underlying EDI agreement. The CMI Rules themselves make no provision for the apportionment or limitation of liability.

The **UNCID** Rules apply to trade data interchange between parties using a trade data interchange application protocol (TDI-AP).[117] Article 4 imposes an obligation on parties to:

> *"...ensure that their transfers are correct and complete in form, and secure, according to the TDI-AP concerned, and should take care to ensure their capabilities to receive such transfers".*

The parties, should they decide to adopt the UNCID Rules, would therefore have a duty of care imposed on them.

6.7.2. LIABILITY OF THE MESSAGE ORIGINATOR

The originator of the EDI message has to ensure that he transmits the correct information. This would also imply an obligation to ensure that the equipment used is in a satisfactory condition and complies with the expected technical standards. The obligation of the parties can to a large extent be regulated by the underlying EDI agreement. *Mosteshar*[118] suggests that the following obligations rests on the message originator:

- the message has to be transmitted in the correct format and protocol;
- there is an obligation on the message originator to safeguard the message against corruption;
- the message has to be correctly addressed to the recipient;
- proper authorisation of the message;
- the message has to accord with the terms of the transaction;
- obtaining the necessary copyright clearance;

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[117] TDI-AP is defined as 'an accepted method for interchange of trade data messages, based on international standards for the presentation and structuring of trade data transfers conveyed by teletransmission'

[118] See Walden *Liability issues of EDI* supra note37 at 52

- the keeping of a data log; and
- the preservation of the message security and confidentiality.

6.7.3. LIABILITY OF THE MESSAGE RECIPIENT

It is important that the recipient acknowledges the message. This will ensure that the correct message is received. The recipient will in certain cases also be required to ensure the confidentiality of the message.[119] Failure to do so can lead to liability.

6.7.4. TITLE TO SUE

When liability arises it becomes necessary to identify the party entitled to sue. This means that the transfer of contractual rights under the contract of carriage has to be examined.

In the **United Kingdom** this issue is regulated by the 1992 COGSA which replaced the Bill of Lading Act of 1855. In terms of section 2(1) of the 1992 COGSA the following parties are entitled to sue the carrier in contract for loss or damage to the goods:

- The lawful holder of the bill of lading;
- a sea waybill; or
- the holder of the delivery order.

This right is given to the above mentioned irrespective of whether property in the goods has passed. The Act also makes provision for the Secretary of State to provide for the application of statute where information technology is used. This anticipated the advent of EDI and is therefore one of the most progressive Acts passed. **Does this mean that the title to sue is given to the holder of the electronic bill of lading?** Under English common law the indorsee of the bill of lading did not have title to sue. Since the electronic bill of lading does not fall under one of the categories mentioned above, the present position seem to be that such a holder would not have title to sue. However, if legislation is passed in terms of Section 1(5), stating

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[119] See supra at 54

that the electronic bill of lading also falls under the mentioned category of documents title to sue can be established.

In terms of the electronic bill of lading, the title to sue would then be given to the holder of the electronic bill of lading. Under the CMI Rules this would be the holder of the Private Key. Title to sue would therefore be treated in exactly the same manner as if a paper bill of lading had been issued.

Draft proposals for bills of lading and title to sue have also been prepared in **South Africa.**[120] The Act provides that a document produced by an electronic system shall be deemed to be a document. This provision clearly accommodates EDI and therefore the electronic bill of lading. The draft Act also aims to rectify some of the shortcomings under the Bills of Lading Act of 1855, which still applies in South Africa. It contains important provisions regarding the passing of rights and obligations under the bill of lading. One of the major shortcomings of the Bill of Lading Act of 1855 was the fact that certain parties could not sue under the contract of carriage. Section 1 of the Act vested right of suit in the consignee of goods and the endorsee of the bill of lading only where property has passed. *Carr*[121] identifies the following parties who would therefore be excluded from the right to sue:

- Where the transferee is a pledgee who acquires the property for reasons of security (i.e. there is no intention to pass property);
- where property passes after endorsement;
- where property passes independent of endorsement; and
- where no property is passed at all (e.g. where the goods are lost).

The 1992 COGSA has remedied many of the shortcomings of the old 1855 bill of lading Act.

7. EDI INTERCHANGE AGREEMENTS

Parties wishing to trade via EDI often find themselves in a legal vacuum. Existing legal norms are ill-equipped to deal with the new legal challenges that EDI provides. Many of the potential

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[120] This draft bill was prepared as an initiative of the SA Maritime Law Association. URL@ http://www.uct.ac.za/depts/shiplaw/titosa.htm

[121] Carr I M. See further supra note14 at 172

legal (and technical) problems can be avoided by the drafting of a proper interchange agreement to regulate the electronic exchange of messages. This is particularly important in light of the fact that EDI does not only entail the electronic transfer of information. In certain instances EDI will create legal rights and obligations, e.g. the transfer (or issue) of a bill of lading will provide the holder with a right of title. It is important to place the contractual relationship on a firm legal footing.[122]

There are basically two types of interchange agreements, each with its own advantages and disadvantages, namely bilateral and multilateral agreements.[123] Although bilateral agreements can be drawn up to suit the specific needs of the parties concerned they could prove unsuitable in an environment where a large number of EDI users operate. The reason for this is that the consent of all the parties would have to be obtained before any changes to the interchange agreement is introduced. It seems therefore more likely that parties would prefer to draw up a multilateral interchange agreement. [124] Another option would be to adopt model international interchange agreements. This would have the benefit of providing legal security.

