

Electronic Bills of Lading

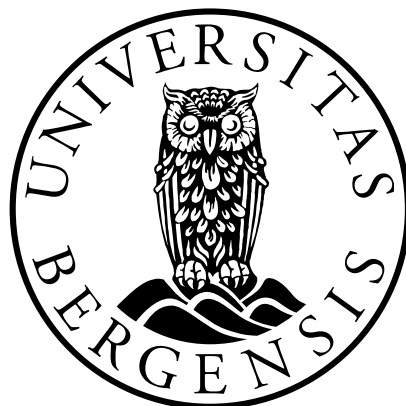
A legal study of the development of e-B/Ls

Candidate number:

109

Words Count:

14460



JUS399 Master thesis

Law Faculty

UNIVERSITY OF BERGEN

[01.06.2018]

Acknowledgements

I first learned about electronic bills of lading back in 2016 while on my exchange at Peking University Law School, from one of the leading professors of Maritime Law in China, Mrs. Gou Yu. Being highly fascinated by Maritime Law, I was intrigued by the tremendous and vast specter of benefits these instruments catered, but even more so to learn the reasons for why the global transition from paper bills of lading to electronic bills of lading is going so slow.

Thus, when I returned from China, I started investigating whether electronic bills of lading were used in Norway and whether one could use such documents under the current Maritime law of 1994. However, I soon discovered that the legal literature on the topic was scant. Suffice to say, this just further intrigued my curiosity and eventually led me on the journey of writing this thesis.

This journey is now coming to an end, although, I have to admit, it has been a long and tiresome process with many challenges, most of which I like to think I surpassed, some I will continue to work on for future endeavors.

There are a number of people, whom without, I would not be able to write this thesis. Firstly, I would like to thank my brilliant supervisor, Kristoffer Svendsen for his un support and belief in my thesis, with his accurate comments and guiding along the way. I would also like to extend my gratitude to professor Erik Røsæg and Trond Solvang at the Norwegian Institute of Maritime Law for our interesting dialogues on the topic. Torgeir Bruborg and Jonas Sandberg in Gard AS, thank you for sharing your knowledge and insight on the field and offering assistance whenever I needed. I would also like to thank Marius Johansen in Wilhelmsen Shipping, for providing information of the practical use of e-B/Ls in their business operation.

List of abbreviations:

B/L – Bill of Lading

e-B/L – Electronic Bill of lading

UNCTAD - United Nations Conference on Trade and Development

UNCITRAL – United Nations Commission on International Trade Law

MLEC – Model Law on Electronic Commerce

MLES - Model Law on Electronic Signatures

MLETR – Model Law on Electronic Transferable Records

RR – The Rotterdam Rules (United Nations Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea, New York, 2008)

HR – Hamburg Rules (United Nations International Convention on the Carriage of Goods by Sea, Hamburg 1978)

CMI - Comite Maritime International

ICC – International Chamber of Commerce

P2P – Peer to peer (network)

SWIFT - Society for Worldwide Interbank Financial

BR – Bolero Rulebook

BCMP – Bolero Core Messaging System

BTR – Bolero Title Registry

Table of contents

- Table of contents 4
- 1. Introduction 6
 - 1.1 Presentation of the subject and issue at hand 7
 - 1.2 Purpose, rationale and structure of the study 9
 - 1.3 Material, method, and delimitations 11
- 2. The traditional B/L – the problems of dealing in paper in a modern world 13
 - 2.1 What is a B/L – the three characteristic functions..... 14
 - 2.1.1 Function as a receipt for the goods..... 15
 - 2.1.2 Evidence of contract of carriage..... 16
 - 2.1.3 Document of title 17
 - 2.2 Problems and benefits of the status que method: 18
 - 2.2.1 Efficiency: time and money..... 18
 - 2.2.2 Environment: the environmental benefits of leaving the paper-based trade..... 21
 - 2.2.3 Security..... 22
- 3. Legal status of e-B/L under Norwegian law 23
 - 3.1 Does the current Maritime Code of 1994 facilitate the use of electronic bills of lading or is a law reform necessary? 24
 - 3.2 Conclusion 27
- 4. Creating a uniform legal framework 28
 - 4.1 Legal issues: A need for a supporting legal infrastructure 29
 - 4.2 Electronic Data Interchange (EDI): Digital signatures and private and public key cryptography 32
 - 4.3 The CMI Rule on Electronic Bills of Lading of 1990: 36
 - 4.4 Model Law on Electronic Commerce 1996 39
 - 4.5 Model Law on Electronic Transferable Records 2017 (MLETR) 42
 - 4.6 The Rotterdam Rules (RR) 2008: 45
 - 4.7 Bolero International Ltd..... 48
 - 4.8 Does the problem lie in the technology itself?..... 51
 - 4.9 Blockchain Technology 53
- 5. Conclusion 56
- Literature list: 58

1. Introduction

1.1 Presentation of the subject and issue at hand

In the early 1990s the maritime industry embarked on a journey to dematerialize a most crucial instrument in the global trade, the Bill of Lading (B/L). The combination of faster ships, better navigation technology and a more frequent trade of goods and commodities while in transit, have led to situations where the B/L arrives later than the goods. Thus, the traditional B/L is failing to fulfill the need of the global trade.

Amongst the bulk of electronic alternatives to bills of lading available, three companies stand out; the Bill of Lading Electronic Registry Organization (Bolero) system, essDOCS systems, and the e-title system. The International Group of P&I Clubs (IG) approved the Bolero and the essDOCS systems in 2010, and the e-title TM system in 2015.

Despite the recent efforts, now, over 20 years later, a ubiquitous usage of e-B/Ls is yet to be seen. The lack of success, seems to be partly related to a general resistance and conservative forces among the participants in the maritime trade in combination with the lack of a legal framework for the use of e-B/Ls. Meanwhile, there is no doubt that use of Electronic Data Interchange (EDI) based technology to dematerialize paper documents, entails cost saving, increased accuracy of information, speed and greatly enhanced efficiency in trade documentation.

In 2009 the Norwegian Government gave the Maritime Law commission the task of reviewing the ratification and implementation of the United Nations Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea (New York, 2008) (the so called, Rotterdam Rules).¹ The convention was considered a milestone for the development and acceptance of electronic bills of lading (e-B/Ls), as it would amend some of the existing rules on Carriage of General Cargo in chapter 13 of the Maritime code, including rules surrounding the use of e-B/Ls.

A unanimous commission presented a proposal recommending that Norway ratified the convention.² However, at the time writing this, the convention is still not ratified by Norway,

¹ http://www.uncitral.org/uncitral/en/uncitral_texts/transport_goods/rotterdam_status.html (accessed on the 21. April, 2018) - Norway was one of the first signatories to the convention, signing straight after it was presented in the UN meeting in New York.

² NOU 2012: 10: Implementation of the Rotterdam rules in the Maritime Code, chapter 1.1, page 11

and neither has there been any national advancement or efforts to amend the current maritime code, so that it better facilitates the use of e-B/Ls.³

³ According to art. 89 of the convention the parties to the treaty must vacate their current membership in the Hauge, Hauge-Visby and Hamburg Rules, when ratifying the Rotterdam Rules. Since no ratification has taken place yet, the Hauge-Visby and Hamburg Rules still apply for Norway.

1.2 Purpose, rationale and structure of the study

Considering the tremendous advantages of e-B/Ls, provoking all these recent efforts to achieve equal treatment of electronic and paper B/Ls under the law, this thesis raises the following question:

What are the reasons for electronic bills of lading not becoming ubiquitous during the last few decades and is there any new developments that might bring change?

In an attempt to answer this question, this thesis will review the current legal frameworks available to see if we can find any practical and/or legal hindrances for the use of e-B/Ls. These “legal frameworks” consist mainly of several endeavors by UNCITRAL through Rotterdam Rules and their various Model Laws, but also by rules created by other private international institutions such as the CMI (Comité Maritime International) Rules and the BOLEROs (Bills of Lading Electronic Registry Organization) rulebook and title registry.

This thesis argues that all of the above mentioned suffers from various problems, both legal and practical, that accumulated makes the electronic equivalents less attractive for potential users. Although the issues are many, all the solutions seem to suffer from the same problem; that they can't ensure uniqueness of a paper document without implementing solutions that restricts publicity of the e-B/L or reduced the security.

Further, this thesis investigates if and how these problems can be solved within the same framework, or if the problems stem from a more fundamental issue with the technology facilitating the solutions available today.

The thesis will have the following structure. The second chapter sets out the more general characteristics and background for the traditional B/L. Its main focus is to provide an understanding of the fundamental functions of the document, with a closer look at its most intriguing feature; being a document of title. We will highlight some of the most common hurdles and drawbacks with the traditional paper B/L. further, the chapter deals with the rationale behind e-B/Ls and how these can remedy the many issues presented in the previous chapter.

Having in mind what was discussed in chapter two, chapter three takes a closer look at the Norwegian Maritime Code (NMC) of 1994 and we will assess whether the law and the laws that supplements the NMC caters the use of e-B/Ls as the law currently stands. As no court

decision to this date has spoken on the issue, this discussion will be somewhat hypothetical and based on basic Norwegian legal method and the legal sources available at this day.

Chapter 4 introduces the core purpose of this thesis. The chapter contains an in dept analysis of the most prominent efforts at facilitating the use of e-B/Ls, and also the technology, which all of them rely on or is built around, electronic data interchange (EDI).

