Thesis: Zurich, 25. April 2007

LL.M. Shipping Law

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ELECTRONIC TRANSPORT DOCUMENTS AND SHIPPING PRACTICE NOT YET A MARRIED COUPLE

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1. Introduction

It seems simple and obvious. The substitution of paper transport documents by electronic documents facilitates international trade transactions.

Transport documents, most importantly bills of lading, have been the key to international trade transactions for several hundred years. With the incredible growth of trade volumes and the emerging of electronic communication forms and electronic commerce in international trade it seems only a matter of time that transport documents will be replaced by electronic mediums.

In the 80's of the last century, the shipping world started to discuss the substitution of paper transport documents and bills of lading by electronic transport documents.[1] Probably the first commercial project for an electronic data interchange system for transport documents (EDI) aiming the open market was SeaDocs in 1986.[2] Today, more than 20 years later, the majority of transport documents are still issued in paper form and sent around the world to the receiver of the goods by courier.

Yet electronic communication, electronic information and electronic commerce are today a reality. The UK law Commission reported in its advice on "Electronic Commerce: Formal Requirements in Commercial Transactions" that the global electronic commerce revenue for 2000 was about $ 286 billion, expected to reach $ 3 trillion in 2004.[3] In another source found on the Internet, the US tax administration estimates that global electronic commerce is projected to increase to $ 12.8 trillion by 2006.[4] There is no doubt whatsoever that international trade will sooner or later be caught by this reality.

It is the goal of this thesis to analyse the legal reasons EDI systems for the procession of transport documents are not having the success they seem to deserve.

The thesis will start by a description of the role of transport documents in an international trade transaction, considering the various forms of transport documents used as well as the applicable law to transport documents and their electronic substitution. On this basis, We will analyse the requirements for a successful substitution of paper documents by electronic documents. Technical methods of

[1] Schuback at 41.
[2] Yiannopoulos at 5.2.1.
[3] UK Law Commission eCommerce at 1.
[4] http://www.ustreas.gov/tigta/auditreports/2005reports/200530010fr.html (accessed on 28 November 2006).

dematerialisation as well as some existing laws and rules regarding electronic commerce and electronic signatures shall be considered.

Electronic transport documents may only be successful if they are able to fulfil exactly the same practical and legal functions as a paper document throughout an international trade transaction. It is essential to analyse if and how an electronic document may serve for the same purposes as a paper document.

After having established the possibilities of a dematerialisation of transport documents we will try to give an overview on previous attempts to provide EDI systems and try to analyse their relative lack of success.

In the last part, we shall examine the UNCITRAL Draft Instrument on Transport Law and how the actual draft could change the situation regarding the use and success of electronic transport documents.

2. Transport documents in international trade

2.1. Brief description of an international trade transaction

No trade, no goods, no shipping, no ships.

An international trade agreement (contract of sale or other kind of contract) is the starting point of each carriage contract. Commodities obtained in one corner of the world are used in another to produce goods or energy. Goods produced in one place are sold all over the world. It is a characteristic of an international trade transaction that the contracting trading partners are spread over the world. Separated by time and place, they are not able to hand over cash against delivery of the goods (delivery versus payment). To close the gap between time and place the contracting parties have to rely on third parties in order to be able to perform their contractual obligations.

The shipper (seller or other person depending on trade agreement) has to contract with a carrier to bring the goods to their destination or to deliver them to a specified person or its order at an agreed time and place respectively.

The buyer eventually has to contract with a bank, which, through a correspondent bank in the country of the seller, accepts and checks the transport documents (and eventually also other documents) against release of payment to the buyer. This is done by letter of credit or documentary credit.

According to the agreement of the seller and the buyer regarding the transfer of risks, one of the parties and/or the carrier has to insure the goods during transport.

There are widely accepted yet different standard rules relating to the different possibilities of performance of an international trade transaction (sale on shipment: Incoterms 2000[5]; letter of credit: UCP 500 [6]). These rules rely on the tender of a transport document, which has to incorporate specific qualities, in exchange for delivery of the goods or payment.[7]

The transport document is the only document that may go through the hands of all parties involved. Issued by the carrier, it is handed over to the shipper (and/or seller), who hands it over to the bank against payment of the letter of credit, from where it goes to the buyer and/or an eventual sub-purchaser or another third party who finally hands over the original document to the carrier at the destination against delivery of the goods.

This shows that a transport document may have different practical functions depending on the form in which it is issued and on who is relying on it. Its development goes back to medieval times, when merchants generally opted to sail with their goods.[8] The functions of transport documents depend on the nature of the document itself, the person relying on it and last but not least the law regulating the document.

The transport document with the most functions is a bill of lading. The carrier confirms what he received and where and to whom he will deliver the cargo. He is entitled to freight for the shipment of the cargo as negotiated with the shipper in the carriage contract.[9] It is not a function of a bill of lading but a consequence of the carriage contract with eventual effects on the consignee of a bill of lading, that the carrier may retain the goods at destination until freight is paid, even if it is due to be paid by the shipper.

For the shipper, the bill of lading is basically proof that he has shipped such-and-such cargo and therefore that he has fulfilled his contractual duty towards the consignee (i.e. buyer of the goods). If payment is provided by a letter of credit, the shipper (if he is the seller) receives payment against handing over of the (clean) bill of lading

[5] See www.iccwbo.org/incoterms/id3045/index.html (accessed on September 21, 2006).
[6] See www.iccwbo.org/policy/banking/id2434/index.html (accessed on September 21, 2006).
[7] UNCTAD Report TD/B/COM.3/EM.12/2 at 9.
[8] Hare at § 14-1 (appertum scriptum).
[9] *Idem* at § 14-6.1.

(together with other documents) to the bank. If the shipper is the seller and sold the goods based on Incoterms 2000 FOB or CIF he has to be able to transfer constructive possession of the goods to the consignee at loading of the goods on ship. If the transport document is a document of title, the shipper can do this by transferring the transport document representing constructive possession in the goods to the consignee.

For the bank, the bill of lading is the main document it has to check "on its face" in a documentary credit procedure (article 13 UCP 500). If the bill of lading corresponds with the instructions received by the buyer, the bank is entitled to pay the letter of credit out to the seller/shipper.[10]

The buyer, after receiving the bill of lading directly from the seller or the bank, is able to claim the goods ad destination from the carrier.[11] He is entitled to claim against the carrier if the goods are damaged or lost during the voyage (but may generally limit this liability). Further, if the bill of lading is issued in a negotiable form, the buyer may by endorsing the bill of lading transfer possession and together with a lawful cause also ownership of the goods to a third party while the goods are still in transit.

The third party having bought cargo in transit on the basis of a bill of lading is entitled to receive exactly what is mentioned on the bill of lading from the carrier (whether or not the bill of lading was correct).[12]

The substitution of paper transport documents by electronic documents may only be successful if all the functions in relation to all parties involved in an international trade transaction are represented in such an electronic document and if all documents "travelling" with the actual transport documents (Bill of Exchange, Commercial Invoice, Certificate of origin, Inspection certificate, Insurance Certificate and others) and accommodated in electronic format.

2.2. Forms of transport documents used

The simplest forms of transport documents are freight forwarders' receipts and ships' delivery orders.[13] Such documents simply acknowledge the receipt of the cargo by the carrier. They do not serve as a proof of the carriage contract. As such, they may

[10] See J H Rayner & Co Ltd v. Hambro's Bank Ltd (1943) 1 KB 37 (CA); Gian Singh & Co Ltd v. Banque de l'Indochine (1974) 2 All ER 754 (PC).
[11] Hare at § 14-6.1.
[12] See 1855 Bills of Lading Act.
[13] UNCTAD Report TD/B/COM.3/EM.12/2 at 25.

be used in circumstances where shipper, carrier and consignee are departments of the same company or companies controlled by the same group.

Sea waybills are non-negotiable documents serving as a receipt for shipment and as evidence of the contract of carriage.[14] A sea waybill does not provide the holder with constructive possession of the goods covered. For the same reason, it does not need to be presented to the carrier in order to obtain the goods at destination.[15] A sea waybill is therefore not suitable to transfer property and is not negotiable. Further, depending on the prerequisites of a letter of credit, it may not be used as a document to be presented against payment in a letter of credit.[16] If neither of these functions is needed in a transaction, the sea waybill is a frequently used transport document often promoted by the UN.[17] As we will see, sea waybills may be used relatively easily in electronic form (see Chapter 7.2).[18]

The most sophisticated transport document is the bill of lading. It is not only a receipt for the cargo and evidence of the carriage contract, but it is also a document of title. This function, considered more detailed in chapter 7.3.3, enables a bill of lading to fulfil a number of functions facilitating international trade transaction. As a result of the document of title function, a holder of a bill of lading has constructive possession over the goods mentioned on the bill of lading.[19] This has the effect that the carrier delivers the goods only to the person in possession of the original bill of lading.[20] The holder of the bill of lading may use the document as security to finance the trade transaction simply by handing over the original document to the creditor. Usually this is done by means of documentary credit.[21] The bill of lading may further be issued to order or bearer and becomes as such a negotiable document enabling the consignee (or holder if it is a bearer bill of lading) to transfer constructive possession to the goods to a third party and hence to sell the goods while they are in transit (see chapter 7.3.4).

[14] Hare at § 12-1.2.4 p. 446.
[15] UNCTAD Report TD/B/COM.3/EM.12/2 at 15.
[16] Williams at 566.
[17] UN/CEFACT Report ECE/TRADE/240 at 59; UNCTAD Report TB/B/COM.3/EM.12/2 at 102.
[18] UN/CEFACT Report ECE/TRADE/240 at 59; Hare at § 12-1.2.4 p. 446.
[19] Carver at 6-001/A.
[20] *Idem* at 6-005.
[21] Williams at 563.

3. Advantages of electronic transport documents

Traditional paper transport documents have served the shipping industry for centuries. It can be said that transport documents enable international trade. But the paper form of transport documents has some substantial disadvantages.

The issuing and processing of paper transport documents is cost intensive.[22] The size of vessels and the number of different cargoes they are able to carry on the same voyage may result in thousands of pages of paper transport documents being issued for one single voyage. Paper transport documents are sent around the world by courier to the receiver of the goods. Sometimes – if the goods are traded in transit – the transport documents reach the final receiver of the goods only after an odyssey around the world.

Modernisation of shipping by container and multi modal transportation result in accelerated arrival of goods at their destination. Today, transport documents frequently arrive after the goods at destination.[23] This may happen specially if the goods are traded in transit and additional time is then lost by documentary credit procedures. The carrier is under such circumstances forced to deliver the goods without the applicable transport document, to discharge them to a warehouse or simply to wait for the transport documents to arrive. The result is always the same;:additional costs (for administration and/or warehousing and/or demurrage) accrue.

Some estimations state that the costs of issuing and processing paper transport documents including cost for eventual delays in delivery could constitute up to 15% of total transportation costs[24] or up to 7% of the world trading volume[25].

Last but not least it is not difficult to create fraudulent paper transport documents or to use one of the usually three issued originals of a bill of lading for fraudulent purposes.

If all the functions of a transport document could be incorporated in an electronic

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[22] Yiannopoulos at 18.
[23] Schuback at 41.
[24] Yannopoulos at 18, citing Amelia H. Boss, *The international Commercial use of Electronic Data Interchange and Electronic Communications Technologies*, 46 Bus. Law. 1787 (1991), citing *Commission of the European Communities, the Legal position of the member Sates with Respect to Electronic Data interchange: Final Report (1989*); Schuback at 41.
[25] Müglich at 145 with reference to http://webcom/pjones/bolclarke.htm (not accessible anymore).

document and such a document could be sent to the receiver of the goods in electronic form, substantial costs and time – and as a result freight – could be saved. But this may only work if the electronic transport document is on equal footing with traditional paper document.[26]

An electronic transport document would be faster, more flexible and easier to handle. It could be analysed and verified on the same computer where it arrived and texts could be interpolated or attached without using a new paper document. Amended or checked electronic transport documents could be sent to a next recipient without postal or currier shipment. It is further obvious that storage and record keeping of electronic documents are much easier and requires less space and administrative efforts than that of paper documents.

It is a result of increased electronic commerce, open global markets and the development of container shipping that more and more relatively small traders need carriage services for relatively small quantities of goods. Such traders, generally not as sophisticated has commercial shippers, need a whole new set of supply chains directed to online consumers with a variety of shipment origins and destinations.[27] Globally accessible open solutions for electronic transport documents would therefore help transportation service providers to meet such demands and handle the increasing number of shippers shipping comparably smaller quantities of cargo.

4. Fears and hindrances to electronic trading

One of the main concerns of the shipping community – and one that inhibits the full implementation of electronic commerce in shipping - seems to be security. In the perception of many carriers, a paper document guarantees more security from fraud than an electronic document. This fear is not legitimate anymore as with the technical solutions available today an electronic document is probably better protected against fraudulent actions than any paper document could be. It will never be possible to completely exclude any fraudulent action, may it be in relation to a paper or an electronic document. But the fear is understandable because the technique involved in electronic documents needs special information technologies skills in order to be understood.

Another fear with similar roots is that a paperless system could cause misdelivery. Specially if the paperless system depends on a third party service provider, carriers

[26] Schelin at 294.
[27] UNCTAD Report TD/B/COM.3/EM.12/2 at 6.

are afraid to be fully liable for fault by this third party, which itself would have little or no liability.[28]

These fears are displayed by endorsements to the P&I policies of P&I Clubs belonging to the International Group. These endorsements exclude recovery in respect of any liability, cost or expense out of or in consequence of the participation in or the use of paperless trading.[29] As a consequence, a carrier using paperless trade procedures has to insure eventual risks by an additional insurance policy. Even if it is not clear at all whether the use of paperless trade actually results in higher risks.

Chandler summarised the risk issue in a brilliant sentence: "The reality is that until electronic trading reaches critical mass, risk will remain the concern of everyone. Until systems are proven in everyday operation risks can only be assumed."[30]

As we will see, it is today still not possible to issue a fully and independent electronic bill of lading, because to date, no legal system acknowledges the concept of incorporating a document of title function in an electronic document (see chapter 7.3.3). An electronic negotiable bill of lading therefore still depends on a third party service provider running a title registry and administering the electronic transfer of rights. It is submitted that this is the biggest and most important hurdle for electronic commerce. Market players are forced to become members of an association offering such services; the administrative cost increases again and the system is only useful to big commercial shippers and not flexible enough to service occasional traders.