The interchange agreement will have to deal with the legal aspects surrounding trade via EDI. The other technical and security issues would also be dealt with in the interchange agreement but for present purposes attention will be focused on the legal aspects. Suffice to say that the technical aspects would include the standards to be used, necessary backup procedures, communication protocols and the hardware and software needed to maintain a reliable system.

7.1. LEGAL ASPECTS REGULATED IN INTERCHANGE AGREEMENTS

Under the banner of freedom of contract the parties would be able to agree on a number of legal issues. However, it is clear that parties would not be able to create their own law - The matters regulated in the interchange agreement must therefore not be in conflict with the law of the chosen forum. If such a conflict arises the statutory provisions pertaining to that particular matter will prevail.

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[122] Eiselen, S *The Electronic Data Interchange Agreement* (1995) 7 SA Merc LJ at 3
[123] van Esch, R *Interchange Agreements* The EDI Law Review 1 at 8
[124] One example of a successful multilateral agreement is the SWIFT network used by the banking community.

The purpose and function of the interchange agreements (in the context of EDI) is to place an obligation on the trading partners to make use of EDI and then regulate the aspects underlying that agreement. The interchange agreement would therefore regulate the manner in which the underlying agreement (for example the contract of sale or contract of carriage) is executed.

Interchange agreements would typically include a provision dealing with the legal conclusion of an agreement. It has been argued that it is doubtful whether such an agreement would be valid if it does not meet the legal requirement regarding the form of the agreement, e.g. when the applicable law requires the agreement to be in a written form.[125] It would also be prudent to regulate in the interchange agreement when and where the obligations arising out of the agreement are concluded. This would avoid unnecessary conflict of laws. In the absence of such a provision it would be left to the courts to decide the applicable law according to the private international law of the particular forum.

Perhaps the most important provision in the interchange agreement will be the apportionment of liability. Various questions arise: Who would be liable for a system-breakdown? Who is liable for the transmission of incorrect data? The list is endless. The interchange agreement would regulate the liability to a great extent. Typically. an interchange agreement would contain a clause exempting a party of liability in the event of 'force majeur'. Some of these agreements have listed what constitutes 'force majeur'.[126] The requirement pertaining to the admissibility of EDI evidence has been dealt with earlier in this paper.[127] Provision would also have to be made to determine the operational time-frame of the agreement and the date of termination.

Lastly, it might be worthwhile for parties to include an arbitration clause in their interchange agreement. This would provide for parties to refer any disputes which might arise to a suitably qualified arbitrator. This might be a cost-effective way of resolving disputes since litigation is generally expensive and time consuming.

7.2. INTERCHANGE AGREEMENTS AND THE BILL OF LADING

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[125] *Van Esch*. See supra note 121 at 17

[126] For example Article 11.2 of the EDIA contract. See furthermore supra note 121 at 24

[127] See paragraph 6.2 supra

7.2. INTERCHANGE AGREEMENTS AND THE BILL OF LADING

Would the parties be able to regulate the form and content of the bill of lading in an interchange agreement? As a general rule contracts are valid even though the formalities have not been complied with.[128] In some instances the law requires certain types of contracts to be signed and in writing. In these circumstances the validity of the contract will depend on compliance with the formalities. Bills of lading are one such example where the law requires the document to be in writing, either implicitly or expressly. It would therefore be impossible for parties to incorporate into their agreement any provision attempting to by-pass statutory legislation. Such a bill of lading would simply not be enforceable under a forum where the statutory requirements have not been met. The interchange agreement can consequently not displace the substantive law governing bills of lading.

It remains to be seen how courts will interpret the provisions of the various domestic and international interchange agreements. It must however be noted that the courts in general seem to adopt a more liberal approach to the writing requirement.[129]

7.3. COMPARATIVE INTERCHANGE AGREEMENTS

In order to understand the implication of interchange agreements it is important to have a frame of reference as to how these agreements function in practice. What follows is therefore a brief introduction to the development of interchange agreements in South Africa and Germany.

7.3.1. SOUTH AFRICA

Up to 1995 the development of EDI was largely in the hands of a non-governmental organisation called SITPROSA (Organisation for the Simplification of International Trade Procedures in South Africa). Since then the standardisation function was transferred from SITPROSA to the South African Bureau of Standards (SABS).[130] The legal working group of

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[128] Farlam & Hathaway *Contract* 3rd edition Jutta & Co,Ltd (1994) at 182

[129] See for example *Dold v Bester* 1984 (1) SA 365 (D) where an informal agreement in handwriting was held to be sufficient to comply with the formalities for the sale of land.