Chapter four also deals with the different attempts to establish a set of uniform rules aimed at facilitating the use of e-B/L. We will first discuss three of UNCITRALs Model Laws, which were uniform legal guidelines presented to national legislators when sculpting their legislation on the issues as well as to assist individuals in drafting contracts and resolving contractual disagreements. Secondly, we will discuss the Rotterdam Rules, and examine whether the convention has a future or if it's yet another unsuccessful attempt at creating a uniform law on the matter. We will also take a closer look at the private initiatives to create a private set of rules established through multilateral contracts, namely by CMI and Bolero.

After reviewing the above-mentioned efforts, we will try to assess which of these, if any, manages to promote a fully legal equivalence of e-B/L versus traditional paper bill of lading. Finally, bases on the assessments we make, we will draw a conclusion on what we can learn from these efforts and see if we can find a common problem that could be remedied by another technology.

We will also introduce Blockchain technology and examine closer some of its many benefits and if it's possible that this technology might cater an e-B/L.

Chapter five is the final and concluding chapter of this thesis. We will discuss the main findings of the Thesis and give some final remarks and suggest areas for further research.

1.3 Material, method, and delimitations

The legal sources and material on the use of e-B/Ls in Norway is scant. There is no mention of e-B/Ls in the NMC of 1994⁴, neither in any of the preparatory works or official comments on the law. Norwegian legal literature is also scarce, if not non-existent⁵, and if mentioned, its nothing more than a mere reference to its existence. Further, there are no court decision on the matter and any potential arbitration rulings on the matter, are not public. The preparatory work by the Maritime Law Commission on the implementation of the RR, does however discuss e-B/Ls, but nothing has yet happened in terms of an actual implementation of the convention, as this is dependent on USA, China, or Russia, signing the convention.

Having this tendency in mind, the thesis would fail to give a sufficient picture of the reality if one based itself solely on Norwegian law. Thus, I will also need to examine the question using an international approach. Since there is no authoritative understanding on the use of e-B/Ls under the current Norwegian law, most of the study would have character of being *de lege ferenda*. Only in some peculiar circumstances is it possible to draw solid conclusions what is *de lege lata* in Norwegian law.

Also, internationally, there is very little, if no case law on the subject, which is why the conventions, model laws and the private law-based set of rules will be the predominant sources in this thesis.

Thus, this thesis comprises a dogmatic legal method⁶ when analyzing Norwegian law and the legal method established through the Vienna convention of 1969 in the analysis of regulations, articles in conventions and *travaux préparatoires* of the Rotterdam Convention with qualitative method. Especially relevant in this context is article 31 on general rule of interpretation and article 32 on supplementary means of interpretation.⁷

Methodically speaking, this entails using different legal methods when approaching the different legal sources.

⁴ Beside one somewhat cryptic mention of electronic signatures in § 296, third paragraph.

⁵ Searching for «elektroniske konnossementer» (the Norwegian term for ebols) at the national library database

⁶ Hans Petter Graver: "Vanlig juridisk metode? Om rettsdogmatikken som juridisk sjanger", *Tidsskrift for Rettsvitenskap*, 2008/8/25, page 149-178.

⁷ <https://treaties.un.org/doc/publication/unts/volume%201155/volume-1155-i-18232-english.pdf> - The Vienna Convention of 1969.

In addition, the nature of the topic entails a lot of energy to the technology itself, which strictly speaking is not law. However, it is absolutely necessary for the understanding of the many legal issues this thesis raises, that one understand how the technology works.

2. The traditional B/L – the problems of dealing in paper in a modern world

2.1 What is a B/L – the three characteristic functions

In order to understand what is required to dematerialize the legal concept of a BL, we must first take a closer look at the essential features of this important document.

The B/L is vested with certain functions, that accumulated, plays a key role in international trade, as it fulfils numerous tasks in the role of facilitating trading in an international environment.⁸ The term B/L is defined in the Norwegian MC section 292, first section, which prescribes the three essential features of the document are highlighted.

According to section 292, a B/L is a

“document:

“1) Which evidences a contract of carriage by sea and that the carrier has received or loaded the goods, and

2) which is designated by the term bill of lading or contains a clause to the effect the carrier undertakes to deliver the goods in exchange for the return of the document only.”

In the following I will describe each of these functions and their purpose in greater details.

⁸ Falkanger, *Scandinavian Maritime Law: The Norwegian perspective*, 2010, page 276.

2.1.1 Function as a receipt for the goods

The receipt function of the B/L is of major importance to all parties, especially the receiver as it provides the essential details of the shipping, such as date and time of receiving the goods, identification and the apparent condition, weight, quantity and quality. If the goods received at the port of destination deviate from the description in the B/L, it gives the receiver a ground for a claim either against the carrier, sender or seller. Thus, we say that the B/L is prima facie evidence of the goods that has been loaded onto the vessel.

2.1.2 Evidence of contract of carriage

The B/L evidences the contract of carriage conducted between the carrier and the shipper where the more specific terms and conditions related to the carriage are to be found. This prevents the shipper or carrier to alter the terms and conditions of the carriage after the bill has been transferred from the shipper, such allocation of liability or limiting liability further.

2.1.3 Document of title

Historically, the B/Ls was recognized of being a document of title in the 16th century, when admiralty courts in Europe started to acknowledge that the document was capable of transferring rights to the goods described therein, namely in the English court decision “The Thomas” in 1538⁹,¹⁰. The bill stated that it was carrying salt to London on the vessel, The Thomas, whereby it was to be delivered to “my master, his assigney or lawful attorney”. Although, this, let alone, doesn’t evidence an actual indorsement in the goods, the provision illustrates the possibility. Recorded evidence of a B/L actually being endorsed is found in the case Lickbarrow v. Mason in 1788, where the court stated: “He who delivers a Bill of Lading in blank to another not only puts it in the power of the person to whom it is delivered, but gives him authority to fill it up as he pleases, and it has the same effect as if it were filled up with an order to deliver to him”.¹¹ As state above, the House of Lords pointed that bill was indeed a document of title and a negotiable instrument by virtue of the customs of merchants.

Although the function as a document of title was the last feature to be attached to the B/L, it is widely considered to be the most prominent feature of the B/L today. So, what does this function more specifically entail?

We can divide this function into three. Firstly, it represents possessory right to the goods for the person holding the document. Secondly, it represents a constructive over the goods described in the B/L. These sub-functions facilitate its last function; security for a potential lender, such as a bank advancing payment under a letter of credit. The second function stands out as being the most prominent. The person holding the document is entitled to delivery of the goods even though he has not yet obtained the physical possession over the goods at port of destination. Without going into too much details, this entails a variety of options for the holder, such as using the document as security for a loan by giving the bank possession of the document. But probably most interesting, and important for this thesis, is the ability of a negotiable B/L to transfer the document by endorsement to a third party. However, being a document of title does not necessarily mean that it is also negotiable in its true sense, giving the transferee better title than the transferor. There is no ubiquitous understanding on this

¹⁰ William Porter Bennett, *The history and present position of the Bill of Lading as a document of title*, Cambridge, 1914, page 9

¹¹ William Porter Bennett, *The history and present position of the Bill of Lading as a document of title*, Cambridge, 1914, page 12

feature of negotiability. This has been somewhat troublesome considering that probably the most important feature of a negotiable bill of lading, naturally relates to its negotiability. Thus, one must use some caution when speaking of “document of title”, “negotiability” and “transferability” in regards of bills of lading in an international context.

2.2 Problems and benefits of the status quo method:

Since its origin, B/Ls have been used because of its characteristic functions in cross-border trade. Hence, its main advantage over its electronic substitute is already being well established in the maritime industry and in the international trade in general, being recognized as a perfect tool for conveying rights in goods while in transit. Having been used for such a long time, certain agreed norms and procedures has been attached to the use of paper BLs in shipping. The governmental bodies involved in the transport of goods has also recognized these norms and procedures. Further, a variety of standard contracts clauses from different shipping lines and cargo owners are known by the parties in the industry. Lastly, and probably most important; these norms and practices is already recognized and practiced by the legal systems throughout the various jurisdictions.

Unfortunately, the same cannot be said about electronic equivalent, which is a fairly new endeavor to bring modernization to the shipping industry. Although, they have been around for quite some time now, a ubiquitous use is yet to be seen. In the following we will discuss the disadvantages related to use of paper B/Ls, and the benefits of e-B/Ls that are directly provoking the recent efforts on achieving equal treatment of electronic and paper bills of lading under the law.

2.2.1 Efficiency: time and money

There has been a tremendous technological advancement in ship building in recent years, especially in terms of speed and navigation, but also in terms of loading methods, i.e. containerization and automated cargo loading in the biggest and busiest docs. However, the same cannot be said about the issuance and handling of paper documents. These systems have remained the same, or with little advancement. The use of paper BLs has several

disadvantages, but maybe the most important disadvantage in this context is that the transfer of a paper bill between two points takes time, which often results in late arrival of the BL.¹²

This puts the carrier in a peculiar situation, where waiting for the BL to arrive incurs demurrage fees, storage cost and further delay, and delivering the goods without presentation of the BL exposes him for the risk of mis-delivery, in which he will be fully liable for.¹³¹⁴ A temporary solution, created by the shipping business practice is to issue a letter of indemnity(L/I), whereby the apparent rightful receiver guaranties that he will cover any loss that a wrongful delivery might cause the carrier. However, the risk of the L/I not being enforceable when the times come is imminent. Still, in practice, accepting a L/I against delivery is often the only solution for the carrier if there is only one claimant demanding delivery.

The endorsement and transfer of a paper document is both time and money consuming. Issuing and managing the paper documents does not come without cost. As of more recently there has been conducted several empirical studies on the costs related to the use of paper documents in the international trade,¹⁵ that estimates the cost of B/Ls, L/Is and other paper documentation to be upwards of 15 % of the physical transportation cost.