Last but not least big container carriers are transporting such high volumes of cargo that they are content with using their own proprietary systems.[31] They therefore do not depend on an independent, international common solution for electronic transport documents. On the other side, if some of the big container shipping companies would commit to such a system, this could be a huge step towards an acceptance of such a system by commerce and also by the legal systems that apply to those shipping

[28] Chandler *Hurdles* 2002.
[29] *Idem*; SKULD Rules Part II Art. 5.2.17 and Appendix 1; American Club Rules Art. 19; UNCTAD Report TD/B/COM.3/EM.12/2 at 59 with reference to the International Group Circular of 5 October 1999, issued by SKULD.
[30] Chandler *Hurdles* 2002.
[31] UNCTAD Report TD/B/COM.3/EM12/2 at 25; see MAERSK LINE ELECTRONIC DOCUMENT PRINTING FACILITY www.maerskline.com:80/globalfile/?path=/pdf/uk_customer_doc_agreement_master (accessed on 22 December 2006); CMA-CGM eServices www.cma-cgm.com/eBusiness/eServices/Public/Features.aspx (accessed on 22. December 2006) and others.

transactions.

5. Applicable Law

The law applicable to transport documents is not uniform. Neither is the law regarding electronic commerce issues. It is therefore difficult if not impossible to summarise the applicable law. But it is nevertheless important to understand which law is or could be applicable in whatever situation and what kind of legal framework such as model laws and rules already exist which could have an influence on transport documents and their substitution by electronic 'documents'.

Transport documents are contractual documents incorporating or evidencing an international contract for carriage and confirming the goods shipped. The validity of an electronic transport document depends on the law applicable to the carriage contract and/or the transport document.[32] Rights and duties of the parties depend on the wording of the transport document and/or the underlying carriage contract (which may be a charter party or another form of shipping contract).[33]

Besides the wording of a transport document and/or the underlying carriage contract (eventually containing a choice of law clause) the applicable law is determined by the private international law of the forum deciding a matter based on and giving effect to such document (the *lex fori*).

The methods of private international law are similar in most jurisdictions. The Rome Convention[34] may be used as a good example to show how most private international laws treat issues of conflicts of law.

First, most jurisdictions try to enforce the intent of the parties. A choice of law, express or implied, is generally upheld even if the case has no connection with the chosen law.[35] An exception is if the parties try to contract out of a national law which otherwise would clearly apply; and any mandatory rules (for example form requirements) of that national law that will nevertheless apply (article 3.3 Rome Convention).[36]

If the parties did not choose the applicable law, most private international laws seek

[32] Muthow at 6.6.
[33] For Conflicts on the front and on the back of the bill of lading in relation to the identity of the carrier see chapter 7.3.5 with reference to The Starsin.
[34] EC Convention on the Law Applicable to Contractual Obligations (Rome 1980).
[35] Vita Food Products Inc. v. Unus Shipping Co. Ltd (1939) AC 277.
[36] *Idem at ??* stating that a choice of law has to be bona fide and legal.

to investigate the applicable law based on the question to which law the case has the closest connection (see article 4.1 Rome Convention). In order to do so, courts generally try to determine the party "who is to effect the performance which is characteristic of the contract" (article 4.2 Rome Convention). In a sale of goods contract this is the seller, in a carriage contract it is the carrier. In a second step it has to be determined in which country this party has its domicile or place of business.

Common law leads to the same result with its so-called Bonython test.[37] It says that "the substance of the obligation must be determined by the proper law of the contract in the system of law by reference to which the contract was made or that with which the transaction has its closest and most real connexion".[38]

Once the applicable national law is determined, it is up to the laws and regulations of that country to determine which rules apply to a specific case. This may depend on the place of shipment, the destination of shipment, the place of contracting or other parameters. An overview on the kind of national laws or conventions that could apply to transport documents or underlying carriage contracts is given in the following chapter (see chapters 5.1 and 5.2).

We will see that mandatory form requirements for transport documents could play a crucial role in the dematerialisation of transport documents. It is with this regard important to keep in mind that parties are not able to contract out of mandatory rules of the applicable national law.

This overview on the system of private international law shows that it is impossible to ascertain the applicable law to a transport document in a general way. Each individual case may lead to a different result. Nevertheless it is possible to establish an overview of laws and rules frequently applicable to transport documents and specially bills of lading. First, it is worthwhile to separate laws applicable to transport documents and carriage contracts from laws envisaging electronic commerce in general. Second, it is also worthwhile to distinguish conventions and national legislations from rules and model laws only applicable if chosen to be so by the parties.

[37] Bonython v Commonwealth of Australia (1951) AC 201 (PC).
[38] *Idem* at 219-20.

5.1. Applicable law to transport documents and carriage contracts

5.1.1. Conventions

No uniform international law (nor convention) exists to define the characteristics and effects of different transport documents. But as they have been established by the customs of trade, they appear similar in most jurisdictions.[39] Nevertheless, the UN together with the CMI is working towards an international harmonisation of trade law. In 2001, the CMI prepared on behalf of UNCITRAL a draft instrument on transport law, expressly including multi modal transport.[40] The project is now pending with the UNCITRAL Working Group III on Transport Law.[41] It is one of the goals of the UNCITRAL Draft Instrument to provide uniform rules for electronic transport documents. We will have a closer look at the draft instrument in chapter 9.

Very important conventions are the Hague-Visby and the Hamburg Rules. These conventions not only provide rules for the limitation of liability of the carrier but define also the rights and duties of the parties.

The Hague[42] or Hague- Visby Rules[43] are applicable in many states including most of the major shipping nations. The Hague-Visby Rules apply only to contracts of carriage covered by a bill of lading or a similar document of title including straight bills of lading (Art 1 (b) Hague-Visby Rules).[44] Provided that the Hague- Visby Rules are applicable (Art X Hague-Visby Rules or by choice of law) and the transport document issued by the carrier qualifies as a bill of lading or similar document of title, the rules define the liability of the ship owner for damages to or loss of the cargo (if no exclusion of limitation applies) is limited according to Art IV (5) Hague-Visby Rules. Otherwise, an eventual limitation of liability has to be considered based on the applicable national law, which may lead to no limitation or different limitation calculations. The Hague-Visby Rules are considered to be slightly more shipper friendly as its limitation limits are higher than those of most national legislations. In relation to electronic transport documents it has to be kept in mind that the Hague-

[39] UNCTAD Report SDTE/TLB/2003/3 at 10.
[40] See www.comitemaritime.org/singapore/issue/issue_draft.html (accessed on 21 September 2006).
[41] See www.uncitral.org/uncitral/en/commission/working_groups/3Transport.html.
[42] International convention for the unification of certain rules of law relating to bills of lading; "Hague Rules 1924"; see www.comitemaritime.org/ratific/brus/bru05.html.
[43] Protocol to amend the international convention for the unification of certain rules of law relating to bills of lading; "Hague-Visby Rules 1968"; see www.comitemaritime.org/ratific/brus/bru06.html.
[44] See J I Mac William Company Inc (Respondents) v. Mediterranean Shipping Company SA (Appellants) House of Lords Session 2004-05(2005) UKHL 11 (thereafter "The Rafaela S").

Visby Rules only apply if an electronic transport document qualifies as a "bill of lading or similar document of title" in the meaning of article 1 (b) of the Hague-Visby Rules.

As the Hamburg Rules[45] have not been ratified by many states they play a less important role in international trade. They rely more on the contractual intention of the parties.[46] The Hamburg Rules are applicable to any bill of lading or other document evidencing the contract of carriage by sea (Art 2 (d) and (e) of the Hamburg Rules). In general it can be said that their limitation of liability regime is more shipper-friendly than the regime of the Hague-Visby Rules. In relation to electronic transport documents the question rises if an electronic transport document is able to qualify as a "bill of lading or other document evidencing the contract of carriage by sea" in the meaning of Art 2 of the Hamburg Rules.[47]

The 1980 United Nations Convention on the international multimodal transport of goods is not yet in force.[48] It is unlikely, that this convention will come in force in the future. We therefore do not have to consider it for the time being.

5.1.2. National laws

Most countries know special legislations for carriage of goods by the sea and transport documents. The United States, the United Kingdom and South Africa universally call these Acts Carriage of Goods by the Sea Act (US-COGSA 1936[49]; UK-COGSA 1992; SA-COGSA 1986). In civil law countries, relevant rules are usually incorporated in the commercial codes and/or special Acts.[50] Many other national Acts and Regulations might have an influence on transport documents and their electronic substitution. Especially, mandatory legal form requirements for (carriage) contracts or transport documents have an influence on the legal appraisal of an electronic transport document.

[45] United Nations Convention on the Carriage of Goods by Sea; "Hamburg Rules 1978"; see www.comitemaritime.org/ratific/uninat/uni02.html.
[46] Glass at 2.85.
[47] Further it might be of importance that article 1 (8) Hamburg Rules defines "writing" as including, inter alia, telegram and telex. Thus electronic documents probably would not qualify as written documents according to the Hamburg Rules.
[48] See www.comitemaritime.org/ratific/uninat/uni03.html.
[49] A 1999 draft for a new US-COGSA is existing, but did not pass Congress yet.
[50] Germany: Handelsgesetzbuch HGB §§ 407-475h; France: Loi sur les contrat d'affrètent et de transport maritimes (1966).

5.1.3. Model laws and rules

If the parties choose the applicable law to their contractual relationship they are not limited to choose one specific national law but they may submit the contract to a model law.

The UNCTAD Secretariat in close cooperation with competent commercial parties and international bodies developed UNCTAD/ICC Rules for Multi Modal Transport Documents[51] to provide provisions for multimodal transport documents based on the Hague Rules and the Hague-Visby Rules. One of the main reasons for the establishment of these rules was and still is the fact that the 1980 United Nations Convention on the international multimodal transport of goods is still not in force. These rules apply when they are incorporated in the contract by the will of the parties. They expressly include a possible substitution of a multimodal transport document by an electronic data interchange message provided the applicable underlying national law permits such procedures (article 2.6). The Model Rules for Multi Modal Transport Documents do not deal any further with electronic transport documents.

Incoterms 2000, developed by the International Chamber of Commerce (ICC) have the purpose of providing international rules for the interpretation of the most commonly used terms in international trade. They do not apply to the contract of carriage, but to the contract of sale, offering various models to perform an international sales transaction.[52] The most popular Incoterms are probably FOB – "Free On Board" and CIF – "Cost, Insurance and Freight". Some of the Incoterms 2000 require the buyer to provide a "proof of delivery" of the goods in the form of a transport document. An electronic transport document has therefore to qualify as a "proof of delivery" in the sense of Incoterms 2000 (see chapter 7.4).[53]

The ICC Banking Commission developed another set of rules for the procedures relating finance and payment of international trade transactions by letter of credit or documentary credit. These are UCP 500 (Uniform Customs and Practice for Documentary Credits 500) and, since November 2006, UCP 600.[54] These Rules also affect the relationship between the seller and the buyer in an international trade

[51] See http://r0.unctad.org/en/subsites/multimod/mt3duic1.htm (accessed on 30 November 2006).
[52] International Chamber of Commerce *Incoterms 2000* Introduction at 1.
[53] *Idem* at 19.
[54] See www.iccwbo.org/policy/banking (accessed on 21 December 2006).

transaction and not the contract of carriage. But the procedures of a documentary, as described in chapter 2.1, are based on the tender of a transport document. A successful dematerialisation of transport documents is therefore only possible if documentary credit procedures allow and accept transport documents in an electronic form. The ICC issued with this regards rules called eUCP. They consist of 11 articles attached to UCP 500 as well as to UCP 600 (for further consideration see chapter 7.5).

5.2. Applicable law in relation to electronic substitution

5.2.1. Conventions

UN Convention on the Use of Electronic Communications in International Contract 2005 (hereafter "eCommerce Convention") was adopted by the UN General Assembly on 23 November 2005 and is open for signature.[55] Its scope is defined in Art 1 (1) of the Convention:

> "This convention applies to the use of electronic communications in connection with the formation or performance of a contract between parties whose places of business are in different states."

It basically acknowledges electronic communication in the same way other written forms of communication are accepted and sets rules regarding when an electronic document qualifies as a written document and how an electronic document may be legally signed (see article 9 eCommerce Convention).

The eCommerce Convention has no or very low impact on transport documents. Indeed it could have an influence on the formation of a carriage contract but its Art 2 (2) expressly excludes the application of the eCommerce Convention to "bills of exchange, promissory notes, consignment notes, bills of lading, warehouse receipts or any transferable document or instrument that entitles the bearer or beneficiary to claim the delivery of goods or the payment of a sum of money". The reason for this exclusion is that the UNCITRAL Working Group IV on Electronic Commerce did not find an agreeable solution for the electronic transfer of bills of lading. The transfer of rights was therefore excluded from the eCommerce Convention and, regarding bills of lading, was left for consideration by the UNCITRAL Working Group III in its Draft Instrument on the Carriage of Goods.[56] The wording of the convention is not clear. It

[55] Chandler Update 2006 at 4.
[56] Chandler eCommerce 2004 at 2.

is questionable if receipts for shipment and/or sea waybills (see chapter 2.2) are excluded from the eCommerce Convention. The last draft was clearer in this respect. Article 2 (g) excluded from the application of the convention "documents relating to the carriage of goods".[57] The preparatory works do not explain the change from the draft to the final version adopted by the UN General Assembly. But most likely all kinds of transport documents are excluded from the applicability of the eCommerce Convention. Nevertheless, it is possible that the rules regarding form requirements and signature could, by the will of the parties, have an influence on the law applicable to transport documents.

5.2.2. National law

With the Directive on Electronic Commerce 2000[58] the European Union laid down a clear and general framework to cover certain legal aspects of electronic commerce in the EU internal market.[59] Member states are required to implement the requirements expressed in the directive into their national legislation. Article 9 (1) of the Directive reads as follows:

> "Member States shall ensure that their legal system allows contracts to be concluded by electronic means. Member States shall in particular ensure that the legal requirements applicable to the contractual process neither create obstacles or the use of electronic contracts nor result in such contracts being deprived of legal effectiveness and validity on account of their having been made by electronic means."