[130] EDI Law Review 3 (1996) at 71

the SABS has since then drafted a model interchange agreement. This final draft has been accepted in September 1995. It governs any electronic transfer of messages between parties. It also makes provision for potential conflict arising between the interchange agreement and any commercial agreement between the parties. Section 1.1.2. provides that the interchange agreement shall have priority should such a conflict arise.

The draft deals with several provisions, including the communications and operations[131], message processing, validity and enforceability. The draft provides that:

> *" The parties shall agree that valid and enforceable obligations shall be created by the communication of messages in compliance with this agreement "*[132]

Furthermore, the parties would waive any right to object to the validity of the transaction if the only ground for the objection would be that the communication occurred through EDI. It also exempts parties from liability in the event of force majeur. Parties would also not be liable for any *'special, consequential, indirect or exemplary damages arising from breach of [the interchange] agreement.*[133]

The draft interchange agreement also places an obligation on parties to comply with any legal requirement pertaining to the transmission of the message. This is certainly a step in the right direction and it remains to be seen if business adopts these agreements.

7.3.2. GERMANY

German trading partners can choose between the German Basic Electronic Data Interchange Agreement (hereafter referred to as the German EDI Agreement) and the European Model EDI Agreement to provide a contractual framework for the trading transactions.[134] For purposes of this paper only a few relevant provisions of the German EDI Agreement will be examined.

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[131] It provides that the parties shall use the UN/EDIFACT standards identified in the technical annex.
[132] See section 4 of the draft interchange agreement.
[133] See section 6 of the draft interchange agreement
[134] Blechschmidt, R *The EDI Law Review* 3 (1996) at 108

As regards the conclusion of the contract the German EDI Agreement provides that a message shall be regarded as received only upon automatic confirmation of receipt by the sender's communications equipment.[135] This means that the message will have no legal effect prior to the confirmation.[136] This is the position regarding a message sent to the information system of the recipient (*data transmission*). Where the message is retrieved from the sender's information system (*data retrieval*) the position is different. In this case the message is regarded as received if it has been made available for retrieval.[137]

A comprehensive liability framework is provided by the German EDI Agreement. A Liability framework which is not based on fault is provided in Article 14. Article 14(1) reads:

> *"Each party is liable for any damage arising from errors or disruptions within the parties sphere of responsibility..."*[138].

The legal aspects are therefore covered fairly comprehensively in the German EDI Agreement. This is especially true regarding the critical area of determining, and dealing with, the potential liability issues arising out of any EDI transaction.

8. EDI MODEL RULES

In order for EDI to function effectively in an international trading environment it will have to be incorporated into an acceptable legal framework. Model rules have been promulgated by several international organisations as a result of the growing interest in EDI.[139] Model rules make EDI messages legally binding on the parties. This can be done either by:

(1) expressly stating in the model rules that they are legally binding on the parties, or
(2) having a provision in the model rules which prohibits the parties from raising the defence that the agreement was not in writing.

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[135] See Article 8 Paragraph 1 of the German Basic EDI Agreement
[136] See supra note 134 at 109
[137] Id.
[138] Article 14(2) defines the sphere of responsibility. It includes communications equipment, communications security and period of time until receipt of the message.
[139] See supra note 14 at 26. Yiannopoulos gives a good overview of EDI model rules, concentrating especially on the impact on electronic bills of lading.

8.1. CMI RULES FOR ELECTRONIC BILLS OF LADING

It is against this background that the CMI rules for Electronic Bills of Lading have to be examined. These rules were adopted in Paris in June 1990 by the CMI.[140] It is furthermore important to note that the CMI rules are voluntary in nature. The result is that the parties have to agree to the rules upon which they will then be incorporated into the contract of carriage. Rule 1 reads:

> *"These rules shall apply whenever the parties so agree."*

If the parties decide to convert the CMI bill of lading to a paper bill of lading the Private Key becomes null and void.[141] This situation might arise in a number of instances, for example where the new holder does not possess the electronic equipment to receive an electronic bill of lading. The CMI rules have anticipated this and provide for a sensible alternative.

8.1.1. MAIN FEATURES

The main feature of the CMI rules is the creation of an electronic bill of lading. These rules are therefore not intended to govern the handling of EDI in general, and bills of lading in particular, on a comprehensive basis.[142] This is evidenced by the fact that the rules are not intended to displace the substantive law applicable to bills of lading. In the vast majority of cases the Hague or Hague-Visby rules will govern bills of lading. Rule 6 clearly states that :

> *"The Contract of Carriage shall be subject to any international convention or national law which would have been compulsorily applicable if a paper bill of lading had been issued"*

However, they arguably will have a significant impact on the manner in which EDI is implemented internationally.