The paper B/L has to be sent to the endorsee by post, at the same time ensuring that the B/L is not handed over to before the purchase sum is paid. This last part is secured by documentary credit, mainly in form of letters of credit(LC). This entails both a time and money consuming process. Using LCs are fairly common practice when the parties do not know each other and the goods represent a significant value.

¹² Chan, Felix W.H., "In Search of a Global Theory of Maritime Electronic Commerce: China's Position on the Rotterdam Rules", *Journal of Maritime Law & Commerce*, April 2009

¹⁴http://www.seelawschool.org/pdf/6_Towards_broader_use_of_electronic_bills_of_lading_in_international_transport_of_goods.pdf, page 87

¹⁵ David Walters, *New Economy, New Business Models, New Approaches*, *International Journal of Physical Distribution and Logistics Management*, page 220-221 (2004), Robert Halhead, *Breaking down the barriers to free information Exchange*, *Logistic information management*, page 34-37, 1995. See also R. Henriksen, *The Legal Aspects Of Paperless Trade and Transport* (1982), page 13-14, referring to studies that show that document handling costs account for 7-10% of the cost related to the transport in international trade).

Further, its generally required in practice that all the original copies of the B/L (usually they come in set of threes) is presented in order to obtain the goods, although one original copy suffice under the current NMC section 302(2). The same applies in the other Scandinavian countries as well as in Chinese and American maritime law.

Further, the rapid fluctuations in the marked prices of commodities and certain goods, have made it more desirable and common to trade the goods multiple times during transit.

Especially this is seen with goods that prices are volatile, such as the trade of oil.

Hence, the transport of oil displays a perfect example of the need for a change. The oil gets resold multiple times during transit. Because of the large sums involved, banks are facilitating the financing of each sale, and it's nearly impossible to process the documentation fast enough. Still, however, the negotiable B/Ls are necessary because of its ability to resale the goods during transit. And since the B/L rarely reaches the final consignee before the goods reaches the port of destination, L/Is have become the practice rather than the exemption in the oil trade. Considering that the indemnity doesn't offer a real security for the banks advancing payments in these cases, the risk of loss is imminent.¹⁶

Suffice to say, the traditional paper B/L are failing to perform its function at the time being, and method which facilitates faster processing of documentation is urgent. It is not surprising that Intertanko, International Association of Independent Tanker Owners, was one of the companies initiating Seadocs, one of the solutions offering e-B/Ls.¹⁷

However, most of these problems would cease to exist if we were to change to electronic alternatives. This would drastically reduce, if not remove, the risk of late arrival of the B/L- Bolero, Essdocs and eTitle, all present some impressive numbers already from their early trials. According to Bolero, in the early trials conducted, a complex paper B/L, which usually takes 20 days to complete, was done in 4 days with Bolero. Further, Essdocs, reports that a simpler trade, that usually takes 41 days to complete via paper, took 65 minutes using EssDocs. E.title also conducted trials on a straightforward container line trade, in which the electronic bill of lading completed their journey in under a day.¹⁸

¹⁶ Chris Reed, Ian Walden, Cross-border Electronic Banking: Challenges and Opportunities, second edition, published 2014, page 72

¹⁷ Chris Reed, Ian Walden, Cross-border Electronic Banking: Challenges and Opportunities, second edition, published 2014, page 72

¹⁸ https://www.ukpandi.com/fileadmin/uploads/uk-pi/Documents/2017/Legal_Briefing_e_bill_of_Lading_WEB.pdf (accessed in Dec. 2017)

Not to mention that there is also a tremendous amount of time and money to be saved by having one, common infrastructure and communication channel, an electronic based system, which is linked with the other closely linked documents, such as LCs.

Bolero claims that their electronic B/L-solution accelerates payment, reduce operational costs, security, visibility and the auditability of trade. The latter is possible due to a single window system for shippers, carriers, banks and other parties involved in the trade, whereby they get a complete overview over all trades conducted for the present and future. Faster transactions mean, better control over credit facilities, faster payment, improved cash flow, and reducing the need for additional pre and post-shipment finance, reduction in the use of L/Is and the additional charges this entail, not to mention elimination of demurrage fees and documentary fraud. In their research trials, Bolero customers reported average cost savings in excess of 30 % by using their system, and further 25% reduced cost in operational cost.¹⁹

2.2.2 Environment: the environmental benefits of leaving the paper-based trade

The adverse impacts on the environment caused by cargo movement in the international trade, is an increasing concern for the world and also a concern recognized by the different stakeholders from carriers to governmental bodies and the international community. Besides the pollution and waste generated by the operation of the vessels, the vast use of paper documents in shipping leaves huge paper trails every year and contributes to deforestation. Although, it's hard to assess the impact that this paper trail has on the environment, we can say with certainty that dematerializing documents within the maritime transportation is a step towards reducing deforestation in general.

The banking industry, among others, have embraced the dematerialization of paper and reported tremendous benefits, such as; quicker, real-time transactions, easier record keeping, and more – all of which is more beneficial for our environment, in addition to saving costs and time for businesses.

As addressed by the UN Economic Trade Commission at the Global Trade Facilitation Conference; “Governments should embrace the digital revolution of international trade.

¹⁹ <https://cdn2.hubspot.net/hubfs/326699/Gated%20Files/Bolero%20Insights%20-%20The%20benefits%20and%20potential%20savings%20of%20digital%20presentations.pdf?submissionGuid=f69fe68e-acfb-43bd-a1df-c92606f5d60b> (accessed easily by typing a made-up name, email address and company name).

Simplifying lengthy paper processes and cutting red tape by going digital means sustainable, faster, and more efficient trade.”

Although, a total paperless environment remains somewhere for the distant future, it is emphasized that governments and business stakeholder should work together to reduce the use of paper by switching to electronic systems where this is possible, thereby reducing the costly, heavy, and increasingly outdated burden of paper transactions to better facilitate international trade. In Norway, the importance of environmental concerns is set out in our highest legal source, the constitution, section 112. Although the statute has no direct impact on the issue of e-B/Ls, it underlines that protecting the environment is a high priority goal in Norwegian law.

2.2.3 Security

Dealing in paper is not only time and money consuming and has a bearing on the environment, it also exposes the industry to documentary fraud and other fraudulent conduct. The paper document embarks on a journey from the time it issues in which numerous entities are involved, making it more prone to forgery by making false documents which arrive before the real BL.

Tremendous amounts are lost each year due to documentary fraud, and the only remedy against it one has to day is making it more burdensome to forge, for instance by the BL carrying a watermark, using special paper in terms of color, density and texture. Further one has procedures that minimize the risk of fraudulent behavior, such as keeping them at a safe location at all times, keeping up to date copies of the B/L by reissuing the bill with updates.

However, forgery is still a big concern in regard of B/L, and one would be surprised of the level of professionalism displayed fraudsters in copying the B/L. In addition, it's also possible to utilize the original paper BL for fraudulent purposes, e.g., by changing its contents.

Another possibility is taking advantage of the practice of issuing three B/Ls for on particular shipment, for instance by being a holder, but not actually being entitled to the goods and then be the first to present the B/L to the carrier and receive the goods. As mentioned, this is fully possible under the NMC section 303.

3. Legal status of e-B/L under Norwegian law

3.1 Does the current Maritime Code of 1994 facilitate the use of electronic bills of lading or is a law reform necessary?

The scope of this chapter is to examine whether there exist any legal hindrances for the use of e-B/L under the current Maritime code, that would have to be removed in order to use any of the solutions that are available today.

When examining the Norwegian Maritime Code and its preparatory work, one does not find any express regulation of the use of e-B/L. Neither, has any Norwegian court decision touched upon the subject until this date.²⁰

The rules regarding B/Ls are set out in chapter 13 of the MC, on the Carriage of General Cargo, part IV, which provides rules on B/Ls and other transport documents.

The three first issues we encounter when examining chapter 13, are the notions “writing”, “document” and “signature”, in §§ 292 and 296. These terms were chosen at a time where no one yet conceived the thought of electronic communications replacing paper transport documents. Thus, they were definitely intended in their traditional sense, meaning paper document, writing on paper, and manual signatures. The question thus becomes, whether there exists a legal basis to interpret these terms in a broader sense, so it includes electronic messages, documents, and signatures.

In 1978 the Hamburg Rules were enacted by UNCITRAL, providing new rules on B/Ls. The Rules were meant to replace the current B/Ls convention, the Hauge-Visby Rules.²¹ And in 1994, the MC was amended, so that the HR was implemented and applied in chapter 13, on Carriage of General Cargo as long as they were in confinement with Norway’s duties laid down in the Hauge-Visby-rules.

In this legislative process, it was decided, amongst other, that § 296, last paragraph, on signatures of the B/L, should be amended, so that the B/L may be signed either electronically or mechanical²², cf. HR article 14 and MC §296, last paragraph. Apart from this, there is no other explicit regulation on the use of e-B/Ls to be found in the MC, which renders the rule somewhat cryptic.

²⁰

²¹ The Hauge Rules of 1924, with protocol of 1968; The Hauge-Visby Rules.

²² Article 14, third Paragraph of the HR; “(t)he signatures on the bill of lading may be in handwriting, printed in facsimile, perforated, stamped, in symbols, or made by any other mechanical or electronic means, if not inconsistent with the law of the country where the bill of lading is issued.”

Neither was it commented on by the commission preparing the 1994 amendment²³. Hence, one can argue that the legislator didn't make any reservations when implementing the HR art.14, and that the rule is meant to be practiced in accordance with the vision of the convention.