Unfortunately the scope of the directive is limited to information technology services, defined as "any service normally provided for remuneration, at a distance, by means of electronic equipment for the processing (including digital compression) and storage of data, and at the individual request of a recipient of a service".[60] This means that the Electronic Commerce Directive neither applies to international trade transactions nor to transport documents.[61] But it shows how certain uniformity could

[57] UNCITRAL Working Group IV Document A/CN.9/571 at 59.
[58] Directive 2000/31/EC of the European parliament and of the council on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market.
[59] Directive 2000/31/EC at (7).
[60] See § 2 UK Electronic Commerce (EC-Directive) Regulations 2002 implementing the Electronic Commerce Directive in UK-Law with reference to EU Directives 98/34/EC and 98/48/EC.
[61] Schaal at 3.3. takes a different view without elaborating on the definition of "information society services".

be reached within the EU by implementing uniform laws stating that specific electronic documents would meet form requirements of written documents according to domestic law.

With the Directive 1999/93/EC of the European Parliament and of the Council the European Union provided a framework for electronic signatures (thereafter "Electronic Signatures Directive"). According to Article 1 it is the scope of the directive "to facilitate the use of electronic signatures and to contribute to their legal recognition". It obliges the Member States to ensure the acceptance of advanced electronic signatures in their national law.

With the implementation of this directive into the national laws of the Member States the European Union established a system, which fully recognises qualified digital signatures including digital signatures of electronic transport documents (see chapter 7.1.2.2). All Member States have enacted national laws based on the Electronic Signatures Directive.[62]

The United States implemented in 2000 the Electronic Signatures in Global and National Commerce Act. This act provides for legal effect of electronic signatures but does not prescribe the use of any specific technology or procedure.

Most countries, including South American and Asian countries seem to have established legislation regarding digital signatures and their acceptance within the last years.[63]

5.2.3. Electronic transport documents in carriage law

Many national Acts regarding carriage of goods do mention electronic transport documents and/or electronic bills of lading. However, they generally do accept electronic transport documents as such and do not offer procedures for electronic trade but allow the parties to agree on such procedures. Two examples shall be mentioned.

1999 US Senate Draft COGSA sec. 2 (c) reading: "An electronic bill of lading may be used in accordance with procedures agreed upon by the parties to the bill."

1992 UK Carriage of Goods by Sea Act sec. 1 (5) empowering the Secretary of State

[62] For example UK with the Electronic Communications Act 2000 (EC).
[63] See overview on http://en.wikipedia.org/wiki/Digital_signature (accessed on 11 December 2006) but note that this is a Wikipedia article which might not be correct in every detail.

to make provisions for cases where telecommunication systems or any other information technology is used for transactions corresponding to "(a) the issue of a document to which the act applies; (b) the endorsement, delivery or other transfer of such a document; or (c) the doing of anything else in the relation to such a document."

5.2.4. Model laws and rules

There exist some model laws and model rules related to electronic commerce. With regard to transport documents and carriage contracts the parties may submit issues related to electronic commerce to such model laws.

The first attempt to provide rules regarding electronic transport documents was the CMI with the 1990 CMI Rules for Electronic Bills of Lading. The system it offers will be discussed in chapter 7.1.3.

UNCITRAL developed a model law on electronic commerce in 1996[64] and a model law on electronic signatures in 2001[65]. These model laws are designed to offer national legislators a set of internationally acceptable rules. But they are also intended to be of use to individuals in the drafting of contractual solutions.[66]

The Model Law on Electronic Commerce treats questions of the application of legal requirements to data messages (chapter II including form originals and evidential weight) as well as the communication of data messages (chapter III including formation and validity of contracts and receipts). The Model Law on Electronic Signatures is based on article 7 Model Law on Electronic Commerce and offers procedures for electronic signatures.[67] These model laws will be discussed in chapter 7.1.3.

6. Methods of dematerialisation

In this thesis the term *electronic document* is used to contrast from a *paper document*. But the term electronic document is not an established concept. It is used for what is to be the result of an electronic substitution of a paper transport document. It is electronic data, containing information, saved in an electronic form or

[64] UNCITRAL Model Law on Electronic Commerce1996 with Guide to Enactment.
[65] UNCITRAL Model Law on Electronic Signatures 2001 with Guide to Enactment.
[66] UNCITRAL Model Law on Electronic Commerce1996 with Guide to Enactment at 16; UNCITRAL Model Law on Electronic Signatures 2001 with Guide to Enactment at 8.
[67] UNCITRAL Model Law on Electronic Signatures 2001 with Guide to Enactment at 8.

sent from one person to another in form of electronic messages. This means that the original electronic document is the electronic data itself and not a print-out of the information it contains. In relation to the dematerialisation of transport documents writers generally refer to Electronic Data Interchange (EDI).[68] The UNCITRAL Model Law on Electronic Commerce 1996 offers a definition of EDI:

> "Electronic Data Interchange (EDI) means the electronic transfer from computer to computer of information using an agreed standard to structure the information."[69]

This shows that EDI is a descriptive term for the process of electronic communication used in international commerce. It has to be kept in mind that EDI is neither an existing system nor an approved standard procedure. But it makes clear that an EDI system, in the lack of uniform laws, depends on some "agreed standards". In the eCommerce Convention the term "Electronic Data Interchange" is not used anymore but more appropriate terms such as "electronic communication", "data message", "information system" and "automated message system" are given legal definitions.[70]

Paperless trade could be achieved with by different methods based on different EDI systems.[71]

First of all, the traditional paper document could still be issued and deposited with a third party service provider. In this case, only the administration of the paper document and it's trading is done by electronic messages and electronic communications between the shipper, the consignee, an eventual endorsee, the carrier and the third party service provider.[72] Such an EDI system does not provide paper less trade, as the original paper transport document is still issued. But it offers paper free trade. It has the big advantage that the law applicable to paper transport document is fully applicable. The parties only have to agree to administer the paper transport document by electronic messages.

A second solution is to substitute the paper transport document and its traditional procedures by electronic messages. The idea is that the existing applicable law to specific transport documents would apply to the transaction exclusively performed by

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[68] Williams at 567 ff.; Muthow at 4 ff.; Gehrke at 8; Müglich at 145 ff.; Laryea at 15, 158; Yiannopoulos at 5 ff. and others.
[69] See article 2 (b) UNCITRAL Model Law on electronic Commerce 1996; Yiannopoulos at 5.1; Gehrke at 8; Muthow at 4.1.
[70] See article 4 United Nations 2005 Draft Convention on the Use of Electronic Communication in International Contracts.
[71] For all of them, see Schuback at 42.
[72] This is the system used by SeaDocs see chapter 8.2.

electronic messages. With a contractual framework the parties submit their system to the law applicable to paper transport documents. Because of the complicated contractual bases and the fact that the law does not yet support an electronic document of title such an EDI system also depends on a third party service provider. This third party allocates the contractual framework and runs an electronic title registry.[73] To involve a third party service provider has the advantage that the rightful holder of the electronic transport document may be verified by the title registry, making this system even more secure from forgery than a traditional paper transport document. It remains unsure if any applicable legal system accepts a transfer of title by an electronic title registry. But as the participants have agreed to the terms, it is unlikely that they would bring such a question to a court. Such a system offers paperless trade.

Last but not least a completely new system could be developed, where one electronic document, independent of any third party, represents a proper electronic transport document embodying all functions of a traditional paper transport document.

The first two methods have the big disadvantage that trading parties depend on a third party service provider administering the whole procedure. The trading parties as well as the service provider have to enter into contractual relationships in order to agree on the rules for the procedures. These are closed systems, not flexible and as such only an option for professional, daily traders. They raise some questions of data protection as the service provider theoretically could have access to plenty of information about all involved parties and their trade activities.

The third method is actually the only method providing a full dematerialisation of a paper transport document. Such an electronic document could be issued by any carrier and sent to any receiver of the goods wherever in the world. This must be the future of an electronic bill of lading.

Besides widespread concerns regarding security[74], such an electronic bill of lading might only be achieved by substantial changes in existing legislation. It has to be a determining factor of the applicable law that and under what conditions an electronic document may be a document of title providing the person having lawful control over that document with constructive possession over the goods in transit (see chapter

[73] This is the system used by BOLERO see chapter 8.4.
[74] Which, it is suggested, are not legitimate because they always have to be judged in relation to the security offered by a paper transport document.

7.3.3). Such a legal instrument cannot be concluded on contractual bases as it involves questions of property law not open to the will of the parties.

Technical solutions for a dematerialisation cannot be properly covered by this thesis. But it seems clear that such solutions are available or could be developed regarding hardware as well as software. The first two methods mentioned could work on a closed network. Such a closed network provides more security but also higher costs for the participants and could be a disadvantage for trading partners in third world countries with poor infrastructure. The goal has to be a solution easily accessible via a simple Internet connection based on widely accepted and/or compatible software.

The basic requirements for a successful and effective EDI system are, according to Mulligan, the following:

- Message structure standards;
- Implementation rules (protocols);
- Translation and communication software;
- Communication links (usually via a managed – open or closed – VAN network);
- Trading partner agreements and
- System integration.[75]

The United Nations Trade Data Interchange Directory defined business standards for the structuring of messages with its UN/EDIFACT rules.[76] They will be continuously adapted and amended. An EDI system for transport documents should be linked to these or similar standards. Business standards are the foundation of compatibility. UN/EDIFACT is not limited to transport documents as such but includes customs, finance, statistics and insurance.[77]

Implementation rules determine the flow of messages. It has to be clear for all involved parties when a message is considered as sent or received, and when and how the receipt of a message has to be acknowledged. Implementation rules could be agreed on within a contract, but for a fully independent working EDI system for transport documents it would be important that the law provides such rules.

The software is the tool. An EDI system for transport documents should allow various

[75] Mulligan at 301.
[76] *Idem*
[77] *Idem* at 302.

solutions from various companies. The business standards and the implementation rules should guarantee compatibility. An open marked is always the best instrument to obtain high quality products at reasonable rates.

Internet access through Internet service providers is today available in most corners of the world. It has to be the goal of an EDI system for transport documents that it is accessible without high infrastructure requirements. Developing countries and traders with small trading volumes need to have simple access to an EDI trading system. It is not helping international trade if such a system is only accessible to global marked players with high trading volumes. A successful EDI trading system should therefore be based on communications based on an open VAN Network such as the Internet.

The better the business standards and the legal framework are, the less would the trading parties need to agree on in order to use an EDI system for their trade transaction.

7. Legal requirements for a substitution of paper documents by electronic documents

We can summarise that a successful dematerialisation of transport documents requires procedures to generate electronic data containing all information of a specific transport document in a form that this electronic data is virtually unchangeable and only readable by certain selected people (the receiver of the goods, the carrier and perhaps other service providers). Last but not least it must be possible to send this bundle of electronic data as an electronic message from one trading party to another in a way that such electronic communication initiates the same legal consequences as the tradition of a paper document.

The legal requirements for a successful dematerialisation can be divided into general requirements and specific requirements. General requirements are issues arising under any circumstances of electronic commerce.[78] Special requirements are legal issues only arising in relation to electronic transport documents.

[78] Gregory at 313.

7.1. General requirements for the substitution of paper documents by electronic documents

As shown (see chapter 2.1) transport documents may play a role in various contracts. The involved persons relying on an electronic transport document need to be able to rely on the authenticity and integrity of such an electronic document and its 'signatories'. Furthermore, such electronic documents have to be enforceable in court and have to be protected from illegal spying by third parties.[79] All these considerations relate to the form of an electronic transport document and its legal acceptability. These questions are not specific to transport documents but may be considered generally when and wherever an electronic document is used in a legal or contractual context. They are therefore treated as "general requirements".

To be enforceable in court an electronic transport document needs to comply with eventual form requirements (writing, signature) and/or it needs to constitute valuable evidence in a court procedure.

7.1.1. Writing form

Certain legislations may by statute[80] require transport documents to be in writing. An electronic transport document should in such cases fulfil the legal requirement of writing as otherwise the document or contract might not be recognized, valid or enforceable. If writing is not a legal requirement, the legal function of a written contract is mainly evidential (see chapter 7.1.2).[81] It is beyond the scope of this thesis to analyse different domestic laws and their writing requirements in relation to transport documents and related contracts.[82] It shall just be mentioned that most common law countries require sale contracts exceeding a certain amount in value to be in written form.[83] Regarding bills of lading, a number of countries require such a document to be written and signed.[84] But most of the countries as well as the Hague-Visby and the Hamburg Rules do not expressly have a formal requirement that a bill of lading or another transport document has to be in writing. Still, it has to be a "document" and the question remains if an electronic document can be document in

[79] Katz at FNa1.
[80] And only by statute as contracts need not be constituted or evidenced in writing at common law. See Laryea at 4.1.
[81] *Idem*.
[82] Yiannopoulos provides a good comparative overview on form requirements for transport documents.
[83] *Idem* at 33;Schuback at 43.
[84] *Idem* at 33.

the sense of these legislations.[85] South African law regulates the form of all sort of negotiable or transferable sea transport documents, including bills of lading, in its Sea Transport Documents Act 65 of 2000. This act requires sea transport documents to be paper documents but – and this is remarkable – states that "a record or document produced by a telecommunication system or electronic or other information technology system and effecting transactions such as those effected by any of the documents referred to in paragraphs *(a)* to *(e)* of the definition of sea transport document is regarded to be a document referred to in the relevant paragraph of that definition" (Sea Transport Document Act s. 1 al. 2). Without international or national law or at least case law acknowledging similar to South African law certain electronic documents as written documents or as documents at all, legal uncertainty remains (see also chapter 7.1.3).[86] The problem is particularly difficult with regard to a bill of lading or another document of title as such documents represent constructive possession in the goods. The concept that an electronic document could represent constructive possession has apparently not yet, been accepted by any legal system in the world (see chapter 7.3.3).

Indeed the parties may enter into agreements stating that they expressly acknowledge an electronic transport document in a certain form. But it has to be kept in mind that such an agreement is not able to overrule mandatory form requirements by any applicable law.

It can be concluded that if a domestic legislation mandatory requires a document to be in writing, such a document cannot be replaced by an electronic document unless national or international laws are amended accordingly. Some existing model laws and rules show how national or international laws could be amended. Parties may also agree on these rules as applicable law, but the effect of such an agreement is in relation to mandatory form requirements of limited effect.