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[140] Kozolchyk, B *Journal of Maritime Law and Commerce* Vol.23 No.2 April 1992
[141] CMI Rule 10(a)
[142] See *Tulane Maritime Law Journal* Volume 16 (1991) at 360

8.1.2. CREATION OF THE ELECTRONIC BILL OF LADING UNDER THE CMI RULES

The shipper will deliver the goods intended for shipment to the carrier. Rule 4 then stipulates that the carrier shall give notice of the receipt of the goods to the shipper. This is done via a message posted to the electronic address of the shipper. The "receipt message" has to meet certain formal requirements which are listed in Rule 4(b). Essentially these are the same requirement as contained in a traditional paper bill of lading and include:

(i) The name of the shipper;
(ii) a description of the goods;
(iii) the date and place of the receipt of the goods;
(iv) a reference to the carriers terms and conditions of carriage; and
(v) the Private Key.

In terms of Rule 49(d) the receipt message "shall have the same force and effect as if the receipt message were contained in a paper bill of lading". The implication is that the receipt message is equivalent to a paper bill of lading. After receiving the receipt message the shipper (or whoever the recipient may be) has to confirm receipt of the message to the carrier.[143] Traditionally, the holder of the paper bill of lading acquires title to the goods and is entitled to endorse the bill of lading to a 3rd party and thereby transfer ownership of the goods. The CMI Rules make endorsement and registration possibly by means of a "Private Key".

The Private Key is defined in Rule 2 as "...any technically appropriate form...which the parties may agree for securing the authenticity and integrity of a Transmission". This approach leaves the door open for future technological advances which may have an impact on the coding and de-coding of electronic data. The holder of the Private Key can therefore claim delivery of the goods, transfer his Right of Control to another party and nominate or substitute the nominated consignee.[144] The holder of the Private Key would find himself in exactly the same position had he been issued with a paper bill of lading.

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[143] CMI Rule 4(b)
[144] CMI Rule 7(a)

Whenever the holder of the Private Key, being the de facto holder of the paper bill of lading, wants to transfer ownership of the bill of lading to a new holder, he would have to notify the carrier of his intent.[145] The Private Key (which is unique to each holder) is used to authenticate the electronic transmission. However it would still be necessary to use other methods of security to ensure that the transmission is private.[146] The carrier subsequently has to confirm receipt of the message and will then transmit the receipt message data to the new holder. The Private Key will be withheld from the new holder pending his acceptance of the transfer. Only after the new holder has transmitted his acceptance of the transfer of ownership will a new Private Key be issued by the carrier.[147] The 'old' Private Key is then cancelled. The carrier acts as the registry and this could clearly cause problems which will be eluded to shortly.

Delivery is effected by production of proper identification to the carrier.[148] It is therefore not necessary to present the carrier with the original bill of lading in order to take delivery of the goods.

In an effort to prevent the legal obstacles which are bound to arise under various national laws regarding the requirement that the document has to be 'in writing' Rule 11 was introduced. It states that the parties agree that any national law or practice which requires the contract of carriage to be evidenced in writing is satisfied by the transmitted and confirmed electronic data. Furthermore, the parties agree not to raise the defence that the contract was not in writing. It is doubtful whether this removes all the legal obstacles.

8.1.3. AREAS OF CONCERN

⇒ Can the Private Key procedure function as a legal negotiable bill of lading?

By accepting the receipt message the buyer obtains rights which (should be) legally enforceable. However, this presupposes that the receipt message was authentic and therefore genuine.[149] If the transferee accepts a receipt message which is fraudulent, real problems arise. Kozolchyk maintains that these problems cannot be overcome by a stipulation that the

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[145] CMI Rule 7(b)

[146] Examples are passwords,access codes, etc. See further paper delivered to CMI on June 10th 1997 by Chandler III: *'Maritime Electronic Commerce for the Twenty-First Century'*.

[147] CMI Rule 7(b)(v)

[148] CMI Rule 9(b)

Private Key and the receipt message are the equivalent of a paper negotiable bill of lading. Furthermore the general rule seems to be that the creation of negotiable documents of title is the prerogative of statutory law.[150]

⇒ Problems may also arise due to the fact that the carrier acts as the private registry. This places a heavy responsibility on the carrier. The carrier would be privy to each transfer. There is no stipulation in the Rules which governs the liability that accompanies this responsibility.[151] It seems unlikely that the carrier would be willing to expose itself to potential liability which is not clearly regulated and defined.

The converse is also true. All the other parties are dependant on the goodwill of the carrier to effect delivery of the private key.[152] The privacy of transfers would be compromised and it remains to be seen if parties would be willing to reveal their identity. However, this problem could easily be overcome by the use of 'front-companies' or agents.

⇒ Jurisdictional questions might also arise due to the fact that the Rules do not stipulate when and where the bill of lading is issued. The rules of Private International Law would come into play at this point to determine where the contract was entered into.

⇒ The banking community in particular is concerned about the apparent lack of security attributed to the Private Key system. It is difficult to visualise an effective security system when so many parties are involved in the transaction. A possible suggestion to remedy the lack of security is to ensure that each private key password should be used as an integral part of the encryption algorithm.[153] This would effectively mean that an erroneous transmission is clearly evident since it would not be readable by the recipient.