While the previous conventions, the Hague and Hague-Visby Rules, facilitated tangibility, they did not on their own give any room for a broader extension of notions "document", "writing" and "signatures" to e-communication. The HRs provisions on signature and writing, however, can be interpreted as accommodating electronic documents as long as there are no national laws that prohibit the use of electronic documents or bills. On the notion of "writing" Art.1, paragraph 8 of the HR states that "writing" includes, inter alia, telegram and telex". The technology listed is not exhaustive, which means that the convention does not necessarily exclude other technologies, cf. the term "inter alia". Further, art.14 sets out that the signature can be made electronically. Thus, the convention does not hinder the use of e-B/Ls.

During the 90s the need for rules to accommodate electronic communication became apparent and resulted in the so-called e-Rule Project in the early 2000s.²⁴

The goal of the e-law project was to achieve a broader acceptance of e-communication and promote the same legal status of e-communication and traditional paper-based communication. The outcome of the project was the enactment of two new laws; the Law on Electronic Signatures (LES) in 2001 and Law of Amendments of Various Laws to Remove Legal Hindrances for Electronic Communication (LRLHC), of 21. Dec, 2001, number 117.

While the LES set up a framework for the use of e-signatures by providing the minimum requirement, the LRLHC, sought to remove legal hinders for e-commerce throughout the various laws. In total 36 laws were amended, including rules in the Maritime Code. By taking a closer look at some of the legislative reasoning behind this work, we can try to ascertain the legislators view at e-B/Ls.

The method chosen to ascertain whether law represented a hindrance or not, was based on the principle of functional equivalence, a principle first used by the UNCITRAL in their efforts to

²³ Ot.prp. nr. 55 (1993-1994)

²⁴ In Norwegian; "e-regelprosjektet"

promote uniform rules on e-communication in the Model Law on Electronic Commerce in 1996. The principle will be discussed in more depth later.^{25,26}

But suffice to say, the principles main purpose is to take a closer look at the core functions and features of the document and then assess whether an electronic equivalent is able to cater these functions or if law amendments are necessary for it to obtain these functions.²⁷

In reviewing the Maritime Code, the commission found some hindrances that were removed, more specific the rules on electronic communication within joint shipping partnerships in chapter 5 of the MC. However, they did not further review the use of electronic communications in regards of Bills of lading. Thus, it would seem as if the legislator did not see any legal hindrances for the use of e-B/L.

In a hearing note by professor Erik Røsæg at the Norwegian institute of Maritime Law, he recommended that the government reviewed the MCs status on the use of E-B/L.²⁸

Responding to the hearing note, the department submitted that the legal questions regarding the use of e-B/L were too extensive and complex to be treated in the e-rule project.²⁹

Thus, one can argue that although, the legislator has not prompted a clear view on the use of e-B/Ls, there does not seem to be any legal hindrances preventing so. Although, it must be admitted that the current rules available does not, on its own, provide a sufficient legal framework for the use of e-B/Ls. If such an e-B/L were to be used in Norway, one would have to rely on an agreed set of rules that regulate the technical details using an e-B/L, while the substantive law would determine the rest, including the effects of negotiating the bill to a third party.

Although there exists no court practice warranting such a use of the MC, this author can't seem find any explicit legal hindrances for the use of e-B/Ls.

²⁵ UNCITRAL (United Nations Commission on International Trade Law): Model Law on Electronic Commerce with Guide to Enactment 1996.

²⁶ Ot.prp.nr. 108 (2000-2001), page. 78

²⁷ UNCITRAL (United Nations Commission on International Trade Law): Model Law on Electronic Commerce with Guide to Enactment 1996.

²⁸ I have been in dialogue with Professor Røsæg during the process of writing this thesis, where he also expressed the lack of efforts from the Norwegian legislator to clarify its view on electronic bills of lading under the Norwegian Maritime Law. Røsæg was head of the committee appointed by the Ministry of Justice to review the ratification and implementation of the Rotterdam Rules in the Norwegian Maritime Code in 2009, cf. NOU 2012:10.

²⁹ Ot.prp.nr. 108 (2000-2001), page. 78, chapter 3.16.1: transport law, last passage.

3.2 Conclusion

The fact that we had to dedicate a chapter to the topic is in itself evidence that there exists legal uncertainty. This lack of legal clarity, makes potential user hesitant to issue such a B/L under Norwegian law and further, leads to a fear of legal recognition, as no court practice accepting the use of electronic bills of lading under the code is yet seen.

Thus, as the MC currently stands, it does not to a sufficient degree regulate the many technical and legal issues that the use of an e-b/L might give rise to. Having this said, its clear that the Norwegian legislator could develop a legal framework to fully enable e-B/Ls. One of the few – if not the only one – existing example of such law is that of the Republic of Korea. That law relies on a monopolistic registry-based system that has yet to find full implementation. The challenges encountered in implementing that law highlight the desirability of international coordination in order to achieve the intended result of enabling e-B/Ls worldwide. For these reasons, and because no widespread use e-B/Ls to date, any law reform exercise undertaken at national level is likely to be somewhat of a shot in the dark.

4. Creating a uniform legal framework

4.1 Legal issues: A need for a supporting legal infrastructure

The status quo regime surrounding B/Ls, although its somewhat cryptic, does not seem to preclude the use of electronic bills of lading. However, as we have seen, the legal uncertainties caused by this might just be a key reason for why potential users of e-B/Ls are unwilling or hesitant to break new ground. This is also supported by a United Nations Conference on Trade and Development (UNCTAD) survey report published in 2003, where it was found that one of the main obstacles that potential users saw to the introduction of electronic bills into their operations was that the ‘legal framework was not yet clear enough and not adequate’.

Some of the challenges faced when seeking to replicate the legal functions of a paper B/L to e-B/L, seems to be related to the document of title function. Being a document of title, it has effects in terms of both property and contract law. Possession of the document may indicate that the holder is party to the relevant agreement and has right to enforce it, but as we will see, possession becomes somewhat trickier when it comes to dematerialized documents, as there is strictly speaking nothing to physically possess.

Further, we must replicate the functions of the notions writing and signature. Primarily, signatures serve the purpose of authentication of contents of a document, a confirmation of personal involvement of the person signing the document as well as an assurance of his consent to and/or a guarantee of his commitment to the contents of same. Both national and international contract laws were developed at a time when paper was the main stay of contract formation. Thus, contractual rules and principles were formulated in terms that envisage paper as the means of commercial, monetary and proprietary representations, communication and record keeping.

This explains why in many jurisdictions; certain contracts are required to be in written forms in order to be valid and binding. The legal requirement in many a jurisdiction that certain contracts must be in writing has been identified as the major obstacle to the use of e-B/Ls in carriage of goods by sea contracts. This is because the legal requirement of written documentation for validity and binding effect of contracts in many areas of commercial transactions has dampened the confidence of stakeholders to adopt electronic commercial practices. Fortunately, enormous efforts have already been made to create enabling legal frameworks that will facilitate international electronic commerce.

Thus, a legal framework is needed, that translate these essential features into an electronic medium. Such a translation needs uniform throughout the various jurisdictions as the appeal of bills of lading. Further, since mercantile customs are considered a source of law in Norway and in most jurisdictions, the rules set out in legislation needs to be in alignment with the emerging commercial practice and allow for technological innovation. Lastly, and as touched upon above, because transfer of title may affect rights of third parties who may or may not be party to any dispute that may arise, clarity and certainty are key to justice being done.

This have led to private initiatives to create a legal infrastructure for e-B/Ls, built on multipartite agreements binding all users. However, such an approach is not entirely independent of State law, as this continue to determine all issues governing the contract of carriage, except the issues involving the use and effect of electronic alternatives, which would then governed by these agreed standards. The use of such, non-national standards are not new, as it was already done by the International Chamber of Commerce (ICC), with the universal application of the Uniform Customs and Practices for Documentary Credits. Such solutions have gained massive support by many commentators, pointing out that the internet operates regardless of borders and thus, such standards are better suited to regulate trade conducted over the internet than state law.^{30, 31}

Although there exist various sets of such standards, in the following we will focus on two solutions; The CMI Rules and the Bolero Rulebook.

Amongst the bulk of electronic alternatives to bills of lading available, there are three companies that are distinct and notable; the Bill of Lading Electronic Registry Organization (Bolero) system, essDOCS systems, and the e-title system. The International Group of P&I Clubs (IG) approved the Bolero and the essDOCS systems in 2010, and the e-title TM system in 2015. I will just focus on the Bolero system, as a complete review of them all would be to

³⁰ http://www2.warwick.ac.uk/fac/soc/law/elj/jilt/2000_3/diedrich - Diedrich, A Law of the Internet? Attempts to Regulate Electronic Commerce, 2002 Journal of Information Law and Technology and Polanski, A New Approach to Regulating Internet Commerce, 2002 Electronic Communication Law Review, page165.

³¹ Miriam Goldby, Legislating to facilitate the use of electronic transferable records: A case study, Reforming the law to facilitate the use of electronic bills of lading in the United Kingdom page 6. The paper was prepared for the UNCITRAL Colloquium on Electronic Commerce New York 14th-16th of February 2011.

compressive for the scope of this thesis. I chose Bolero because it seems the most prominent and it was also the first solution to be approved by the IG clubs.

UNCITRAL have made tremendous efforts in creating a uniform legal framework for the use of electronic bills of lading, which has laid the ground for the creation e-B/Ls for companies such as Bolero, Essdocs and e.Title. They are all based on two basic principles which have become most important in the future regulation of e-documents and their use, namely the principle of functional equivalent and of technology neutrality.