The 1996 UNCITRAL Model Law on Electronic Commerce provides in its article 6 that "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". And more expressly in relation to transport documents, the model law states in article 17 that "where the law requires that any action … 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". The model law is not a

[85] Muthow at 6.3.
[86] Schuback at 43.

convention. It applies only if the parties agree on it as applicable law to the contract. Therefore, article 6 and 17 only apply in relation to writing requirements stated by the model law itself and are – even if the model law is the applicable law to a contract – not able to overrule mandatory writing requirements in domestic laws.

As shown, the eCommerce Convention does not apply to transport documents (Art 2 (2); see chapter 5.2.1). Its eventual coming into force would therefore not change the situation regarding the acceptance of electronic transport documents as written documents.

The 1990 CMI Rules for Electronic Bills of Lading also contain a provision regarding writing requirements. Article 11 reads as follows:

> "The carrier and the shipper and all subsequent parties utilising these procedures agree that any national or local law, custom or practice requiring the Contract of Carriage to be evidenced in writing and signed, is satisfied by the transmitted and confirmed displayable in human language on a video screen or as printed out by a computer. In agreeing to adopt these Rules, the parties shall be taken to have agreed not to raise the defence that this contract is not in writing."

The provision refers expressly to writing requirements in any applicable national or local laws. But it has to be kept in mind that the Rules are not law but rules applicable by the will of the parties. The obligation not to raise a certain defence remains a contractual obligation entitling the other party eventually to damages but is not able to validate an electronic bill of lading issued based on the Rules in a legislation requiring it to be in writing. If the applicable law defines a written form as prerequisite of validity, an electronic transport document under the Rules may be void in such legislation regardless of Art 11 of the rules.

In most jurisdictions, if a contract has to be in writing, the signature of all parties involved is essential in order to fulfil the writing requirements. With this regard, the situation and conclusion is the same as with regards to the writing requirement itself. Contractual agreements or model laws may not overrule mandatory signature requirements in applicable national law unless the law expressly accepts digital signatures (see chapter 7.1.2.2).

7.1.2. Evidential value

If writing is not a mandatory requirement, a written and signed document is still of great evidential significance. It shows that the person who signed the contract or document has read and understood it and agrees with its content. The individuality of a signature helps to identify a document as a truthful and original document. It's a singular and authentic document. Obviously, an electronic document may not be signed in a traditional way. But in order to fulfil the same functions as a signed paper document, an electronic document has to incorporate exactly the same characteristics. Let us first analyze technical methods to provide electronic documents with such characteristics and then display the relevant international legislation and model laws offering solutions for this problem and making electronic documents legally accepted as evidence be international or national laws as well as within court procedures.

7.1.2.1. Technical solutions for the evidential function of electronic documents

Most methods used today to guarantee the singularity and authenticity of an electronic document are based on digital signature technology and mathematical algorithms that encrypt entire documents.[87] The digital signature verifying the issuer's identity and the encryption providing security that the document is authentic and singular, not having been read or changed by any person other than the issuer or any other expressly entitled person.

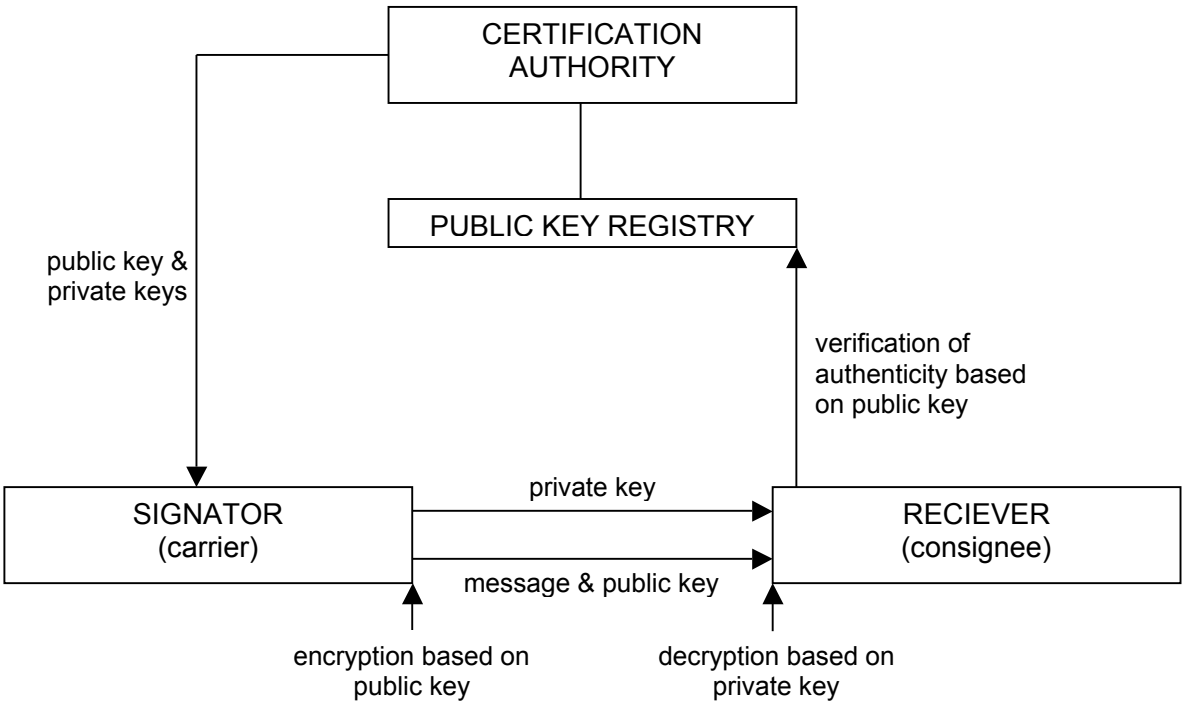
There are basically two types of cryptographic encryption. A symmetrical system where the same key (code) is used to encrypt and decryt data (so called "private key system") or the asymmetrical system using one key to encrypt and another key to decryt data (so called "public key system"). Digital signatures usually work on an asymmetrical system.

Digital signature and encryption work hand in hand. Two algorithms match to a singular combination usually based on calculations involving two large prime numbers.[88] Such algorithms are extremely secure as, because there are infinitely many prime numbers, even the best supercomputers in the world would take thousands and thousands of years to crack the matching algorithm to a 128 bit key.[89]

[87] Katz at fn a1.
[88] *Idem* at fn1.
[89] Schaal at 2.1.

One algorithm remains secret, the “private key”. The other algorithm is public, the “public key”. The system is also referred to as “public key infrastructure” (PKI).[90] The algorithms are calculated and allocated by a “Certification Authority”[91] as a trusted third party. The Certification Authority should be state controlled and has a similar function as a notary public. The holder of the digital signature receives the algorithms in form of a computer chip.[92] The public key identifies the holder of the digital signature and is published in an open registry of the Certification Authority.[93] The receiver of a digital signed message may identify the issuer of the massage based on the public key attached to the message. Like a signature on a paper document, a digital signature is unique to the sender and shows that the sender has read, understood and approved the message. The issuer of a digitally signed message generates, based on the data received by the Certification Authority an individual private key for each message. The message is generally encrypted based on the public key. Encryption can be described as the scrambling and altering of the message file from plaintext into an unreadable cipher text.[94] With this encryption the message is not only unreadable by third parties but the signature is also irrevocably linked with the content of the message. The digitally signed message finally has a message integrity code (“MIC”) incorporated. This code is a specially computed quantity unique to the signed message at the time it is sent. The MIC therefore guarantees that the message was not changed or manipulated since its author sent it.[95] Only a person with the matching private key can decrypt the file and make it readable again.[96]

[90] *Idem*
[91] Schaal at 2.2.
[92] Geis at 1.0.
[93] *Idem*
[94] Schaal at 2.1.
[95] Katz at fn 5.
[96] *Idem* fn1.



A manual signature on a paper document may be comparatively easily detached from the content of the document or the content itself may be fraudulently changed by a third party without affecting the manual signature. With regard to authenticity and possibilities of fraud the system of digital signatures seems more secure than a system based on a paper document. The weak point of this system is the fact that the private key has to be communicated to the receiver within an independent message and/or a different way of communication. If the private key as well as the encrypted message falls in the hands of an unauthorised third party, fraudulent action cannot be excluded.

7.1.2.2. Legal acceptability of digital signatures

With the Directive 1999/93/EC of the European Parliament and of the Council the European Union provided a framework for electronic signatures. According to Article 1 it is the scope of the directive “to facilitate the use of electronic signatures and to contribute to their legal recognition”. It’s most important article 5 obliges the Member States to ensure that advanced electronic signatures

> “(a) satisfy the legal requirements of a signature in relation to data in electronic form in the same manner as a handwritten signature satisfies

those requirements in relation to paper–based data; and

(b) are admissible as evidence in legal proceedings".

The directive further defines the requirements for a "qualified certificate" (article 2 (10) and Annex I Electronic Signature Directive) as well as Certification Authorities (called "certification-service-provider" article 2 (11) and Annex II Electronic Signature Directive). Last but not least it sets requirements under which a qualified certificate issued in a foreign state has to be recognised as such by the Member States (article 7 Electronic Signature Directive).

With the implementation of this directive into the national laws of the Member States the European Union established a system, which fully recognises qualified digital signatures. The Directive and the corresponding national laws of the Member States respectively do not exclude transport documents. Within the European Union a digitally signed transport document is therefore to be regarded as a manually signed transport document as far as the signature is concerned. An electronic document signed by a qualified electronic signature is an evidential document of highest quality.[97] In some legislation a digitally signed electronic document does fulfil the requirements of statutory written form.[98]

But unfortunately, a digital signature is not able to replace a paper based negotiable instrument or a document of title such as a bill of lading.[99] Neither the Directives nor National laws expressly accept the transferability of a digitally signed electronic document as a negotiable instrument or a document of title.

The United States implemented in 2000 the Electronic Signatures in Global and National Commerce Act. This act provides for legal effect of electronic signatures but does not prescribe the use of any specific technology or procedure. Most of the States know legislation setting the rules for digital signatures, acceptable technologies (private key encryption) and the establishment of certification authorities (see to instance California Digital Signatures Regulations 1998[100]).

Most countries, including South American and Asian countries seem to have established legislation regarding digital signatures based on private key

[97] Geis at 3.1.1.
[98] *Idem* with reference to German law.
[99] *Idem* at 4.2.
[100] http://www.ss.ca.gov/digsig/regulations.htm (accessed on 11. December 2006).

encryptography system within the last 7 years.[101]

South Africa enacted in 2002 the Electronic Communications and Transactions Act Nr. 25. This Act deals with various issues related to the use of electronic communication such as the legal admissibility of electronic communication, consumer protection, data protection liability of service providers as well as cyber crime. In the scope of this thesis chapter III (part one on legal requirements for data messages and part two on the communication of data messages are of significance), chapter V (cryptography providers) and chapter VI (authentication service providers) are of significance.

Art. 12 of the Electronic Communications and Transactions Act defines that "a requirement in the law that a document or information must be in writing is met if the document or information is (a) in the form of a data message and (b) accessible in a manner usable for subsequent reference". The term "data message" broadly defined. It means any data generated, sent, received or stored by electronic means (art. 1 Electronic Communications Act).

With regard to advanced electronic signatures, the Act does not refer to one specific systems but defines in article 13 any system for electronic signatures to be applicable if it

- "a method is used to identify the person and to indicate the person's approval of the information communicated; and
- having regard to all the relevant circumstances at the time the method was used, the method was reliable as was appropriate for the purposes for which the information was communicated."

It is even presumed that if an advanced electronic signature is used, such signature is valid unless contrary is proved.

The act also defines the conditions for an electronic document to be legally recognised as an original (art. 14 Electronic Communication and Transaction Act). Electronic data may be presented as an original if it is in a form that guarantees its integrity from the time when it was first generated.

Under the given circumstances, written, signed and/or original documents are

[101] See overview on http://en.wikipedia.org/wiki/Digital_signature (accessed on 11. December 2006) but note that this is a wikipedia article which might not be correct in every detail.

admissible in court proceedings as such (art. 15 Electronic Communication and Transaction Act).

In order to provide users with a certain assurance as to what kind of electronic documents and electronic signatures are accepted as substitutes to written and signed paper documents the state is obliged to establish and maintain a registry of cryptography providers (art. 29 al. 1 Electronic Communication and Transaction Act) as well as accredited authentication service providers (art. 33 ff. Electronic Communication and Transportation Act).

These rules fully apply to transport documents and specially sea transport documents. South African law therefore offers a legal foundation for digitally signed transport documents based on but not limited to the system of private key encryptography.

It can be summarised that today most countries legally accept qualified digital signatures based on private key encryptography in the same way as a manual signature. This has an influence on transport documents in countries where specific transport documents have to be signed in order to be legally valid. But the system of private key encryptography has not only an impact in countries where signature is a prerequisite of validity. In any country, this method provides a digitally signed electronic document with strong evidential power in any enforcement or court proceedings. Its evidential value is at least as good as the evidential value of a paper document. Still, if a transport document is requested to be in writing, a qualified digital signature is not able to make an electronic document legally accepted as a written document.

7.1.3. Model law solutions for electronic commerce

With regard to enforceability and evidence the parties may overcome the legal insecurity of the acceptability of an electronic transport document by submitting the document and/or the contracts evidenced by it to certain model laws or rules. Certain national legislation regarding carriage of goods by the sea expressly empower the parties to agree on procedures regarding electronic bills of lading (see 1999 US Senate Draft COGSA sec. 2 (c) reading: “An electronic bill of lading may be used in accordance with procedures agreed upon by the parties to the bill.” See also chapter 5.2.3). Such model rules become legally binding to the parties if the contract between the parties or the model rule itself state expressly that they are legally binding on the

parties (if chosen to apply) or if the contract or the rules include a provision which prohibits the parties from raising the defence that the agreement was not in writing or did not fulfil any other form requirements.[102]

UNCITRAL developed a model law on electronic commerce in 1996[103] and a model law on electronic signatures in 2001[104]. These model laws are designed to offer national legislators a set of internationally acceptable rules. But they are also intended to be of use to individuals in the drafting of contractual solutions.[105] A contractual EDI solution for transport documents could therefore be based on these model laws. The Model Law on Electronic Commerce treats questions of the application of legal requirements to data messages (Chap II including form originals and evidential weight) as well as the communication of data messages (Chap III including formation and validity of contracts and receipts). The Model Law on Electronic Signatures is based on Art 7 Model Law on Electronic Commerce.[106] And is based on a public key encryption and certification by a so-called certification service provider.