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[149] Kozolchyk, B *The Paperless Letter of Credit and Related Documents of Title* 55 Law & Contemp. Probs. 39,40 (1992) at 91

[150] See supra at 92

[151] See supra 14 at 29

[152] Ph.H.J.G. van Huizen, Privaatrechtelijke Aspecten

[153] The suggestion is that the system should be based on uniform procedure as found in S.W.I.F.T. See further supra note 149 at 238

⇒ The CMI Rules do not make provision for the authentication of electronic bills of lading. It has been suggested that a public key system should be adopted to authenticate the electronic signature.[154]

The CMI Rules establish a good procedural basis for the use of EDI in bills of lading. As was mentioned earlier, these Rules are not intended to replace substantive law, but merely to provide a framework for EDI in the international use of bills of lading.

8.2. UNCID

Parties often develop their own underlying agreements to govern sales contracts which are conducted by electronic means. This is especially important given the fact that international law has not kept pace with electronic development and accordingly does not regulate such trade satisfactorily. It is with this in mind that the International Chamber of Commerce (ICC) produced uniform rules of conduct for interchange of trade data by teletransmission. The UNCID rules were developed in conjunction with several international trade bodies, including UNCITRAL.[155] These rules are intended to regulate the conduct of parties making use of EDI or other electronic information exchange.

Furthermore, the UNCID rules would also govern the conduct of parties making use of the CMI rules. This will only be the case where the UNCID rules are not in conflict with the CMI rules.[156] The UNCID rules do not have the force of law but only come into operation if the parties contractually agree to them. The rules impose a duty of care on the parties to ensure correct and secure transfer of electronic information.[157] Regarding the conduct of the parties relying on the transfer of electronic bills of lading it suffices to say that UNCID will or should have a significant impact on the manner in which these transactions are performed. It would be prudent for parties involved in these transactions to adhere to these rules in order to avoid conflict and promote uniformity.

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[154] LMCLQ (1996) Part 2 at 237
[155] This information was obtained from the internet at URL http://www.law.warwick.ac.uk/html/95-4.html
[156] CMI Rule 3(a)
[157] UNCID Article 5

8.3. INCOTERMS

The ICC's INCOTERMS are intended to define the rights of parties under international sales contracts. It has been stated that " trade terms are indispensable for the implementation of the contract".[158] Parties contractually agree to adhere to the Incoterms and express reference to these terms has to be made in the contract of sale before they become binding. The ICC has seen the need to reflect the growing use of EDI in modernised rules of interpretation.[159] The Incoterms 1990 provide for the validity of electronic messages. Article 8A and 8B provide:

> *"Where the seller and the buyer have agreed to communicate electronically, the [usual document] may be replaced by an equivalent electronic data interchange agreement".*

The parties would therefore have to agree to use electronic messages as a replacement of the usual transport documents which would include the traditional paper bill of lading[160].

8.4. OTHER EDI MODEL RULES

A number of other Model Rules have also been promulgated by various bodies. For present purposes these rules need not be dealt with but are simply listed in the interest of presenting a complete picture.[161]

(1) EDI Association Standard Electronic Data Interchange Agreement 2nd. ed. 1990[UK]
(2) Model Electronic Data Interchange Agreement Draft No.1, 1990 [Australia]
(3) Electronic Data Interchange Trading Partner Agreement, 1990 [Canada]
(4) Guidelines Concerning Custom-Trader Data Interchange Agreements and EDI User Manuals, March 1990
(5) Trade Electronic Data Interchange Systems {TEDIS} European Model EDI Agreement, 1990

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[158] Prof. Jan Ramberg *Forum internationale* No. 13 November (1988)
[159] Supra at 10
[160] Dellatista, C *Incoterms in practise* ICC (1995) at 52
[161] See supra note 158 at 32

9. UNCITRAL

The United Nations Commission on International Trade Law (UNCITRAL) has prepared a Model Law on Electronic Commerce.[162] This Model law can be adopted into legislation by the various jurisdictions attempting to implement EDI legislation. The Model law would also provide a useful framework for countries seeking a framework from which to draft their own legislation. It is beyond the scope of this paper to examine in any great detail the various provisions of the Model law. However, some of the provisions will have implication for electronic commerce dealing with the carriage of goods by sea. These provisions will therefore briefly be examined.

Article 1 defines the scope of application and reads:

> *"This law applies to any kind of information in the form of a data message used in the context of commercial activities".*

It was suggested that the term 'commercial' should be given a wide interpretation. The bill of lading would also be included in the scope of this definition.

Another important provision is found in article 5, which concerns the legal recognition of data messages. It ensures that legal effect is not denied to information solely on the grounds that it is in the form of a data message. The legal recognition of the validity and enforcement of the information is also ensured under this article. Article 5 reads:

> *"Information shall not be denied legal effect, validity or enforceability solely on the grounds that it is in the form of a data message".*

However, parties would still need to comply with the relevant statutory provisions regarding the particular documentation used.