In the following I will take a closer look at the efforts by CMI and UNCITRAL to tackle the legal challenges raised by e-B/Ls. I will take a closer look at how the most prominent provider of electronic bills of lading, Bolero, have utilized EDI technology to ensure that their electronic equivalent cater all the essential functions of the paper bill.

But first, we will look at the technology that all these efforts are built around, Electronic Data Interchange, and private and public key cryptography.

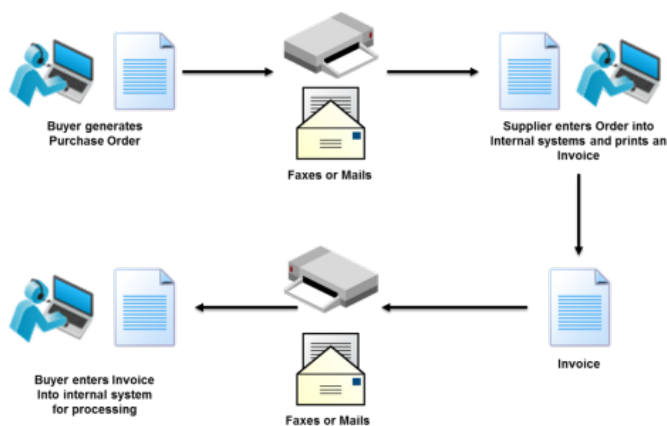
4.2 Electronic Data Interchange (EDI): Digital signatures and private and public key cryptography

Electronic Data Interchange is nothing new. It's an electronic means of transferring information and has contributed to the gradual decrease in the use of paper documents since the 1980s. Most famous system using EDI technology is 'SWIFT' who uses it in international commerce by the banking industry for the communication of commercial letters of credit among banks worldwide.³²

Like paper, EDI technology ensures necessary notoriety of binding agreements and the content of information passed between parties.

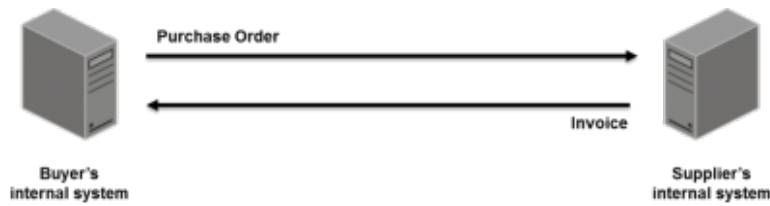
But unlike paper, EDI information is not processed by humans, but by computers. Nevertheless, some of the same considerations and issues arise when using EDI. Just like humans, computers are reliant on speaking a lingua franca or the same "language", so to speak, in order to communicate. Thus, the information passed between the computers must be in a common format. Just as a Norwegian wouldn't send a letter in his native language to an American, one wouldn't send EDI information in a different format than the one used by the receiver. For this reason, there has been developed numerous standard formats. The two formats most used, are EDIFACT and ANSI X12.

Email or fax communications:



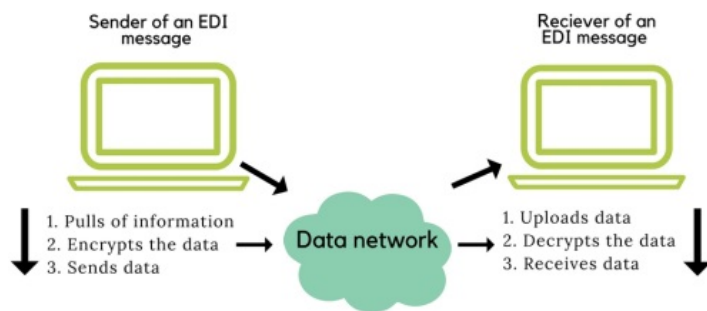
³² SWIFT stands for Society for Worldwide Inter-bank Financial Telecommunications and was established to facilitate the transmission of bank-to-bank financial transaction messages. More than a million messages per day are transmitted on SWIFT's global telecommunication network, including letters of credit and bank guarantees. SWIFT is also one of the companies behind the development of Bolero.

EDI; no paper, no people:



As illustrated, EDI replaces postal mail, fax and email, by going straight through to the receiver, enabling immediate processing of the data. Although email is an electronic means of communicating data, it still requires human-interaction and processing, which to some extent increase inefficiency, but first and foremost, it raises numerous security issues.

This brings us over to one of the most prominent features of EDI- it's ability to ensure confidentiality between the parties by providing a secure platform for transactions where the information transferred between the sender and receiver is encrypted, and thereby less prone to be tampered with or observed by anyone else than the parties. Encryption is basically a scrambling of the data, making the message into apparent nonsense, unless one is provided a key that decrypts the message. This prevents that hackers obtain information while the data message is transmitted over telecommunications channels. However, encryption/decryption does not come free, as it is a cumbersome and expensive process to maintain and update the systems regularly. Nevertheless, one must recognize that the potential loss if this information is stolen will often exceed the expenses of maintaining the systems. Below is a simple illustration of how this applies in practice:



As mentioned, one would need a key to decrypt the encrypted data (bullet point 2 in the figure). In terms of methods of encryptions there are basically two schemes, private keys and public keys. The private key encryption is a method whereby the personal key for encrypting is identical to that of the receiver needs to possess to decrypt. This does come with some security issues, as this key could be prone to theft by a third party. To defend oneself against this, one is recommended to change the key on regular occasions, which can present a challenge since both the senders and receivers key needs to be in synch at all times when being used.

Public key cryptography, on the other hand, generates a matched set of keys- one public, and one private. The public key is either broadcasted to all senders or made available at a public location on the closed network, where its easily retrievable.

Any senders who needs to send the receiver an encrypted message uses the recipient's public key to encrypt message. The private key, which is held private by the recipient, is the only key that can decipher messages encrypted with the matched public key. There can only be one holder of the private key at all times, and this person is called "holder". The scheme requires that the private key cannot be generated from the public key. The key is then altered when the holder transfers the bill of lading to a third party. Thus, it is only the carrier and the knows the private key.

This enables the users to securely exchange encrypted messages and further identify the sender through verification of its digital signature, since his private key is unique and when it

matches the public key, one can know for sure who wrote the message. This process, of course, is overlooked and facilitated by a trusted third party (e.g. Bolero International Ltd.), keeping for the whole time the register of every individual transaction (exchanged electronic communication and electronic transport record), as well as of the public and private keys issued to its members.

Public-key encryption is gaining wide spread acceptance as the preferred encryption technology. With public-key encryption, a message recipient generates a matched set of keys, one public key and one private key.

4.3 The CMI Rule on Electronic Bills of Lading of 1990:

CMI is a non-governmental organization that works on harmonizing the legal framework within Maritime Law. In 1990 they published the rules on electronic Bills of Lading, a comprehensive private legal framework for the use of electronic bills of lading which private parties can choose to incorporate in their contracts of carriage.

Both the CMI rules and the Bolero Project share the characteristic of being efforts in creating a private set of rules that would constitute a legal framework, promoting predictability surrounding the use of electronic bills of lading, especially in respect to the legal equivalence of their functions to the paper bills. The CMI Rules is far older than the Bolero Project, and one might say that its efforts laid the fundament for the development of Bolero later in the 90s.

Their rules have played a key role in the development of electronic bills of lading, and they are recognized as being one of the most successful attempts to create a private set of rules regulating the use of electronic bills of lading, before alternatives as Bolero was introduced. Part of the reason for their success and popularity, was their international approach, being available for anyone without any subscription or fees, which attracted more users. Further the rules are voluntary, in the sense that it was up to the parties to choose whether the rules were to be implemented in the contract of carriage or not.

Further, they do not interfere with any national rules or conventions. Article 6 of the rules stipulate that if they are used, the contract of carriage will be regulated by any international convention or national law that would be mandatory if a paper bill of lading was issued.³³

Article 11 of the CMI rules deals “writing” requirement. It states that “The carrier and the shipper and all subsequent parties utilizing 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 electronic data residing on computer data storage media 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 defense that this contract is not in writing.”

³³ http://www.uncitral.org/uncitral/en/uncitral_texts/electronic_commerce/1996Model.html

Thus, the rules preclude the parties and users of the CMI procedure from raising any objections in relation to the transactions concluded on the regime on the solely on the grounds that the transaction was not in writing or signed mechanically.

In terms of replicating the three functions of the paper bill of lading, the CMI rules seem to have done so successfully in regard of the function as receipt and evidencing a contract of carriage. However, in regard of the document of title function, the solution poses some issues which will be discusses after.

Article 4, a-iv) stipulates the form and content of the receipt message by stating that the carrier must upon receiving the goods from the shipper, give notice of the receipt of the goods to the shipper by message at the electronic address specified by the shipper". The closer content of the message is mostly coherent with the requirements of a bill of lading set forth in the Hauge-Visby rules and thereby §296 of the maritime code, containing a description of the goods, time and date of receipt and containing a reference to the carrier's terms and conditions of carriage. Further, article 4 V) prescribes that a private encryption key must be used in subsequent transmissions. The rules recognize information through such a message as having the same force as that of the traditional B/L. Although we cannot say for certain whether a Norwegian court would accept this, this author believes that it is likely that the court would respect the party's intention and agreement on making the CMI rules applicable for the contract of carriage, thus making them enforceable under Norwegian Law.

Further, the CMI rules article 4, iv) states that the e-B/L has to make reference to the contract of carriage, which is further emphasized in art.5 saying that the terms and conditions shall form part of the contract of carriage, provided that the carrier has included reference to such terms and contracts in the electronic bill.

Thus, the CMI Rules does cater the function of receipt and evidencing a contract of carriage.