The Model Law on Electronic Commerce sets some special rules for carriage contracts and transport documents. Article 16 lists (in an open list) various possible actions eventually to be performed under a carriage contract and states that the rules apply to all of these. Specially, Art 16 (f), makes the rules applicable to granting, acquiring, renouncing, surrendering, transferring or negotiating of rights in the goods. Article 17 then overrules any form requirements for such actions in other laws by stating 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 one or more data messages". Such legislation as drafted by the UNCITRAL Model Laws would enable the complete substitution of a paper transport document and especially of a bill of lading by an electronic document or rather a defined set of electronic communications between the parties.

If parties would chose the model laws as applicable law on a contractual bases, the problem remains that such a contractual system is not able to overrule mandatory rules of the applicable law to the case.

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[102] See also Muthow at 8.
[103] UNCITRAL Model Law on Electronic Commerce1996 with Guide to Enactment.
[104] UNCITRAL Model Law on Electronic Signatures 2001 with Guide to Enactment.
[105] UNCITRAL Model Law on Electronic Commerce1996 with Guide to Enactment at 16; UNCITRAL Model Law on Electronic Signatures 2001 with Guide to Enactment at 8.
[106] UNCITRAL Model Law on Electronic Signatures 2001 with Guide to Enactment at 8.

7.2. Specific requirements for a substitution of paper transport documents by electronic transport documents

7.2.1. Receipt and sea waybill

Sea waybills are non-negotiable documents serving as a receipt for shipment and as evidence of the contract of carriage.[107] A sea waybill does not provide the holder with constructive possession of the goods covered. For the same reason, it does not need to be presented to the carrier in order to obtain the goods at destination.[108] A seaway bill is therefore not suitable to transfer property and is not negotiable. Further, depending on the prerequisites of a letter of credit, it may not be used as document to be presented against payment in a letter of credit.[109] If neither of these functions is needed in a transaction, the seaway bill is a frequently used transport document the use of which is favoured by the UN.[110]

A sea waybill may relatively easy be used in electronic form.[111] It is unlikely that any national law demands a receipt or a sea waybill to be in writing. Both are documents of evidential character. An electronic substitution of a receipt or a sea waybill is therefore successful, if the electronic receipt or the electronic sea waybill has the same evidential value as their paper form.

As already considered an electronic document signed with a digital signature has at least the same evidential value as a paper document. All functions of a receipt or a sea waybill could therefore be incorporated in and represented by a digitally signed electronic document. Such an electronic document could be sent to the receiver by common email. General legal rules for digital signatures are fully sufficient to substitute receipts or sea waybills by their respective legal form. No specific rules in relation to the electronic substitution of such transport documents are needed.

7.3. Bill of Lading

The most sophisticated transport document is definitely the bill of lading. It exists in different forms as a straight or negotiable document for sea transportation or multi modal transport but in whatever forms it is used, it has the attributes of a traditional bill of lading. Developed by English law of the 16th and 17th centuries it allows

[107] Hare at § 12-1.2.4 p. 446.
[108] UNCTAD Report TD/B/COM.3/EM.12/2 at 15.
[109] Williams at 566.
[110] UN/CEFACT Report ECE/TRADE/240 at 59; UNCTAD Report TB/B/COM.3/EM.12/2 at 102.
[111] UN/CEFACT Report ECE/TRADE/240 at 59; Hare at § 12-1.2.4 p. 446.

sellers and buyers located in distant parts of the world to exchange goods and payment and eventually even to trade the goods in transit.[112] It can be characterised by the following three traditional functions. A bill of lading is

- receipt for the shipment of cargo (quantity and quality),
- evidence of the contract of carriage and
- document of title113
- and eventually a negotiable document

Bills of lading are generally used in form of templates issued by the carrier with all relevant (individual) information on the front and general conditions in microscopic letters on the back. Quite frequently, the general conditions name English law as applicable law to the bill of lading and select London jurisdiction. Sometimes, there is a sophisticated choice of law clause depending on the case (for example, that the contract shall principally be subject to English law; but if delivery of cargo is to the US then USA law prevails). If the bill of lading has no choice of law, the applicable law to the bill of lading has to be established according to the private international law of the country where the claiming party tries to assert jurisdiction (the *lex fori*; see chapter 5).

In order to analyse the possibilities of substitution of a paper bill of lading by an electronic bill of lading it is necessary to have a closer look at each function.

7.3.1. Evidence for carriage contract

The bill of lading is not the contract of carriage in itself. It may be that the contract has already been concluded with the issuing of the booking note.[114] But it is a proof that a carriage contract in respect of the mentioned cargo exists for the mentioned voyage.[115] The bill of lading is often relevant for the calculation of freight and might be issued as a freight collect bill.[116] In such cases, the consignee will have to pay freight at destination. It is important to keep in mind that the carriage contract's terms might differ from what is stated on the bill of lading.

If the parties use an electronic document secured by a system using qualified digital signature (with public key infrastructure), such an electronic document is probably

[112] UNCTAD Report TB/B/COM3/EM.12/2 at 30.
[113] Hare at § 14-1.
[114] Hare at § 12-1.1.2.
[115] *Idem* at § 14-3.2.
[116] Glass at 2.93.

safer from forgery than any paper document. As such it is as much a proof of evidence of the contract between the shipper and the carrier as a paper document could possibly be (see chapter 7.2.1). The function of a bill of lading to evidence a carriage contract may easily be incorporated in an electronic document if the parties agree on model laws such as the UNCITRAL Model Law for Electronic Signatures or if the applicable law provides rules and procedures for digital signatures.

7.3.2. Receipt for shipment

The goods handed over to the carrier are recorded in a bill of lading. The carrier issuing a bill of lading has to describe the received goods in relation to quantity, quality and condition. It is obvious that the duty of the carrier to examine the goods is limited to a prima facie examination by the first mate during the loading of the vessel.[117] In relation to quantity, this means that the bill of lading has to say how many packages (containers, pallets) have been loaded on board. Information's given to the carrier by the shipper have to be described as such (i.e. 10 pallets *said* to contain 40 TV sets). Regarding bulk cargo, the carrier should record the quantity, as he is able to measure it during the loading process. Again, information given to the carrier by the shipper has to be described as such. Otherwise, the carrier risks being liable for eventual differences in quantity at discharge.

The carrier has to examine the condition of the goods by reasonable visible external examination during the loading process (prima facie). If these examinations do not lead to any concerns, the carrier states that the goods have been loaded or received in apparently good order and condition. The consequence of a statement of condition in the bill of lading is that the carrier might be liable for recognisable prima facie defects as well as for defects occurred during the voyage.

The description of quality is generally of little consequence to the carrier. It is in most cases a limited duty of the carrier to name the cargo (wood, iron-ore, copra…). For further remarks on quality, the carrier eventually refers to the description he was provided by the shipper (*said* to have such-and-such specifications).

If the bill of lading makes no reservations regarding quantity, condition and quality, the carrier issues a clean bill of lading. Besides eventual liabilities of the carrier for issuing a clean bill of lading, this might have consequences for the whole transaction as the banks in the process of payment by letter of credit are only allowed to pay

[117] Hare at § 12-1.2.2 and at § 14-3.1.

against a clean bill of lading.

To be a receipt for shipment is an evidential function of a bill of lading. If an electronic document secured by a system using qualified digital signature, such an electronic document has the same evidential value as any paper document. As such it is as much a receipt for the goods shipped as a paper document could possibly be.

7.3.3. Document of title

This is probably the most important function of a bill of lading as it enables the seller to transfer constructive possession to the consignee and, if issued to order, the consignee to transfer constructive possession of the cargo to a third party and therefore enables the consignee to resell the cargo in transit. Unlike some negotiable instruments or a deed of title of immovable property, a bill of lading evidences the right to possession of the cargo (constructive possession).[118] As such, the bill of lading – as emphasised by Hare – is a "legal surrogate for the physical delivery of the goods". The transfer of the bill of lading to the consignee or by endorsement to a third party enables the issuer or the holder of the bill of lading to hand over possession to the consignee or a third party while the cargo is actually travelling on high seas. The bill of lading represents the cargo itself in such a transaction. Together with the intent to transfer ownership, the issuer or holder of a bill of lading is actually able to transfer ownership to the consignee or the endorsed third party according to the property law of most jurisdictions.

Schaal suggests that as the certification of a digital signature by certification authorities guarantees – similar to a notary public – that the buyer of the goods that are in transit knows that the seller is the person entitled to the goods if he encrypted his offer with a public key that was issued by a certification authority such an electronic document is able to substitute the document of title function of a paper bill of lading.[119] It is submitted that this is not correct. The difficulty of the dematerialisation of a document of title is not authenticity but is the incorporation of the right to constructive possession in an electronic document. A digital signature does not legally enable an electronic document to fulfil the functions of a document of title.

Possession of the document represents possession of the goods. It is an attribute of

[118] Hare § 14-3.3.
[119] Schaal at 2.2.

paper that it supports the principle of merger.[120] The right to constructive possession of the goods may be embodied in a physical document.[121] Such legal instruments exist in most jurisdictions and have been developed throughout legal history. The paper document is merely a medium for the incorporation of constructive possession. That a sheet of paper is itself a tangible *res* makes the transaction easier to understand because possession of a sheet of paper is transferred in the same way as possession of the goods it is representing. But there is no reason why any other medium – for example an electronic document – could be used to incorporate and transfer constructive possession in the goods, provided that the parties agree on such a use and have confidence in it. It is the message that is important, not the paper.[122] Nevertheless the legal world seems to have big difficulties to accept such a change. Without a clear and explicit legal provision including rules on how an electronic document of title is transferred from one person to another, it is not expectable that any legal system accepts a right *in rem* to be incorporated in a disembodied electronic message not being a *res* itself.

Intellectual property rights cause a similar problem. How can "possession" "ownership" or "creatorship" of an idea be manifested and enforced? Intellectual property law is working with a system registering the rights in public registries. As we have seen, to work with a title registry is one method to achieve dematerialisation of bills of lading (see chapter 6). It is suggested that a system based on a registry has too many disadvantages. Such a system is too complex, to costly, not free accessible by everybody, not flexible and causes problems of data protection.

There is no long-term way to an electronic bill of lading other than by establishing law acknowledging an electronic bill of lading to be a document of title provided certain requirements are fulfilled. If an electronic document is able to identify and authenticate its issuer, secure that its content has not been changed, secure that it is an original and not a copy and that no copy exists and identify the lawful holder of the document, it should be able by law to be a document of title.

[120] Laryea at 74.
[121] Geis at 4.2.
[122] Chandler Maritime Electronic Commerce at 471.

7.3.4. Negotiability

Traditionally, the function of negotiability was treated together with the function of document of title. Since The Rafaela S[123] it is clear that these two functions have to be considered independent from one another. In this decision, the House of Lords held that a straight bill of lading qualifies as "a bill of lading or a similar document of title" in the sense of Art 1 (b) Hague-Visby rules. The decision makes sound legal and commercial sense and it can be expected that other courts in other jurisdictions will or would come to a similar conclusion. A bill of lading does not have to be *negotiable*. Negotiability is therefore an additional function attributable to a bill of lading by the will of the parties. Obviously, the document of title function and negotiability are linked. Only a document of title may be negotiable but not every document of title needs to be a negotiable.

A negotiable bill of lading is mainly issued in the interests of the consignee. The goods represented by a negotiable bill of lading can be traded on the basis of the bill of lading while the goods are in transit. On the other side, a negotiable bill of lading may be used for finance reasons. The consignee or buyer may in a documentary credit procedure secure a credit to finance the transaction by transferring the negotiable bill of lading to the financing bank by way of security.

An electronic negotiable bill of lading has to be able to fulfil the same functions. Traditional paper bills of lading are negotiable if the consignee is named " (or) to order". If a consignee is named, the order bill of lading is negotiated by endorsement. The question is how an electronic bill of lading could be "endorsed".

Various methods have already been discussed. All of them involve the original issuer of the bill of lading (carrier)[124] or a third party service provider [125], who has to control and acknowledge the transfer of the bill of lading to the new holder or endorsee. The solutions therefore do not offer the same flexibility as a does a paper bill of lading.

An electronic equivalent to an endorsement has to be developed and supported by law.

This should actually be possible by means of digital signatures. The consignee could issue a new electronic bill of lading containing all the relevant information for the

[123] J I Mac William Company Inc (Respondents) v. Mediterranean Shipping Company SA (Appellants) House of Lords Session 2004-05(2005) UKHL 11 (thereafter "The Rafaela S").
[124] See CMI Rules for Electronic Bills of Lading at chapter 8.2.
[125] See SeaDocs at Chap 8.3 and Bolero at Chap 8.4.

endorsee, attach the original (encrypted) bill of lading to the new electronic bill of lading and send the whole data package including the private key for the original electronic bill of lading encrypted by his own digital signature to the endorsee. The original electronic bill of lading would then be 'boxed' in the new bill of lading. The carrier could upon presentation, open the original bill of lading and check if it has not been changed (MIC code; see chapter 7.1.2.1) and if it matches with the information received with the "endorsed" bill of lading it is attached to. If it does, the carrier would be allowed to deliver the goods. However a technical solution would have to be found, which would make the original bill of lading unusable to the consignee once she was electronically endorsed. Eventually this is also possible based on the MIC code if such a code could be programmed to change when the electronic bill of lading was electronically copied.

7.3.5. Title to sue

The consignee or its order needs to be in a position to sue the carrier for delivery of the cargo (against presentation of the bill of lading) and for damages caused to or loss of cargo during the voyage. This is usually not a problem in civil law countries, as they know a contract in favour of a third party (i.e. *stipulatio alteri*). But English law does not recognise the rights of a party extraneous to a contract.[126] English law has resolved this problem by s 2 of the UK COGSA, 1992. Therein, the Act transfers all rights of the shipper against the carrier under the contract of carriage to the lawful holder of a bill of lading.[127]

Neither a *stipulatio alteri* nor a transfer of title to sue according to s 2 of the UK COGSA, 1992 do mandatory have to be in writing. The parties could therefore agree on appropriate procedures to transfer the title to sue by means of electronic messages. A digitally signed electronic bill of lading is therefore good evidence for the transfer of the right to sue from the shipper to the consignee. Nevertheless it would be desirable to have uniform law stating explicitly that title to sue may be transferred by electronic means.