Article 16 deals specifically with actions related to the contracts of carriage of goods. It includes:

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[162] Information on UNCITRAL is available on the internet at URL: http://www.un.or.at/uncitral

- the furnishing of the marks, number, quantity or weight of the goods;
- issuing a receipt for the goods;
- notifying a person of terms and conditions of the contract;
- claiming delivery of the goods; and
- authorising release of the goods.

The holder of the bill of lading can claim delivery of the goods. The bill of lading is clearly included under the provisions of Article 16. Article 17 provides that:

> *"...where the law requires that any action referred to in article 16 be carried out in writing or by using a paper document, that requirement is met if the action is carried out by using one or more data messages".*

However, this article is subject to paragraph (3), which provides that the legal requirement for the transfer of a right or obligation (the use of a paper document) is met if this right is conveyed by a data message. These provisions aim to give legal recognition to electronic transport documents. Article 17(6) ensures that compulsory applicable rules shall still apply, even though electronic data messages are used. It reads:

> *"If a rule of law is compulsorily applicable to a contract of carriage of goods which is in, or evidenced by, a paper document that rule shall not be inapplicable to such a contract of carriage...by reason of the fact that the contract is evidenced by such data message or messages instead of a paper document".*

The UNCITRAL Model law therefore aims to create a legal framework and promote uniformity for the operation of EDI.

10. THE FUTURE

Negotiable electronic bills of lading have not yet been implemented on a large scale. However, there have been a number of experiments in substituting the traditional paper bill of lading with an EDI system, noticeably **SeaDocs** and **Bolero**.

10.1. SEADOCS

This experiment in electronically negotiating bills of lading lasted less than one year. However, it can be seen as the first serious attempt to introduce a electronic bill of lading.

Chase Manhattan bank and Intertanko (an association of independent oil tanker operators) joined forces in creating *SeaDocs Registry Limited.* SeaDocs was a London-based Delaware corporation which was created to facilitate the need experienced by the oil trade to transfer the right to obtain delivery of the crude oil. Oil or petroleum cargo is often sold en route and conventional documentation would be to slow to supply each buyer with an original bill of lading.[163] It therefore became necessary to look at other substitutes for the traditional paper bill of lading. SeaDocs worked as follows[164]:

An original paper bill of lading was issued by the carrier. This bill of lading was then deposited with SeaDocs. SeaDocs acted as the depository-custodian of the original paper bill of lading. In addition to this function, SeaDocs also acted as registry for further bill of lading negotiations. SeaDocs was therefore the agent for all the parties involved in the shipping transaction- this included authority to endorse the bill of lading (therefore acting as agent for both the endorser and the endorsee) and to deliver the paper based bill of lading to the consignee or party who would eventually claim delivery of the cargo. The procedure was developed to effectuate transfer of ownership during transit.

Once the original paper bill of lading was delivered to SeaDocs and in its safekeeping, a test key or code was delivered to the shipper. The shipper had to notify SeaDocs electronically

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[163] Kozolchyk, B *JMLC* Vol 23 No 2 April (1992)

[164] This information was obtained from the articles by Boris Kozolchyk (see supra note 163 at 227-229) as well as A. N. Yiannopoulos (see supra note 14 at 22-24)

when he wanted to negotiate the bill of lading. The shipper would then provide the endorsee/buyer with a portion of the test key. SeaDocs had to test the message of the shipper to ensure it was authentic before acting on it. In addition to the shipper notifying SeaDocs of his intent to transfer, the endorsee/buyer would also notify SeaDocs of his acceptance of the transfer. SeaDocs would then verify the message of the endorsee/buyer against the portion of the test key. These checks were intended to ensure that the correct messages and instructions have been received.

SeaDocs would record the name of the endorsee/buyer in the registry as the new owner only after all the messages had been checked. Upon arrival of the goods at the port of destination, SeaDocs would transmit an identifying code number to the carrier (in practice this code was transmitted to the ships master) as well as to the last endorsee of the original bill of lading. The endorsee, who would the be the owner of the goods, was entitled to delivery by means of this code.

As was mentioned earlier, SeaDocs did not survive for longer than a year. This was despite the fact that no serious operational difficulties were experienced. *Kozolchyk*[165] gives the following reasons for the failure of the SeaDocs experiment:

- Since the liability of the participants had not been established, the insurance of the registry operations was relatively high;
- commodity traders were unwilling to record their transactions in a central registry as this would subject them to inspections by tax authorities and other competitors;
- the reticence by the ultimate buyers of the crude oil to acquire bills of lading from a registry which was designed to service intermediaries and speculators; and
- the banks especially were uncomfortable with the fact that one of their competitors should have exclusive control of the registry business.

Although this system has not survived it nevertheless proved than an electronic bill of lading system could work in practice. However, it also demonstrated another valuable lesson- unless the trading partners and the business community in general accept and make use of a particular system, it will not survive. The bottom line here is not so much legal concerns but practical ones. Will the system benefit us? Will it make our business more effective, that is to say,

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[165] See supra note 163 at 228

reduce costs and save time? Only if these questions are answered in the affirmative will full scale implementation of EDI be possible.