However, as indicated above, it is in regard of the document of title function that CMI rules reaches somewhat short. The system is built around the use of private key cryptography. In the chapter on EDI and learned how such private key cryptography can act as a substitute for physical possession of a paper document, enabling the holder of the private key to transfer the document by transferring the key, although with some security concerns compared to that of public key cryptography. Nevertheless, any technical difficulties and security issues, it does

change the structure of which the shipping operation would have to be operated. While under a paper bill of lading, the carrier does not have to be involved in any transfer of the document, the CMI-rules gives the carrier a key role in facilitating the transfer of rights to the goods while in transit, by documenting or registration every transfer, and making him the only person who can transfer the private key, and thereby the right to the goods. This has been seen as an unattractive solution because it increased the workload of the carrier tremendously.

To sum up, we can say that the CMI rules has the benefits of being an open network, which does not necessitate any membership or extra cost for potential users. This makes it more accessible and alike the paper document. However, the rules entail an increased workload on the carrier, which might make it an unattractive solution for potential users.

It is also interesting to note that the CMI, which before played a crucial role in the development of maritime law, now no longer has a pivotal role in international maritime legislation. In this respect, one important development is that governments prioritize time in international trade and national legislative bodies; hence, legislations initiated to facilitate trade without a political point are less likely to be prioritized. These efforts will now be discussed.

4.4 Model Law on Electronic Commerce 1996

The Model Law on Electronic Commerce (MLEC) of 1996 with its Guide to Enactment, was the first of its kind, purporting to provide national legislators with a set of internationally acceptable rules, aimed at removing legal obstacles that might exist throughout the various jurisdictions and increasing predictability for electronic commerce in general. Primarily, it sought to remove hindrances created by statutory provisions which could not be derogated from by contract, by providing that electronic information is treated equal to paper based.

The ML sought to tackle some of the main issues relating to EDI technology fulfilling the legal requirements for the use of paper documents; legal recognition of data messages, “writing” or a document” requirement, signature requirement and document of title and negotiability. It is clear that EDI in itself, is not capable of being an equivalent of paper documents, both in nature nor legally speaking.

Thus, the MLEC promotes some essential principles, that have become prudent for the future development of electronic commerce, mainly the principle of non-discrimination, technological neutrality and functional equivalence.³⁴ The latter is probably the most essential principle and is based on an analysis of the functions of the paper based requirements and determining how these functions can be fulfilled through electronic means, namely the three essential features of the document, being a receipt, evidence of a contract of carriage and a document of title. But also, the requirements of writing, original, signed and record³⁵.

The principle of non-discrimination ensures that a document is not denied legal effect on the sole basis that it's in electronic form, while the principle of technological neutrality mandates the adoption of provisions that are neutral with respect to the technology used. It aims at accommodating any future development without further legislative work needed to be done.

Moreover, part II of the MLEC, dealing with electronic commerce in connection with carriage of goods, has been complemented by other legislative texts, including the United Nations Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea (the "Rotterdam Rules") and may be the object of additional work of UNCITRAL in the future.

³⁴ http://www.uncitral.org/uncitral/en/uncitral_texts/electronic_commerce/1996Model.html

³⁵ The equal treatment of electronic writing is set forth in article 6, electronic signatures in article 7, and the requirement of original in article 8.

The requirement of a ‘writing’ or a ‘document’ is required or implied by most jurisdictions, including Norway, cf. MC § 292. The MLEC article 5 provides that electronic transmissions have the same legal status as writing where the law requires such information to be in writing.

The MLEC was not the first to provide rules on e-signatures, as the HR sets out that a signature may be “in writing (...) or by any other mechanical or electronic means”. As touched upon previously, the NMC § 296, third paragraph has implemented this rule as well.

Art.6 of the model law provides that requirements of signature in law, the rule is satisfied by a data message if;

- “a) method is used to identify the originator of the data message and to indicate the originator’s approval of the information contained therein; and
- b) that method is reliable as was appropriate for the purpose for which the data message was generated or communicated, in the light of all circumstances, including any agreement between the originator and the addressee of the data message.”

Thus, the law remains open for any technological means of creating a signature, including EDI.

The function of being a negotiable document of title is a key function of the B/L. In this regard, the ML recognized that an essential aspect of this function the physical possession of the document. Paper documents, is by its very nature unique, and an electronic equivalent must satisfy this uniqueness requirement because the bill of lading is a document of title, and the holder has possessory rights over the goods and contractual rights against the carrier by virtue of being holder.

Technically this goes beyond the guarantees offered by paper B/Ls because, as is well known, paper B/Ls are characteristically issued in sets of three originals and only one original need be presented to the carrier in order for delivery to take place, cf. MC §302, second paragraph. Thus, the singularity requirement does not in theory apply to paper B/Lz, but in practice the fear of fraud has led to the practice of requiring a ‘full set’ of originals upon a documentary transfer.

The MLEC identifies what it calls “the guarantee of singularity”, as the essential prerequisite that any system replicating a paper bill of lading must satisfy. The requirement of singularity

is set out in article 17,3 paragraph of the MLEC. The notion of uniqueness, must be clarified to some extent. Strictly speaking, all data messages can be considered unique, even if they are copies of an older message, since they are sent at a different time and date, and even more so if its sent to a different person than the earlier message. However, if one considers unique as referring to a data message of unique kind, or a transfer of a unique kind, then in that sense, no data message is unique, and no transfer by means of data message is unique. To avoid these misinterpretations of unique, the commission on drafting the model law, decided that for the purpose of article 17, they wanted to make a clear definition, since “uniqueness” and “singularity” of B/L was completely new notions for the practitioners of maritime transport law.³⁶ Article 17 seeks to ensure uniqueness by requiring that “a reliable method is used to render such data messages unique”. According to the guide to the model law this should be interpreted as referring to a reliable method that secure that data messages purporting to convey any right or obligation of a person might not be used for, or on behalf of, that person inconsistently with any other data messages by which the right or obligation was conveyed by or on behalf of that person.

The ML does not prescribe a specific method one would use to achieve the uniqueness, but as mentioned, in practice in practice this is done by registry. This means that each time an e-B/L is issued or transferred electronically, a record is made in a register of the name of the person to whom it is issued or transferred, and that entry in the register will indicate that person to be the holder of the B/L. In this way, the singularity requirement is satisfied. There are three main models of registry system: governmental registries operated by state agencies³⁷, private registries³⁸ operated by the issuers of rights to be registered and central registries operated by a private group and whose use is open only to that group's members.

³⁶ UNCITRAL MLEC, guide to enactment, paragraph 117.

³⁷ The Korean KNET is an example of such a registry.

³⁸ The CMI Rules operates on a private registry, where the carrier has the role of managing the registry.

4.5 Model Law on Electronic Transferable Records 2017 (MLETR)

The MLETR was finalized in 2017 and was prompted by a need of further clarification of the term “electronic transferable records” which was used in the Rotterdam Rules, cf. article 1, paragraph 15. Similar to the previous work by UNCITRAL, the Model Law also promotes the principles of technology neutrality and functional equivalence. Thus, it sets out the conditions which electronic records must satisfy to fulfil the purposes and functions of the requirements relevant to transferable documents.

The scope of the MLETR is to treat these electronic transferable records as functional equivalents of transferable documents and instruments. The MLETR lets it be determined by the substantive law which documents and instruments that are transferable.

Most important among these requirements is the guaranty of singularity, uniqueness. As touched upon previously it is important in this regard to prevent multiple claims from being made on the same claim. In an electronic environment one must prevent that the system retains copies of data. The Model Law seeks to ensure uniqueness by requiring in article 10, paragraph 1, b), (i, (ii and article 11, paragraph 1, a), that a “reliable method” is used to identify an electronic record as the electronic transferable record and establish “exclusive control” of an electronic transferable record as functionally equivalent to possession of a transport document, cf. article 8, b).

Until this day, this is done by registry keeping of the messages, arranging their priority, however, the Model Law does say that this might be achieved in different manners as well with future technology, as we will discuss in more detail later in chapter 4. In paragraph 87 of the explanatory notes, the commission points out that the relative notion of uniqueness gives rise to technical challenges in an electronic environment, as offering an absolute guarantee of non-replicability may not be technically feasible and as the identification of the specific record that is supposed to constitute the equivalent to the respective transferable document or instrument is not obvious due to the lack of a tangible medium. In fact, the notion of uniqueness poses challenges also with respect to transferable documents or instruments, since paper does not provide an absolute guarantee of non-replicability. However, a paper document, as a physical object, is by nature unique and, furthermore, centuries of use of paper in business trans- actions have provided sufficient information to commercial operators for an

assessment of the risks associated with the use of that medium, while practices relating to the use of electronic transferable records are not yet equally well established.

The ML focus on the transferability of the record and not its negotiability, which the ML lets substantive law regulate. Thus, the rules of negotiability in Norwegian law would not be affected.

Article 2 of the model law defines “electronic record” based on the definition of “data message” in the model law on Electronic Commerce article 8, paragraph 3, and aims to clarify that electronic records, may but do not need to, include a set of composite information. It highlights the fact that information may be associated with the electronic transferable record at the time of issuance or at any time before or after (e.g. the information related to endorsement). In particular, the generation of metadata does not necessarily take place after the generation of a record but could also precede it. The composite nature of an electronic transferable record is particularly relevant for the notion of “integrity” contained in article 10, paragraph 2, of the model law.

In addition, the definition opens up for the possibility that in certain electronic transferable record management systems data elements may, taken together, provide the information constituting the electronic transferable record, but with no discrete record constituting in itself the electronic transferable record. The word “logically refers to computer software and not to human logic.

The definition of “transferable document or instrument” focuses on the key functions of transferability and of providing a title to performance. It does not aim to affect the principle that substantive law should determine the rights of the possessor.