7.4. Compatibility with Incoterms 2000

Incoterms 2000, developed by the International Chamber of Commerce (ICC) are intended to provide international rules for the interpretation of the most commonly used trade terms in international trade. They do not apply to the contract of *carriage*,

[126] Hare at § 14-4.
[127] *Idem* at § 14-4.

but to the contract of *sale*, offering various models to perform an international sales transaction and deliver the goods. The most popular Incoterms are probably FOB – "Free On Board" and CIF – "Cost, Insurance and Freight". Some of the Incoterms 2000 require the buyer to provide a "proof of delivery" of the goods in form of a transport document. An electronic transport document has therefore to qualify as a "proof of delivery" in the sense of Incoterms 2000.

All Incoterms requesting the buyer to provide a "proof of delivery" contain a rule regarding electronic data interchange (always a subsection of rule A8). It reads as follows:

> "When the seller and the buyer have agreed to communicate electronically, the document referred to in the preceding paragraph may be replaced by an equivalent electronic data interchange (EDI) message."

If the parties therefore issue, based on agreement or on law, electronic transport documents, such procedure is supported by Incoterms 2000. The procedures are completely up to the parties. Incoterms 2000 even do not require the electronic data interchange message to be authenticable.

7.5. Compatibility with UCP 500 and 600

The ICC Banking Commission developed Uniform Customs and Practice for Documentary Credits (UCP).[128] They provide a set of widely accepted rules for documentary credit transactions. The actual version is UCP 500 developed in 2000. On 24 October 2006 the ICC Banking Commission approved UCP 600.[129] The changes from UCP 500 to UCP 600 will have no impact on questions relating electronic transport documents. In this chapter reference will be exclusively to UCP 500.

In a documentary credit procedure the bank (issuing and/or confirming bank) checks the transport document (and other documents) received from the seller. If these documents correspond with the information received by the buyer the bank pays the agreed draft (sales price) to the seller. UCP 500 caters for all sorts of transport documents[130]. Article 20 UCP 500 provides an "original document" may be a

[128] See www.iccwbo.org/policy/banking/id2436/index.html (accessed on 26 December 2006).
[129] At the time of writing, the UCP 600 was not yet available.
[130] Marine/ocean bill of lading (article 23 UCP 500), sea waybill (article 24 UCP 500), charter party bill of lading (article 25 UCP 500), multimodal transport document (article 26 UCP 500),

"document produced or appearing to have been produced by (…) automated or computerized systems (…) provided that it is marked as original and, where necessary, appears to be signed. (…) A document may be signed (…) by any (…) mechanical or electronic method of authentication." This article shows that UCP 500 would work with a print of an electronic transport document. But what if the transport document exists only in electronic form? The ICC issued 12 rules attached to UCP 500 and UCP 600 called eUCP. Article e3 states that "document" in the sense of UCP 500 shall include an electronic record and "sign" and the like shall include an electronic signature.

> "Electronic record means data created generated, sent, communicated, received, or stored by electronic means that is capable of being authenticated as to the apparent identity of a sender and the apparent source of the data contained in it, and as to whether it has remained complete and unaltered, and is capable of being examined for compliance with the terms and conditions of the eUCP credit" (Art e3 (b) (I) eUCP).
>
> "Electronic signature means a data process attached to or logically associated with an electronic record and executed or adopted by a person in order to identify that person and to indicate that person's authentication of the electronic record" (Art e3 (b) (II) eUCP).

eUCP makes UCP 500 documentary credit procedures completely open to electronic forms of transport documents. The definitions of "electronic records" and "electronic signatures" are very well designed. They clearly provide definitions for what characteristics an electronic transport document must have in order to qualify as an electronic record. They do not limit electronic records or electronic signatures to one certain technical solution but remain open to future developments.

7.6. Compatibility with custom procedures

Usually at two points of a voyage the goods have to go through customs (export and import). An electronic transport document system makes only sense if the customs procedures support electronic transport documents. Custom procedures are individual to every country. It cannot be expected and does not make sense that such procedures will one day be regulated by uniform international law. Every country has therefore to provide a legal environment supporting electronic custom procedures.

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air transport document (article 27 UCP 500), road, rail or inland waterway transport document (article 28 UCP 500) and even a courier or post receipt (article 29 UCP 500).

Many countries already established electronic custom procedures. But it is out of the scope of this thesis to analyse such regulations.

Some uniformity guaranteeing that electronic documents are accepted by the various customs can be achieved by uniform business standards. UN/EDIFACT has developed and is developing business standards for messages to be used in customs procedures.[131] Such standards should guarantee that once a custom caters for electronic procedures, transport documents complying with UN/EDIFACT business standards should be able to be used.

8. Previous attempts

8.1. General

Several attempts have been made in the past to establish systems for the management of electronic transport documents. These systems either exclude documents of title or work with third parties offering electronic communication services and running a "title registry" representing the document of title function of a bill of lading or similar document of title.

Probably the first attempt to establish an electronic transport document goes back to 1971 with electronic sea waybills system by the Atlantic Container Line.[132] Big container lines have been developing and are using their own "single company" solutions for electronic transport documents (see Chap 4).[133] This overview will however focus on previous attempts not limited to one company but offering solutions for the whole market.

8.2. CMI Rules for Electronic Bills of Lading

The CMI made the first attempt to provide general rules regarding electronic transport documents with the 1990 CMI Rules for Electronic Bills of Lading ("CMI eRules'). The rules do not offer a complete business solution and as such may not really be qualified as a previous attempt. But they offer a system enabling the parties

[131] Mulligan at 303f.
[132] Schuback at 45.
[133] UNCTAD Report TD/B/COM.3/EM12/2 at 25; see MAERSK LINE ELECTRONIC DOCUMENT PRINTING FACILITY www.maerskline.com:80/globalfile/?path=/pdf/uk_customer_doc_agreement_master (accessed on 22 December 2006); CMA-CGM eServices www.cma-cgm.com/eBusiness/eServices/Public/Features.aspx (accessed on 22. December 2006) and others.

to agree on electronic bills of lading with appropriate procedures. [134]

The rules offer a contractual (Rule 1, CMI eRules) mechanism for replacing a traditional paper bill of lading with an electronic bill of lading by imitation of the functions of the paper bill of lading in an electronic environment.[135] According to this system it is the carrier who issues an electronic bill of lading secured by a private key (Rule 4, CMI eRules). The bill of lading is issued as an electronic message sent to an electronic address specified by the shipper and only valid if the shipper confirms receipt (Rule 4 (a) and (b) , CMI eRules). Negotiation of the CMI Bill of Lading is only possible by notification of the carrier. The carrier then cancels the first CMI Bill of Lading and issues a new one (secured by a new private key) in the name of the new holder (Rule 7 (b) , CMI eRules). Receipt of all messages (notification of the carrier and new CMI Bill of Lading to new holder) has to be confirmed. The holder of the actually valid private key is the only person being able to claim delivery of the goods at destination.[136] The electronic messages sent under these Rules should conform with the relevant UN/EDIFACT or any other business standards acceptable to all users (Rule 3 (b) , CMI eRules).

The CMI Bill of Lading is a simple and straightforward solution. But it has some substantial weaknesses. As already mentioned it is a contractual instrument, which does not allow the parties to discard any mandatory rules of applicable law.[137] Further the carrier acts as private registry. This implies additional responsibilities and further administrative efforts on the carrier.[138] It is questionable if the carrier is the right party to put these obligations on and it is questionable if a system, which needs the consent of the carrier for every negotiation of the goods in transit, is in the interest of all involved parties. Last but not least the CMI Bill of Lading is not linked to a digital signature method and is therefore not guaranteeing security and authenticity of the messages sent under this system. But if the party agree to issue electronic bills of lading according to the CMI Rules on Electronic Bills of Lading the system should work, be legally binding to the parties and be enforceable (provided it does comply with all mandatory rules of eventually applicable legislation).

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[134] No information could be found as to how broadly electronic bills of lading based on the CMI Rules have been used.
[135] UNCTAD Report TD/B/COM.3/EM12/2 at 52.
[136] UNCTAD Report TD/B/COM.3/EM12/2 at 52.
[137] *Idem* at 53.
[138] Muthow at 8.1.3.

8.3. SeaDocs

The SeaDocs project can be seen as the first serious attempt to introduce an electronic document management system for bills of lading.[139] It was based on an intiative by the Association of International Oil Tanker Owners (INTERTANKO) and taken over and run by the Chase Manhatten Bank.[140]

SeaDocs worked based on a central registry of shipping documents (SeaDocs Registry Limited in London[141]). The original paper bill of lading issued by the carrier was not sent on its traditional odyssey from master to seller bank buyer etc. but was deposited with Sea Docs which acted as depository-custodian of the paper bill of lading.[142] SeaDocs acted then as agent on behalf of all involved parties. The transfer of the document then worked by the exchange of electronic messages coming and going to the relevant parties. The system was secured by a test key issued to the shipper when the paper bill of lading was delivered to SeaDocs for safekeeping. If the shipper wanted to transfer the bill of lading, he informed SeaDocs electronically and privided the consignee/endorsee with a portion of the test key. The consignee endorsee/consignee also notified SeaDocs of its acceptance of the transfer. Sea Docs verified both messages acording to the test key and the portion of the test key respectively and then effected the transfer by recording the name of the consignee/buyer in the registry as the new holder of the bill of lading.[143] At the arrival of the goods SeaDocs had two options. It could issue an identifying code to the carrier and the actual holder of the bill of lading entiteling the holder to receive and the carrier to deliver the goods or it could send the original paper bill of lading to its holder.[144]

Mainly for practical reasons the project lasted only for one year. The project did not find the support in the industry to be financially successful. The system seems to have failed because of the following reasons:[145]

- Commodity traders did not like to have their transactions recorded in a central registry.

- The ultimate buyers of commodities did not want to acquire bills of lading from

[139] *Idem* at 10.1.
[140] Schuback at 45 Laryea at 78.
[141] *Idem* at 45.
[142] Laryea at 79.
[143] *Idem*.
[144] *Idem*.
[145] *Idem* at 79f.; Muthow at 10.1.

a registry actually suporting and servicing intermediaries and speculators.

- Chase Manhatten bank was not enough seen as a trusted third party specially by other banks who were unconfortable with the fact that one of their competitors sould have exclusive control over the registry business.

- The liability of SeaDocs Registry Limited was not established. This resulted in relatively expensive insurance contracts for the registry operations.

8.4. BOLERO

BOLERO was founded based on an initiative of the European Union as a joint venture between SWIFT (Society for Worldwide Interbank Financial Transactions) and The TT Club (The Through Transport Mutual Insurance Association Ltd.). Its ambition was or is to provide an electronic bill of lading. It was by many writers seen and judged as "the solution" to the dematerialisation of a bill of lading.[146] It offers a closed EDI system. Any party that wishes to trade in the electronic environment of Bolero, including carriers, shippers, consignees, banks and other bodies connected with the shipping of goods such as port authorities, needs to become a member of the "Bolero Association".

BOLERO (Bill Of Lading Electronic Registry Organisation) works based on a multilateral contractual approach. The first step for any party (carrier, shipper, consignee, bank or other bodies) wishing to trade on BOLERO's trusted trade platform is to become a member of the BOLERO User Association by concluding a service contract with BOLERO Association Limited.[147] The members of BOLERO User Association (called "Users") submit themselves to the BOLERO Rule Book[148] and the Bolero Operating Procedures (Rule Book Appendix)[149].

The Users further enter into a contract with BOLERO International Ltd., the operating company of the BOLERO trusted trade platform. Different versions exist of such "Operational Service Contracts", depending on the status the user would like to

[146] Muthow at 10.2; Schuback at 50; Mulligan at 307; Schaal at 4; UNCTAD Report TD/B/COM.3/EM.12/2 at 60.
[147] www.boleroassociation.org and for the service contract see www.boleroassociation.org/downloads/bal_sc.pdf (accessed on 28 November 2006).
[148] See www.boleroassociation.org/downloads/rulebook1.pdf (accessed on 28 November 2006).
[149] See www.boleroassociation.org/downloads/op_procs.pdf (accessed on 28 November 2006).

acquire (Basic, Corporate, Enterprise or Premier Founder).[150] These contracts are individual to each member.

The BOLERO Rule Book defines the whole complex of contractual relations between users, BOLERO Association Limited and BOLERO International Ltd., the company actually running the BOLERO trusted trade platform on BOLERO.net. It contains similar rules as an ordinary master agreement for data interchange and electronic commerce between two individuals.[151] The Rule Book sets the procedure for paperless transport documentation by establishing on a contractual bases a legal environment corresponding to the existing legal environment for paper documents.[152] This means that the so called Bolero Bill of Lading, a full electronic document which by itself would not fall within the classic definition of a "bill of lading" according to maritime conventions and other relevant legislations[153], becomes by multilateral contract a bill of lading in a legal sense in relation to the Users, the BOLERO Association and BOLERO International Ltd.

Such is the legal corporate architecture of the BOLERO system. A paperless transaction on the BOLERO system works on three technical components. The Core Messaging Platform, the Title Registry and the User Database.[154]

The Core Messaging Platform is a special mail server for electronic communications between the users, BOLERO Association BOLERO International Ltd. (Operating Procedures article 1.2). It is an independent certification authority and is based on the MIME standards[155] regarding cryptographic techniques and digital signatures. Additionally, every message sent under the system is acknowledged immediately by a receipt of the Core Messaging Platform and is listed in a messaging protocol.[156] Cryptographic techniques and digital signature ensure the BOLERO Bill of Lading to be a receipt for the goods shipped and evidence of the carriage contract.

The Title Registry is an electronic database of information in relation to BOLERO's

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[150] Gehrke at 16.
[151] Schuback at 50.
[152] See among others article 3.2. (4) Rule Book states that "a contract of carriage in respect of which the Carrier has created a Bolero Bill of Lading shall be subject to any international convention, or national law giving effect to such international convention, which would have been compulsorily applicable if a paper bill of lading in the same terms had been issued in respect of that contract".
[153] Schaal at 4.
[154] Gehrke at 17.
[155] See http://en.wikipedia.org/wiki/Mime (accessed on 29. December 2006) but note that this is a Wikipedia article which might not be correct in every detail.
[156] Schaal at 4.