10.2. BOLERO

Bolero is a joint project, funded by the European Community, aimed at the use of electronic bills of lading.[166] The ultimate aim is to create a fully electronic environment which offers an alternative to the documents in use for international trade. The system uses a series of EDIFACT standard international messages, a central register and security system to pass electronic title. The security system is based on digital signatures. A certification authority will issue electronic signatures to the members of the project.[167] The central registry will be a trusted third party, for example a telecommunications company or bank.

The agreement to use electronic communication is incorporated into a set of rules which will bind all the members. These messages are based on the CMI Rules for electronic bills of lading.[168] The carrier will then electronically receive the instructions from the shipper. He will then turn this into a Bolero bill of lading (BBL) and send it back to the shipper after digitally signing the message. A record for the BBL is then created by the registry who will create a unique consignment reference number to the BBL. Upon acceptance of the BBL the shipper becomes the first record holder of the BBL. Paper documentation is not required and the entire process is conducted electronically.

If the holder of the BBL wishes to transfer the electronic document to a third party he will initially send a transfer request to the third party. If the third party accepts the transfer he becomes the new holder of the BBL. The key has to be authenticated by the registry. All the parties who receive messages receive from the registry the public key necessary to decrypt the message in order to ascertain the source of the message. Once again, this method is aimed at ensuring that the authorised parties receive the correct messages.

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[166] Usefull information on Bolero was obtained at the following website: http://www.ttclub.com/ttclub/bolero.html

[167] Van Boom in *European Transport Law* 1997 at 11

[168] Faber, D *Electronic bills of lading* LMCLQ (1996) Part 2 May 1996 at 242-244

Problems might arise under a BBL in respect of title to sue. In the United Kingdom section 2(1) of the 1992 COGSA gives the lawful holder of the bill of lading title to sue the carrier. This was necessary because English law does not allow the contractual creation of an instrument (such as a bill of lading) which gives a subsequent holder (i.e. who was not party to the original contract) the right to sue one of the original parties to the contract.[169] It would therefore not be possible for the shipper and carrier to enter into an agreement which purports to give the endorsee of the bill of lading the right to sue the carrier. However, it is suggested that this problem can be overcome by the statutory creation of such a right in the 1992 COGSA. Section 1(5) of the Act allows the Secretary of State to provide for the application of statute where information technology is used.

Bolero has several advantages. It will essentially save time and eliminate much of the paper documentation associated with international trade in general and carriage of goods by sea in particular. This is possible because each data element only needs to be transmitted once effectively eliminating the duplication of large amounts of paper documentation.

Finally, shipping systems will be integrated with the systems of the other relevant traders, including the manufacturing, order processing and accounting systems. Bolero will be watched closely by the various parties concerned with international trade. Successful implementation and operation of the Bolero system will go a long way towards alleviating fears associated with electronic bills of lading. In many ways Bolero can be seen as a 'testing ground' for the battle surrounding the implementation of electronic bills of lading.

10.3. EDI & INTERNET

No discussion of EDI could be complete without mentioning the **Internet**. There has been remarkable growth of Internet users in the last few years. More and more companies are also turning their attention to the Internet. This simple introduction to EDI and the Internet is by no means comprehensive. It is merely intended to focus attention on the possible use of EDI in cyberspace. In an electronic world where technology changes almost daily it is difficult to keep pace with the latest developments. However, the Internet is here to stay and business would be short-sighted not to take advantage of this dynamic medium

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[169] Crouch v. Credit Foncier of England Ltd (1873) 8 Q.B.D. 374

The Internet is not an organisation but could be described as *" the inter-working of existing corporate and government networks using commonly used telecommunications standards "*[170]

What **advantages** does the Internet offer? These can briefly be summarised as:

- Adoption of common standards
- A distributed Directory Service capability-to electronically contact any organisation in the world
- Ubiquitous network coverage from service providers-customer can choose level of service
- Widely acceptable public domain software.[171]

Organisations and business using the Internet would usually make use of Value Added Networks (VAN) . These networks act as third party service providers and typically would provide delivery of the EDI documents as well as support in developing a EDI trading community. However, parties would not have to rely exclusively on VAN since EDI only requires that trading partners follow the content standards (such as EDIFACT).

The problem is that the Internet is not very secure. It would therefore be necessary to take certain measures to provide adequate security and privacy. Some suggested steps would be to obtain passwords to establish 'firewalls' and implement active countermeasures in the 'firewalls'.[172]

Another interesting development regarding the use of EDI on the Internet has been the involvement of The Electronic Commerce World Institute in Montreal with EDI. This independent organisation will provide administrative support for the Internet Law and Policy Forum (ILPF).[173] The ILPF mission is to *" respond and ... accelerate the development of solutions for the challenging legal issues and policy questions arising with the increase of business activity on the [Internet] "*.[174] Working groups will analyse these questions. The argument is that the Internet provides a neutral venue to resolve confusing global legal issues.