Applicable substantive law will determine which documents or instruments that are transferable in the various jurisdiction ³⁹. The model law list includes: bills of exchange, cheques, promissory notes, consignment notes, bills of lading, warehouse receipts, insurance certificates, and air waybills.

³⁹ http://www.uncitral.org/pdf/english/texts/electcom/MLETR_ebook.pdf - UNCITRAL Model Law on Electronic Transferable Records, paragraph 38

Further the Model Law sets out that the signature requirement as it is presented in the model law on electronic signatures, and it may thus be fulfilled if a reliable method is used to identify that person, cf. article 9 of the Model Law.

4.6 The Rotterdam Rules (RR) 2008:

The RR represents UNCITRAL latest convention on the carriage of goods and most recent endeavor to provide a uniform and updated legal framework for the use of e-B/L and e-commerce in general.⁴⁰ Some of its provisions was recognized as representing significant breakthroughs in the area previously ruled by the Hauge-Visby and Hamburg-rules.

The RR contains a considerable number of rules regarding transport documents. Article 47 sets out the rules for delivery against a “negotiable transport document”. The convention doesn’t use the word B/L, but its features are quickly recognizable in the RRs article 1, definition of “negotiable transport document”; means a document issued under a contract of carriage by the carrier that:

- (a) Evidences the carrier’s or a performing party’s receipt of goods under a contract of carriage; and
- (b) Evidences or contains a contract of carriage.

In order to be negotiable, the RR requires so to be stated or made out “to order”, or other appropriate wording, “recognized as having the effect by law applicable to the document”. The Norwegian Maritime Law commission discussed in NOU 2012:10, whether this last alternative could be interpreted so that the traditional view on B/Ls in Norwegian law, that a B/L is considered negotiable unless otherwise is said, could be considered such an appropriate wording recognized as having the effect by law. However, the commission abandoned this argument, stating that in relation to uniformity it was best to bring the definition of a bill of lading in alignment with the definition of “transport document” in RR article 1, (14).⁴¹

The RR does not contain any provision on B/Ls having to be in written form, instead it sets out the notions of “transport document” and “electronic transport record”, both conceived as being equal in terms of functionality, cf. article 54, second paragraph.

Signatures are provided for under article 38, which sets out that a “transport document” is signed manually, while the “transport record” is signed by electronic means. To Ensure the

⁴⁰ United Nations Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea, 2008

⁴¹ NOU 2012: 10, 1.4, page 14.

authenticity, the e-signature shall identify the signatory in relation to the electronic transport record and indicate the carrier's authorization of the electronic transport record, cf. art. 38(2). The provision does not make reference to the status of e-signatures under national legislation, since it is the substantive law that give validation to e-communication or commerce in relation to legislation or rules of law and practice.

The principle of functional equivalence is set out in article 9 of the convention, which refers to a what it calls a "electronic transport record". According to the provision such an e-record must contain a method for issuance and transfer of the e-record, an assurance that the record contains its integrity, the manner in which the holder is able to demonstrate that it is the holder and the manner of providing confirmation that delivery to the holder has taken place or that the record has ceased to have any effect or validity, cf. art 9 a-d).

As a functional equivalent to possession of the transferable document, the convention sets out the notion of "exclusive control" over the electronic record. The notions "issuance" and "transfer", referred to in art. 9 (a) of the RR, is further emphasized in art. 1. First paragraph states that "issuance" of a negotiable electronic record in accordance with procedures that ensue that the record is subject to "exclusive control" from its creation until it ceases to have any effect or validity. The notion "transfer" refers to the transfer of exclusive control over the record.

The RR promotes the equal treatment of e-B/Ls and paper B/Ls in its article 7, stating that an electronic transferable record shall not be denied legal effect, validity or enforceability on the sole ground that it is in electronic form. However, second paragraph sets out a consent requirement for the use of e-communication. Thus, one can argue that the RR doesn't fully treat e-communication equal to paper communication. Although the third paragraph emphasizes that such a consent might be inferred from the other persons conduct, it still contributes to promote the view that the two are not fully equal in terms of the convention. Having said this, it doesn't represent a major drawback for the attractiveness of the convention.

The major reason for the conventions lack of success is rather political than legal related. The success of the convention is entirely dependent on the major maritime nations ratifying the

convention. It is highly unlikely to be ratified by the United States and, as other states await the position of the US, they will most likely never enter into force. The rules are unlikely to be sent to the Senate for consideration and approval (U.S. Const. art. 2, § 2, cl. 2) unless they are expected to pass without opposition. Some ports still oppose the rules and apparently have strong spokespersons in the Senate. The objections are to some extent of a constitutional nature, and without going further into detail, it suffices to say that the convention is by most nations viewed as being doomed.⁴² Its principles will however still be guiding and has influenced the model laws and will continue to influence UNCITRALs future work.

⁴² Francesco Berlingieri: *International Maritime Conventions (Volume 2): Navigation, Securities, Limitation of Liabilities and Jurisdiction*, Information Law from Routledge (Abingdon 2015), page 166.

4.7 Bolero International Ltd

In the 1990s the European Unions initiated and funded a research with the goal of establishing a global cross-industry solution to enable the dematerialization of cross border trade. This led to the establishment of the Bolero Association, which quickly gained recognition amongst banks, corporate and logistics memberships across the globe. In its early phase, they incorporated a central registry for all trade related documents of title, like bills of exchange, promissory notes and eventually bills of lading. This generated enough interest to catch the attention of SWIFT, and TT club, which in 1996 entered into an agreement on a joint venture company, Bolero International Limited in 1998. Today they provide a combination of trade finance expertise, technology and legal framework to facilitate digital solutions across the globe.⁴³

Much of the success of Bolero can be contributed to the fundament that was laid by CMI and their rules. Bolero had a relatively easy time replicating the bill of ladings function as receipt and evidence of contract of carriage, as these functions are essentially just recording and transmission of data.

Similar like the CMI rules, bolero seeks to solve the “uniqueness” issue by making the users sign the Bolero Rulebook(BR), a multilateral legal agreement creating a private multijurisdictional legal framework for the users. Further, they use the Bolero Core Messaging Platform(BCMP), based on EDI technology. However, Bolero also introduces a title registry, ran and operated by Bolero(BTR), which is attached to the message platform.

I will now describe in further dept how all these three together constitute their e-B/L-solution.

Under Bolero, the contract of transfer of the e-B/L is consummated when the prospective holder receives the shipper’s message to that effect, communicated through the BCMP that supports the process of sending of the e-B/L from party to party without the holder interacting directly with the application or all the parties having to converge on a single platform.

The BTR is a common user agreement for the users of Boleros E-B/L, that consists of 18 rules, that altogether prescribes the duties and rights for the users and puts legal force behind

⁴³ <http://www.bolero.net/home/company-overview/> (Last accessed in February 2018)

the BTR and BCMP. It ensures that the users all act in accordance with a common set of rules, thus providing legal certainty for their members.

As touched upon previously, there is a tremendous number of rules and customs attached to the use of paper B/Ls built up through decades of mercantile use. We also mentioned that these rules do vary to some degree from jurisdiction to jurisdiction due to legal traditions and legal culture.

The most essential feature of the rule is of course ensuring that no party raises objections of the validity of an electronic message or signature on the sole ground that its sent in electronic form, cf. section 2.2.2, third paragraph of the BR.⁴⁴ Further, paragraph 1 and 2 in section 2.2.2 states that any law, contract, custom applicable that require writing, or signature, shall be satisfied with electronic means.

Further, the Rules regarding the electronic messages are especially suited to Boleros own technology. Unlike the CMI rules which is built around an open network where users can use any messaging platform or technology that fulfills the requirement set forth in the rules, the BR does not operate with such a technology neutral approach. The close relationship between the BR and the Bolero technology provides a more robust and universally applicable rulebook that eliminates the need for individual bilateral agreements between parties, as the rulebook covers every aspect.

The notion of keeping a title registry, is fairly old. In the early history of the bill of lading, before the document was recognized as document of title, it was customary that the ship clerk kept track of the different consignees of the cargo onboard.⁴⁵

It is the title registry that really separates Boleros solution to that of previous ones, like the CMI rules. While the messaging platform replicates the transfer or sending of the document from on party to another, the title registry is attached to the platform, thus always keeping record of the current holder, thus ensuring it uniqueness – that there is only one holder of the

⁴⁴<https://cdn2.hubspot.net/hubfs/326699/Gated%20Files/The%20Bolero%20Rulebook.pdf?submissionGuid=13c30427-1df3-4f88-90a6-e8e10b17e91f> – The Bolero Rule book (Easily accessible by typing a made-up name, email address and company name)

⁴⁵ Before this, it was custom for merchants to travel with their goods to the port of destination. Eventually this became less desirable as the merchant trade advanced and grew more complex, and the merchants stopped travelling with their cargo, instead consigning the goods to a buyer at the port of destination. It then became apparent that one would have keep such a registry – Alan Mitchelhill, Bills of Lading: Law and Practice, Second Edition, Springer, 21. nov. 2013, page 1 and William Porter Bennett, The history and present position of the Bill of Lading as a document of title, Cambridge, 1914, page 6.

document at the time. Further, the registry can only be updated by the current holder, and does not put any further workload on the carrier, which was the one of the main problems with the CMI Rules.⁴⁶

As the Rulebook is only applicable to those parties who are bound by it, transfer of the bill of lading can only be between parties to the Rulebook. So, if one wishes to transfer the e-B/L to anyone outside the system, one immediately encounters a legal as well as technical barrier. The only remedy Bolero offers in such a situation is to issue a paper bill of lading instead, which also require that the private key for the “old” B/L is handed back to the carrier, before a new is issued.⁴⁷ One could argue that such a solution defies the purpose of an e-B/L. However, the time saved by using an e-B/L in the initial face will benefit the final consignee in the end.