Bill of Lading (Operating Procedures article 4). The electronic information saved in this registry is supposed to represent the title function of a paper bill of lading and hence is representing constructive possession over the goods in transit.

Negotiability of a BOLERO Bill of Lading is achieved by the use of the English common law concept of attornment and novation (article 3.4 ff. Rule Book). By the use of the concept of attornment, the carrier acknowledges the transfer of rights in the goods to a new consignee. In English Common Law attornment describes a situation where a tenant accepts a new landlord's right in a property after the leased property has been sold.[157] In the concept of BOLERO it means that the carrier who has the factual control over the goods by entering into a contract with the shipper agrees to follow the shipper's instructions if the consignee negotiates the bill of lading. The transfer of rights in the goods from the consignee to a third party (endorsee in the concept of paper bill of lading) is achieved by the novation of the carrier's contract with the shipper between the carrier and the consignee (hence the third party or endorsee becoming the consignee of the new novated contract).

If the goods are to be sold to a party not being member of BOLERO Association, the BOLERO Bill of Lading may not be used anymore but the article 3.7 of the Rule Book provides that in such a case the parties may switch to a paper bill of lading to be issued at that moment by the carrier on the request of the actual consignee.[158]

BOLERO leaves it on the responsibility of its users to assess if the BOLERO System complies with the laws of the country the User wishes to trade in or with.[159] As the solution is based on contractual relationships, legal uncertainty remains as to the acceptance and enforceability of the system in various jurisdictions. According to Paul Mallon, Director of Legal and Regulatory Affairs of BOLERO, the system was not yet subject to any legal dispute resolution in any jurisdiction. Nevertheless, in case of disputes, the claims to enforce the system are of contractual nature. A claim to transfer property or possession may therefore not be enforceable in some jurisdiction but the claimant may only be able to claim damages based on breach of contract. The BOLERO system does not change the fact that no convention, law or judge did yet approve the equality of a BOLERO Bill of Lading with a paper Bill of Lading nor was the binding ness of the Rule book in relation to all involved parties

[157] *Ibid* 4.2.
[158] UNCTAD Report TD/B/COM.3/EM.12/2 at 58.
[159] Gehrke at 67.

affirmed.[160] But it may be seen in favour of the BOLERO system that such questions have not yet been challenged. Nevertheless, BOLERO seems not yet to have had the success it was expected to.[161] In may opinion the main reason for this is the fact that becoming a member of BOLERO involves the entering into various contracts and the submitting to extensive rules and conditions.

8.5. @GlobalTrade

@GlobalTrade is run by Global Trade Corporation based in Toronto, Canada. It is working closely with different partners such as Adobe, Capgemini, Sitpro and Visa.[162] Unlike the previous projects @GlobalTrade does not offer a solution for bills of lading and other documents of title. This system is based on electronic sea waybills and has its main focus on the letter of credit procedure. As Laryea stated it "marries the functionality of credit card with Documentary credits".[163] Based on Sea Waybills @GlobalTrade is able to operate in an open system. Only buyers and the banks issuing letters of credit need to sign a multicontractual document with @GlobalTrade. The system is based on its own Rule Book, its User Agreement, UCP 500 (including eUCP) and Incoterms 2000. It further fully complies with the CMI Uniform Rules for Sea Waybills.[164]

The buyer who signs up with @GlobalTrade obtains a credit line or an eLC Card (electronic Letter of Credit Card) from its bank (which has to be a participating bank). Once signed up the buyer may apply for an electronic documentary credit by logging in the system of @GlobalTrade through its bank. He needs the beneficiary's agreement to the terms and conditions of the electronic documentary credit. The beneficiary will then be advised of the credit issuance by email including document instruction templates of the required documents already containing the relevant specific information. Based on these templates the beneficiary requests for the issuance of corresponding electronic documents by the respective trade service providers (carrier for electronic Sea Waybill, insurance for insurance policy etc.). The beneficiary then sends all electronic documents as an electronic message to the Documentary Clearance Centre, which is processing the documentary credit. Digital

[160] Schuback at 50.
[161] Jones at 1.
[162] For further corporate information see www.globaltradecorp.com.
[163] Laryea at 87.
[164] Laryea at 87.

signatures including cryptographic technology secure all electronic messages.[165]

The system seems to run quite successfully in the North American trade. But it has two substantial disadvantages.

- It is only working if the trade transaction is financed by a letter of credit and
- it does not support any documents of title or negotiable documents.

9. The CMI/UNCITRAL Draft Instrument on Transport Law and its impact on electronic transport documents

9.1. Introduction to the UNCITRAL Draft Instrument

We have seen that today, with the available technology and legal acceptance of digital signatures, it is possible to work with electronic transport documents in international trade. The only function, which can still not be easily and comfortably incorporated in an electronic document, is the document of title function of a bill of lading. In other words rights such as the right to constructive possession of the goods are today still only legally accepted if incorporated in an electronic document. Indeed the industry is able to build systems and services which try to overcome this lack of legal acceptance by building public title registries (working based on digital or paper documents). But these systems need a vast contractual framework and are only working in closed communities provided, controlled and administered by respective third party service providers.

The fully dematerialised electronic negotiable bill of lading working independent of any third party is today still a dream of the future.

Functional equivalence requires proper law. Before a solution can be offered to the industry the law has to provide rules, which support an electronic negotiable bill of lading. It is submitted that is where the focus should be. In that context efforts in order to provide electronic bill of lading systems, which fit in with the actual global legal understanding of a document of title are interesting but on the long run only of temporary value.

Changes in the law could be legislated by individual states. But as trade transactions are for the most part cross border transactions, it would be desirable to have a widely accepted convention providing uniform law in relation to transport documents and

[165] For the description of the system see Laryea at 86f..

their electronic substitution. A uniform law treating carriage of goods and transport documents would further make sense, because such contracts and specially the various forms of transport documents have historically been developed by the commerce and not on the drafters desk. Their characteristics and particularities appear in most jurisdictions in a similar way. [166] A uniform law would therefore be nothing but the historical consequence of the development of carriage contracts, transport documents and their forms in international commerce.

The UN Draft Instrument on Carriage of Goods (wholly or partly) (by Sea) (thereafter called "UNCITRAL Draft Instrument" [167]) could provide such a uniform law.

It was prepared in 2001 on behalf of UNICITRAL by the CMI. The scope of the UNCITRAL Draft Instrument is vast. It is neither limited to one specific transport document nor to carriage by sea. It is the goal of the draft instrument to set uniform law for all transport documents and carriage contracts including multi modal contracts.[168] As it stands today, the UNCITRAL Draft Instrument will apply as soon as a multi modal carriage contract includes at least one sea leg voyage. It is supposed to provide uniform law in relation to rights and duties of the issuers and holders of various transport documents, the limitation of liability of the carrier as well as the requirements for the acceptance and use of electronic forms of transport documents.

It has to be kept in mind that the draft is not final and the work is still in progress. Further it will take years until such a draft convention will come into force by the required number of signatory states and it will take even more time until (and if at all) the number of states who signed and ratified the convention will reach a level so that it can be said that some uniformity is reached.

This thesis will not discuss the UNCITRAL Draft Instrument in relation to questions of multi modal transport and limitation of liability, but it will focus in on the features of the UNCITRAL Draft Instrument in relation to electronic commerce.

[166] UNCTAD Report TD/B/COM.3/EM.12/2 at 10.
[167] See www.uncitral.org/uncitral/en/commission/working_groups/3Transport.html (accessed on 21 September 2006).
[168] See www.comitemaritime.org/singapore/issue/issue_draft.html (accessed on 21 September 2006).

9.2. Electronic transport documents and the UNCITRAL Draft Instrument

The following discussion of the electronic commerce features of the UNCITRAL Draft Instrument is based on the actual state of the discussion based on the last complete draft dated 4. September 2003[169].

The foundations of the electronic commerce features of the UNCITRAL Draft Instrument are articles 16 and 17 of the 1996 UNCITRAL Model Law on Electronic Commerce (see chapter 7.1.3).[170] The discussions of these articles in the UNCITRAL Electronic Commerce Working Group on the subject of documents of title leading to the UNCITRAL Model Law on Electronic Commerce showed that the lack of uniformity in the law regarding transport documents is a serious hindrance of the acceptability of electronic commerce in international trade.[171] The UN eCommerce Convention of 2005 expressly excludes letters of credit or other financial instruments, nor negotiable documents such as bills of lading (see Chap 5.2). Obviously the working groups concluded that special regulations for electronic transport documents and related electronic commerce questions should be incorporated in the UNCITRAL Draft Instrument.[172]

9.2.1. "Functional equivalent" or "stand alone" approach

The CMI and the UNCITRAL Working Group III on Transport Law discussed two possible legal approaches to establish electronic transport documents; the "functional equivalent" and the "stand alone" approach.

As described by Van der Ziel, the functional equivalent approach is based on the conclusion that, "generally, the "virtualisation" of documents of title is not feasible because of the formal function of the paper document. Instead the material functions of documents of title can be incorporated in a structure of electronic messages."[173] According to this approach, the UNCITRAL Draft instrument would simply declare that electronic documents are to be accorded the same legal and commercial status as paper based documents are accorded by the applicable (national or international) law.[174]

This approach raised substantial questions in relation to form requirements in most

[169] UNCITRAL Working Group III Document A/CN.9/WG.III/WP.32.
[170] Chandler eCommerce at 1.
[171] Chandler eCommerce at 1 Van der Ziel at 1.
[172] UNCITRAL Working Group III Document A/CN.9/572 at 58 ff.
[173] Van der Ziel at 1.
[174] Chandler eCommerce Features 2004 at 2; Van der Ziel at 1.

national laws for negotiable bills of lading. It is at least questionable if a general declaration of functional equivalence alone would support true negotiability of a negotiable bill of lading as such a provision could affect national property law.[175]

At least in respect of the document of title function of a bill of lading a stand alone approach has to be preferred (see chapter 7.3.3). According to this approach, the UNCITRAL Draft Instrument would provide "stand alone" procedures for electronic transport documents as if paper transport documents would have ceased to exist.[176]

The solution offered by the UNCITRAL Draft Instrument is a compromise between the two approaches. Common problems of electronic and paper transport documents are treated on the bases of a functional equivalent approach but unique features to electronic transport documents are treated in stand alone provisions.[177]

Common elements:[178]

- Article 1 (f) defining the "holder" of a negotiable transport document for paper transport documents and electronic records. With relation to an electronic record, a holder is the person who has exclusive (access to) (or control of) the electronic record;

- Article 1 (h) defining "controlling party" in relation to the transfer of rights by paper transport documents or electronic records;

- Article 1 (r) defining "contract particulars" which means information relating to the contract of carriage that appear in a transport document or an electronic record;

- Chapter 8 on transport documents and electronic records (articles 33 to 36 UNCITRAL Draft Instrument) sets rules for the issuance and the content of transport documents and electronic records. The general rules set out in these articles apply to paper transport documents as well as to electronic records.

Stand alone electronic features:[179]

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[175] Van der Ziel at 2.
[176] Chandler eCommerce Features 2004 at 2.
[177] Chandler eCommerce Features 2004 at 2.
[178] Chandler eCommerce Features 2005 at 4-6.; CMI Yearbook 2003 *a guide to the e-commerce features in the draft instrument on the carriage of goods (wholly or partly) (by sea)* at 251f.

- Articles 1 (n), (o), (p) and (q) defining “electronic communication”, “electronic record”, “negotiable electronic record” and “non negotiable electronic record”;

- Chapter 2 on electronic communication (articles 3 to 6 UNCITRAL Draft Instrument) sets the basic rules and requirements for the acceptability of electronic communication of electronic records;

- Article 35 (b) defines the signature requirements for an electronic record;

- Article 59 provides legal support for the transfer of rights under an electronic record.

9.2.2. Definitions

The relevant terms used by the UNCITRAL Draft Instrument are defined in Art 1. It is worth displaying the full definitions of these terms, as they will be used accordingly in the discussion that follows.

Article 1 (n):

> “Electronic communication means communication by electronic optical or digital images or by similar means with the result that the information communicated is accessible so as to be usable for subsequent reference. Communication includes generation, storing, sending, and receiving.”

Article 1 (o):

> “Electronic record means information in one or more messages issued by electronic communication pursuant to a contract of carriage by a carrier or a performing party that
>
> (i) evidences the carrier’s or a performing party’s receipt of goods under a contract of carriage or
>
> (ii) evidences or contains a contract of carriage or both. It includes information attached or otherwise linked to the electronic record contemporaneously with or subsequent to its issue by the carrier or a performing party.”

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[179] Chandler eCommerce Features 2005 at 6ff.; CMI Yearbook 2003 *a guide to the e-commerce features in the draft instrument on the carriage of goods (wholly or partly) (by sea)* at 252ff.

Article 1 (p):

> "Negotiable electronic record means an electronic record
>
> (i) that indicates, by statements such as "to order" or "negotiable" or other appropriate statements recognized as having the same effect by the law governing the record that the goods have been consigned to the order of the shipper or to the order of the consignee, and is not explicitly stated as being "non-negotiable" or "not negotiable", and
>
> (ii) (ii) is subject to rules of procedure as referred to in article 6 which include adequate provisions relating to the transfer of that record to a further holder and the manner in which the holder of that record is able to demonstrate that it is such holder.

Article 1 (q):

> "Non-negotiable electronic record means an electronic record that des not qualify as a negotiable electronic record."

The term "electronic record" is what was in this paper previously referred to as "electronic transport document". It is the same term as used in the eUCP rules (see chapter 7.5), but it should be noted that it does not refer to the fact that it is meant to be an electronic transport document. Electronic communication is simply the sending of electronically saved information (may it be a message or an electronic record) by electronic means.

Chapter 2 of the UNCITRAL Draft Instrument sets the rules for electronic communication.[180] Article 3 contains the principle of equalisation. It reads as follows:

> "Anything that is to be in or on a transport document in pursuance of this instrument may be recorded or communicated by using electronic communication instead of by means of the transport document provided the issuance and subsequent use of an electronic record is with the express or implied consent of the carrier and the shipper."