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[170] http://www.va.gov/publ/standard/edifaq/general.htm#q2
[171] See supra at 27
[172] http://www.va.gov/publ/standard/edifaq/security.htm
[173] *The EDI Law Review* 3: (1996) 161-163
[174] See supra at 161

It will be interesting to watch for future development in this regard. Further information can be obtained from the ILPF homepage at : www.ilpf.org. [175]

The Internet will clearly expand even more in coming years, However, it is doubtful if international trade will be conducted on a wide scale on the Internet because of the apparent (real and perceived) lack of security. Unless this issue is resolved the Internet will not reach it's full potential. There should therefore be some means of encrypting the message in order to secure the transmission. This might mean that trading partners would have to agree to a encryption protocol which would then be part of the trading partner agreement. This works well where the trading partners are known to each other but difficulty might arise where there are multiple users who would not always be known to each other hence making such an agreement a practical impossibility.

Lastly, it is worth briefly mentioning the issue of e-mail as a substitute for EDI. It has been suggested that there are certain aspects of e-mail which could present a cost-effective alternative to EDI. It would obviously not replace EDI completely. Instead it would be used in conjunction with CGI scripts. In layman's terms a CGI script would mean a computer programme that runs on the host computer and with which the clients terminal can interact. CGI scripts can be used to provide security, e.g. a password programme would allow only certain authorised users to access the information.

The computer would then process the script and an order would be placed electronically.[176] It might certainly prove a viable and cost effective means to electronically transmitting documents, especially where the level of security required is not too severe. E-mail would prove useful where companies seek to establish relationships which in turn might lead to contractual negotiations. Once the transfer of the actual documents is required, the trader might prefer to make use of a more secure network.

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[175] Interested parties can also contact ILPF at The Electronic Commerce World Institute in Montreal, Canada at e-mail: info@ilpf.org.

[176] See http://www.webcom.com/pjones/ediema.html

10.4. DATA PROTECTION

Data protection also deserves a brief mention since it is imperative that information processing is adequately protected. The United Kingdom has responded to the growing fears of data manipulation by passing the Data Protection Act of 1984[177]. The long title of the Act describes its purpose as:

> *"[regulating] the use of automatically processed information relating to individuals and the provisions of services in respect of such information".*

The Act defines what is meant by data, a data user and a data subject. Data is construed widely to include '*...information recorded in a form in which it can be processed by equipment operating automatically in response to instructions given for that purpose...*'. The data user would include a legal person, such as a value added network service provider, and is not limited to a natural person holding data.

The Data Protection Act sets out certain principles, which must not be contravened. These principals include:

(a) fair and lawful procession of personal data;
(b) accuracy of personal data; and
(c) adequate security measures to protect users against unauthorised access.[178]

Although the Data Protection Act is mainly concerned with the protection of information concerning individuals, it highlights the need for legislation to protect the information contained in documentation. In an EDI context, this means that the carrier (or central registry) who is responsible for the holding of the electronic bill of lading, will need to be assured of the liability attached to the storage of the information contained in such documentation, as well as the responsibilities pertaining to such storage.

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[177] A useful discussion of the purpose and intent of the Data Protection Act can be found in *Introduction to Computer Law* chapter 30 by David Bainbridge. See supra note 33
[178] See Bainbridge supra at 299

11. CONCLUSION

It is difficult for parties to relinquish a document which has served them well over the years. The bill of lading is one of the most respected documents in international trade. It has been held that :

> *"A bill of lading is a document of dignity, and courts should do everything in their power to preserve its integrity in international trade for there, especially, confidence is of the essence".*[179]

However, new technology has brought new challenges and possibilities. Once the remaining technical concerns regarding security and authentication have been resolved, and legal recognition assured, full scale implementation is possible.

Substituting the traditional bill of lading with EDI is still fraught with real (and perceived) problems. Parties wishing to trade with EDI will have to be aware of the potential pitfalls associated with electronic trading. Pending legislative reform, the parties will have to regulate many of the technical and legal requirements in the underlying EDI interchange agreement.

The traditional bill of lading will still have its place in the immediate future. The capital expenses of setting up an EDI network might prove to costly to afford these services to everybody. There is no reason why the electronic bill of lading can't co-exist with the paper bill of lading for the immediate future. The real challenge lies in creating a system in which both traders and the courts feel comfortable. This will require a concerted global effort from all the parties involved. This is certainly a difficult, but by no means impossible task. The proponents of EDI will have to prove that the electronic bill of lading can function in the real trading environment and ultimately, that it provides users with a competitive edge.

The electronic bill of lading will undoubtedly become a reality. There are simply too many advantages attached to this form of trading to dismiss the concept. In order for the electronic bill of lading to substitute the paper bill of lading, it would essentially have to offer the same advantages and level of security associated with the paper bill of lading.

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[179] The Carso 43 F.2d 736 AMC quoted in Schoenbaum at 10-12

The functions of the negotiable paper bill of lading can be duplicated but the electronic bill of lading would have to go one step further: it would have to improve on the traditional bill of lading. The advantages of the electronic bill of lading have been discussed.[180] It is suggested that these advantages will prove sufficient to eventually replace the paper bill of lading and take the bill of lading into the next century.

[180] See paragraph 4.2 supra

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