With this article the UNCITRAL Draft Instrument treats electronic transport

[180] See UNCITRAL Working Group III Document A/CN.9/WG.III/WP.32 at fn 39 stating that the discussion of this chapter has been postponed and may therefore still be subject to substantial changes.

documents as an exception of paper transport documents requiring the consent of the carrier and the shipper (but not the consignee or endorsee!). The article means that whenever the UNCITRAL Draft Instrument makes a reference to “document” or “bill of lading” the equivalent electronic record or electronic communication is materially equalised even if the respective article does not expressly mention so.[181]

It is the intent of the UNCITRAL Draft Instrument to offer a full solution for electronic transport documents. In chapter 7 I examined the general and the specific requirements for a substitution of paper transport documents by electronic documents. I will now examine if and to what extent the UNCITRAL Draft Instrument offers solutions for those requirements.

9.2.3. General requirements for a substitution according to the UNCITRAL Draft Instrument

The UNCITRAL Draft Instrument distinguishes in its definition section between ”transport document” (article 1 (k) UNCITRAL Draft Instrument) and “electronic record” (article 1 (o) UNCITRAL Draft Instrument). Both require evidencing the carrier’s or a performing party’s receipt of goods under a contract of carriage or evidencing or containing a contract of carriage. As a consequence, if the parties choose so, no paper transport document has to be issued. The UNCITRAL Draft Instrument clearly accepts transport documents (negotiable or not) in electronic form. If the draft will be enacted as a convention by different states, these states will legally accept electronic transport documents as set out in the draft notwithstanding any eventual other form-requirements in their national law.

But the UNCITRAL Draft Instrument sets some form requirements for an electronic record, which need some consideration.

With regard to electronic records article 35 (b) UNCITRAL Draft Instrument writes:

> “An electronic record shall be authenticated by the electronic signature of the carrier or a person having authority from the carrier. For the purpose of this provision such electronic signature means data in electronic form included in, or otherwise logically associated with the electronic record and that is used to identify the signatory in relation to the electronic record and to indicate the carrier’s authorization of the electronic record.”

[181] Van der Ziel at 5.

The UNCITRAL Draft Instrument defines the form of an acceptable electronic signature quite broad. Basically this seems to be right as the provision should cater for eventual further technical developments in this area as well as for actual technical methods of digital signatures. But as it stands the provision is too broad. The working group is of the opinion that this subparagraph needs to be reworked in view of a consistency with the UNCITRAL Model Law on Electronic Signatures. [182] It would eventually be helpful to consider as well article e3 (b) eUCP.

The UNCITRAL Draft Instrument does not contain any provisions in relation to the enforceability of an electronic record and its evidential value. It does neither offer technical solutions for transport documents nor does it define in detail when an electronic signature is sufficient. As the UNCITRAL Draft Instrument stands, these questions remain to be answered by appropriate national law. Many countries enacted laws and rules offering definitions and procedures for acceptable digital signatures. Most of them are based on a private key system with a third party authorization service provider. In my opinion the Draft Instrument should be more precise with regard to the requirements of an acceptable digital signature and its legal consequences. It could be considered to implement part of the UN Model Law on electronic signatures into the Draft Instrument. In any case, article 35 (b) should be consistent with the UN Model Law on electronic signatures.[183]

9.2.4. Specific requirements for a substitution according to the UNCITRAL Draft Instrument.

Besides the signature requirement of article 35 UN the UNCITRAL Draft Instrument does not specify what an electronic record is supposed to look like, how it has to be communicated and what standards it has to meet (except the provisions for negotiable electronic records in Arts 1 (p) and 6; see Chap 9.2.4.3). It can be summarised that every electronic message, issued by electronic communication is an electronic record if

- the message evidences the receipt of goods under a contract of carriage or evidences and/or contains a contract of carriage and
- is authenticated by an electronic signature identifying the signatory in relation

[182] UNCITRAL Working Group III Document A/CN.9/WG.III/WP.32 at fn 133; the working group is of the opinion that this article needs to be reviewed
[183] The working group came to the same conclusion see UNCITRAL Working Group III Document A/CN.9/576 at 202ff.

to the electronic record.

The question is if an electronic document meeting these requirements is able to fulfil the functions of the various existing transport documents. In chapter 7.2 it was shown that it should be possible to represent all the functions of a transport document with evidential character by an electronic document with a qualified digital signature. Such an electronic document should have the same evidential value as a paper document.

9.2.4.1. Functions with evidential character

The following functions of a transport document have evidential character

- Receipt for shipment of the goods and
- evidence for the contract of carriage.

An electronic record as defined by the UNCITRAL Draft Instrument should therefore be able to represent an electronic receipt an electronic sea waybill and at least the named functions of a bill of lading.

All these transport documents contain information pursuant to a contract of carriage. They evidence the carriers or a performing party's receipt of goods and/or evidence or contain a contract of carriage. Their electronic form therefore qualifies as an electronic record according to article 1 (o) UNCITRAL Draft Instrument. Electronic records of a receipt or a sea waybill need to be authenticated by an electronic signature (article 35 (b) UNCITRAL Draft Instrument).

But as already mentioned the requirements for electronic signatures are not enough described in the UNCITRAL Draft Instrument. Nevertheless it seems quite clear that, if an electronic signature complies with the UN Model Law on electronic signatures, the European Electronic Signatures Directive (1999/93/EC) or other rules of respective applicable national law, electronic receipts and electronic sea waybills will, based on the UNCITRAL Draft Instrument, have the same evidential value as their paper form.

9.2.4.2. Document of title

The dematerialisation of the document of title function of a bill of lading is the "pièce de résistance" of the electronic substitution of a bill of lading. As previously stated in this paper, the goal must be a total dematerialisation offering an electronic bill of

lading which is not dependant of any third party service provider or any title registry. An electronic bill of lading which, as a paper bill of lading, can be issued by any carrier in the word and sent to any receiver in the world. The UNCITRAL Draft Instrument has no provision expressly and exclusively dealing with the document of title function. It offers provisions for the transfer of rights (chapter 12, articles 59 to 62 UNCITRAL Draft Instrument). These provisions set rules for the transfer of rights incorporated in an electronic record and differentiate between negotiable and non negotiable electronic records.

This raises substantial questions. What rights may be incorporated in an electronic record and why does the UNCITRAL Draft Instrument differentiate between negotiable and non negotiable electronic records. How do these provisions have to be interpreted with regard to the document of title function of a bill of lading?

The UNCITRAL Draft Instrument answers none of these questions.

It seems that “rights” means all rights of the parties, specially the shippers and the consignee’s, under the contract of carriage, eventually including the right to constructive possession in the goods. In this case the only legal bases stating that a document of title function may be incorporated in an electronic record would be the general equivalence provision in article 3. It is at least doubtful if article 3 is a sufficient legal base for the full substitution of a document of title by an electronic record. In my opinion, such a revolutionary legal concept would need a formal provision, which clearly enables an electronic record to incorporate constructive possession to the goods represented by the electronic record.

A different example makes even clearer that the UNCITRAL Draft Instrument is not workable with this regard. Since The Rafaela S, it is clear that the document of title function and the negotiability function of a bill of lading have to be considered as two different functions. A straight bill of lading is as much a document of title as is a negotiable bill of lading. What would happen with a straight bill of lading in electronic form according to the UNCITRAL Draft Instrument? First of all, the parties would not need to agree on adequate rules for the transfer of the record, the legitimacy of the holder and the confirmation of delivery (article 6 UNCITRAL Draft Instrument). Second, according to Art 61 UNCITRAL Draft Instrument, the transfer of rights under a contract of carriage pursuant to which no negotiable electronic record is issued shall be effected in accordance with the provisions of the applicable law. This means that an electronic straight bill of lading, issued under the UNCITRAL Draft Instrument

could be null and void if the applicable law does not recognise documents of title in an electronic form or does not allow any transfer of rights in an electronic form.[184]

It should be clear without any additional terms in the agreement between the carrier and the shipper needed that an electronic record should with regard to authenticity and security fulfil the standards of a qualified digital signature or at least an equivalent system and with regard to business standards the procedure used should comply with EDIFACT or at least equivalent standards. Obviously the UNCITRAL Draft Instrument should not be limited to a certain specified form of technical methods and procedures but should set acceptable minimal standards in order to be able to work with current as well as future technical developments. Only with a certain specification by the draft itself it is possible to achieve aspired uniformity.

With these provisions, the UNCITRAL Draft Instrument fails to provide sufficient legal basis for a full dematerialisation of a bill of lading. It leaves the parties in legal insecurity as it does not explicitly state that an electronic record may be a document of title and as it refers the parties in case of doubt to the applicable national law. As the draft stands today, it has to be assumed that commerce will remain sceptical with regard to the use of a fully dematerialised bill of lading and will, if at all, only use contractual systems provided by third party service providers and based on title registries.[185]

9.2.4.3. Negotiablity

As already mentioned in the previous chapter, the UNCITRAL Draft Instrument differentiates between negotiable and non negotiable transport documents or electronic records.

Article 1 (p), with reference to article 6 obliges the parties to agree on “adequate” provisions relating to the transfer of a negotiable electronic record. Article 6 specifies this obligation. It states that the carrier and the shipper (or the holder) have to agree on “adequate” provisions relating to

(a) “the transfer of that record to a further holder,

(b) the manner in which the holder of that record is able to demonstrate that it is such holder, and

[184] On this subject see also Schelin at 294ff..
[185] UNCITRAL Working Group III Document A/CN.9/576 at 194.

(c) the way in which confirmation is given that

(i) delivery to the consignee has been effected, or

(ii) (…) the negotiable electronic record has ceased to have any effect or validity."

Adequacy as used in both provisions is not defined by the UNCITRAL Draft Instrument and is therefore subject to interpretation of the UNCITRAL Draft Instrument and eventually the applicable national law.[186]

In my opinion the fact that the UNCITRAL Draft Instrument obliges the parties to agree on rules for the use of electronic records and their transfer and the fact that these rules are supposed to be "adequate" are two weak points of the draft.

The parties should not need to agree on a lot more than the fact that the transaction will be conducted by electronic transport documents. The draft should define or at least refer to definitions regarding adequate forms for the negotiability and transfer of electronic records (see already chapter 9.2.3). As it stands the UNCITRAL Draft Instrument does not offer legal certainty as missing or not "adequate" contractual provisions could lead the situation that an electronic record is of no legal value or may not be negotiated with full legal effect, even if intended so by the parties.[187]

Presumed the rules agreed on by the parties are "adequate" in the meaning of the UNCITRAL Draft Instrument, a negotiable electronic record and all the rights incorporated in such a record may be transferred to a third party by passing the electronic record in accordance with the rules of procedure the parties agreed on (article 59 (2) UNCITRAL Draft Instrument). The legal bases for the negotiability are therefore the "adequate" rules agreed on by the parties. The parties may only agree on rules within the legality of the applicable law. They are, by agreement, not able to break mandatory rules of the applicable national law. If the applicable national law has mandatory form requirements for negotiable transport documents not supporting these to be issued in electronic form, no electronic record in the sense of the UNCITRAL Draft Instrument could be issued. It is not a good idea to delegate the rules for the negotiation of an electronic record to the will of the parties. The UNCITRAL Draft Instrument should set clear rules regarding minimal standard procedures for the negotiation of electronic records as described in chapter 7.3.4.

[186] Van der Ziel at 5, specially fn 8.
[187] Van der Ziel at 5.

9.2.4.4. Title to sue

The UNCITRAL Draft Instrument treats questions relating to rights of suit in chapter 13 (articles 63-65). Article 63 states that "(…) rights under the contract of carriage may be asserted against the carrier or a performing party only by the shipper, the consignee or any third party to which shipper or consignee has transferred its rights". Together with the general equivalence provision of Art 3 UNCITRAL Draft Instrument, article 63 enables the shipper to transfer rights of suit to the consignee or a third party by the transfer of an electronic record.

10. Conclusion

The law in most countries does acknowledge digital signatures in general. An electronic document signed with a digital signature is today in most jurisdiction of the same evidential value as a written document. With a digital signature most functions of a transport document can be incorporated in an electronic transport document. Most other legal instruments used in an international trade transaction such as letter of credit procedures (UCP 500 and 600) and Incoterms 2000 already cater for a fully dematerialised electronic transport document if some sort of digital signature secures them.

But international and/or national law still does not offer a solution for the use of transport documents incorporating rights in goods such as the document of title function of a bill of lading. The law is not yet familiar with the concept of incorporating rights *in rem* (propriety rights) in an electronic document itself not being a *res*. The parties may indeed establish systems and methods on a contractual bases which represent the document of title function and which work based on the sending and receiving of electronic messages. Such systems usually work with a third party registry representing the rights of constructive possession in the goods. They are secured by a contractual prohibition of the parties from raising issues relating to transfer of title as a defence. Or they limit their scope strictly to transport documents not being documents of title.

A fully independent negotiable bill of lading, which may be issued by the carrier in an electronic form is still to come. It would be no surprise that the lack of success of the previous attempts could be explained by the fact that the law does not yet cater for an electronic document of title. It is not a question of security or fraud but a simple question of legal history that an electronic document cannot be a document of title.

Functional equivalence needs proper law.[188] The UNCITRAL Draft Instrument is the perfect body to expunge the international lack of acceptance of electronic documents of title. Unfortunately the draft as it stands today is not clear on this subject but is "hiding" the document of title function in the subjects of negotiability and transfer of rights. If the UNCITRAL Draft Instrument still aims to provide a workable solution for electronic transport documents and especially electronic bills of lading, it's respective articles have to be reconsidered.

- An electronic record is only able to incorporate a document of title function if it is given this characteristic by a clear and explicit stand alone provision.

- The UNCITRAL Draft Instrument should first differentiate between transport documents or electronic records not being documents of title and transport documents or electronic records being documents of title. Negotiability would then have to be treated in a subparagraph in the chapter on documents of title.

- The characteristics of an electronic signature should be defined in conformity with the existing laws.

- The UNCITRAL Draft Instrument should define what "adequate" rules for the negotiability of an electronic record are.

It is clear that sooner or later the fully dematerialised transport document will be used in commerce. It is the duty of the legal community to make sure that the law is supporting business and trade and is not a barrier to commercial developments. With the UNCITRAL Draft Instrument the global community has the possibility to set a clear and explicit legal bases for the use of electronic transport documents and particularly electronic bills of lading and other documents of title. It is important that the global legal community takes this chance by providing rules, which effectively facilitate electronic commerce in international trade.

[188] Van der Ziel at 261.

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Zurich, 25 April 2007

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