It is also possible to do it the other way around, going from an B/L to a e-B/L, for instance if a letter of credit requires an e-B/L to be presented. The quicker the document gets presented, the quicker the beneficiary under the letter of credit gets paid and the goods can be delivered.

⁴⁶<https://cdn2.hubspot.net/hubfs/326699/Gated%20Files/The%20Bolero%20Rulebook.pdf?submissionGuid=13c30427-1df3-4f88-90a6-e8e10b17e91f> – The Bolero Rule book (Easily accessible by typing a made-up name, email address and company name)

⁴⁷ See also Rule 10 (Option to receive a paper document) of the CMI Rules for Electronic Bills of Lading (1990).

4.8 Does the problem lie in the technology itself?

Examining the recent attempts and efforts done to digitize the B/L we can safely say that all are able to facilitate the use of an e-B/L as it is today. However, this was only partly the goal of this investigation, as we also sought to find imperfections or issues that might make potential user hesitant to using e-B/Ls. Having said this, there are a few issues I would like to address, all of which can be blamed on the technology itself, and not the legal frameworks that surround them.

Both Bolero and the CMI rules does secure uniqueness of the electronic document through the use of a common user agreement. However, none of them are able to secure this uniqueness without also attaching a title registry to the messaging platform, either a third-party title registry like Bolero does, or by a register operated by the carrier, like the CMI rules.

Although, Bolero clearly provides a solution that has effectively replicated the functions of a paper B/L, it excludes potential users and limit trade by being a closed member-network. CMI on the other hand is accessible for everyone, but gives the carrier a central role of keeping track of transactions, which places a tremendous and undesirable workload on the carrier.

According to a survey conducted by the UNCTAD⁴⁸, an insufficient infrastructure for the use of e-B/Ls was were among the biggest obstacles that potential users saw for the use of e-B/Ls.⁴⁹

Obstacles to the use of electronic alternative responses (more than one answer possible)	% of respondents
Infrastructure/market/trading partners not yet ready	51
Legal framework is not clear enough or is not adequate	44
Electronic equivalentents are not sufficiently secure	25
Technology and/or switch to electronic environment is too costly	12
Confidentiality concerns	10

⁴⁸ United Nations Conference on Trade and Development
⁴⁹ UNCTAD ‘The use of transport documents in international trade’ (2003) (UNCTAD/SDTE/TLB/2003/3) paragraph 79.

It is interesting to note that the cost of changing over to an electronic system is among the least of concerns for potential users. Miriam Goldsby, an author that have written extensively on the topic of bills of lading for quite some time, cites the research by UNCTAD, and remarks that ‘even once membership is obtained, the user may be trading with non-members, which would prevent the user from benefiting from the investment’.⁵⁰

Hence, we might ask ourselves if there’s any other technology that can remedy these issues.

⁵⁰ Miriam Goldby *Electronic Documents in Maritime Trade: Law and Practice* (Oxford University Press 2013) 11.06. See also Miriam Goldby ‘Electronic bills of lading and central registries: what is holding back progress?’ (2008) 17(2) *Information & Communications Technology Law* 125, 132.

4.9 Blockchain Technology

Blockchain technology is widely known after the introduction of the crypto currency, Bitcoin in 2009. Although, most would only associate blockchain technology with crypto currency, its potential is far greater in reality. The technology ensures an essential feature of currencies; that double spending of one coin does not occur. Bitcoins and other crypto currencies have gained tremendously in popularity the last couple of years and is being recognized and trusted by most financial institutions and the business world in general. The reason for this is that they are capable of ensuring the uniqueness of each bitcoin, to an even greater extent than what is possible with paper currencies, as these can be copied and forged.

Hopefully we can harvest the blockchain technology which was invented to avoid double spending of a bitcoin, to ensure uniqueness of e-B/Ls, on an open peer to peer network, without intermediaries and title registries.

Blockchain is an online ledger, where the existing data cannot be deleted or altered. It consists of a chain of blocks, each block recording the transactions that have been confirmed on a block to block basis. But the blockchain technology is not just about creating ledgers. It also makes it possible to trade tokens online on a P2P basis and hold them without the involvement of intermediaries. As with EDI, each transaction is secured by a digital signature, which ensures that the identity of the transferor is authentic.

Since a B/L, strictly speaking, is not a monetary value like bitcoins, one would have to apply the technology somewhat different. One author on the topic, Professor Koji Takahashi at the University of Doshisha, Law School, suggest that blockchain technology is highly capable of guaranteeing that “tokens” on a blockchain ledger functions like a negotiable document, which entitles the rightful holder to claim performance of the obligation prescribed therein. This would enable the carrier to issue an e-B/L in the form of a token on a blockchain ledger which represents the right to demand delivery of the goods. Since the technology makes it impossible for the record to be altered or the electronic records being copied down the negotiating chain, there is no need for any third party to supervise the transactions to keep track of who the holder is, the record itself would be passed down a negotiation chain, untouched.

Even if Blockchain technology diminishes some of the issues related to closed networks, and title registries, they would still need the support of an applicable legal system. The RR were adopted in 2008, prior to the birth of the blockchain technology.⁵¹ As we have seen, throughout UNCITRALs work with the RR and the MLs, the principle of technology neutrality has been a guiding principle. Although, the RR does not mention blockchain technology, it doesn't necessarily mean that its excluded from the scope of application.

The MLETR provides generic rules that apply to various ETRs, including models based on tokens and distributed ledger or other technology, cf. MLETR art. 1.⁵² Thus, the MLETR facilitates the use of e-B/Ls based on blockchain technology. However, legal recognition of ETRs, does not imply a requirement to use or accept them, instead a consent is required to use an electronic transferable record in general. The consent doesn't need to be expressly indicated or given in any particular form, rather it may be inferred from all circumstances, including parties' conduct. The reasoning behind this is contemplated in the explanatory notes that states that a requirement of explicit consent would create an unreasonable barrier to the use of electronic means.⁵³

4.9.1 Concluding remarks

Blockchain technology allow the trade of tokens on a p2p-system, without any involvement of intermediaries or a central registry. It's not possible to store or copy the entries in the blockchain, but rather the private key to reassign them. The unique features of blockchain based tokens, raise a vast amount of legal question that would go far beyond the capacity of a thesis like this to answer. Having said this, many legal issues have been discussed and written extensively about by Japanese Professor Koiji Takahashi of the university of Doshisha University Law School, which work I recommend deeply, as it offers a unique insight into the matter.⁵⁴

⁵¹ Michael Sturley, Tomotaka Fujita and G van der Ziel The Rotterdam Rules: The UN Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea (Sweet & Maxwell London 2010) para 3.039 states that: 'it appears that the technology needed for a reliable token system is still not available in the market place'.

⁵² http://www.uncitral.org/pdf/english/texts/electcom/MLETR_ebook.pdf - Explanatory Note to the UNCITRAL Model Law on Electronic Transferable Records, Article-by-article commentary.

⁵³ Explanatory Note to the UNCITRAL Model Law on Electronic Transferable Records, Article-by-article commentary

⁵⁴ http://www.uncitral.org/pdf/english/congress/Papers_for_Programme/30-TAKAHASHI-Implications_of_the_Blockchain_Technology_and UNCITRAL_works.pdf - Implications of the Blockchain Technology for the UNCITRAL Works (last accessed 7. May 2018), <https://www1.doshisha.ac.jp/~tradelaw/PublishedWorks/BlockchainTechnologyElectronicBL.pdf> - Blockchain technology and electronic bills of lading (last accessed 27. April 2018)

With principles such as technological neutrality and functional equivalence, the existing works are flexible enough to accommodate the blockchain technology. While there are a few unanticipated issues which the technology raises, they may be dealt with by further developing those works.

Further, we must mention that Bolero has already started working on implementing blockchain technology into their systems.⁵⁵ Although Bolero probably won't get rid of the membership system, it is likely that other companies will utilize the technology to compete with offering a open p2p network based on blockchain technology.

⁵⁵ http://www.bolero.net/pass_the_panacea_the_trade_-_finance_revolution_puzzle/ (last accessed 29.05.2018)
<http://www.bolero.net/the-unstoppable-tide-of-digitisation-in-trade-bolero-at-gtr-asia-in-singapore/> (last accessed 13.05.2018)

5. Conclusion

I'm going to start this concluding chapter with repeating the question we raised initially: What are the reasons for electronic bills of lading not becoming ubiquitous during the last few decades and is there any new developments that might bring change?

Seeking to answer this question, we have embarked on a long journey, examining the document itself, the various e-B/L-solutions, and the legal frameworks available, but also the technology itself, and whether the new blockchain technology could better cater the use of e-B/Ls under these systems.

In the following I would like to highlight some of our main findings and thus try to draw a conclusion. Aside from a general conservatism and skepticism in the maritime industry, the findings of thesis seem to prove that all the current solutions available suffers from various issues that might make potential users hesitant to embrace the use of e-B/Ls.

Firstly, neither Bolero nor the CMI rules is able to ensure uniqueness of the e-B/L without also attaching a title registry to the messaging platform. Although, Bolero clearly provides a solution that has effectively replicated the functions of a paper B/L, it excludes potential users and limit trade by being a closed member-network. CMI on the other hand is accessible for everyone but gives the carrier a central role of keeping track of transactions, which places a tremendous and undesirable workload on the carrier.

Blockchain technology allow the trade of tokens on a p2p-system, without any involvement of intermediaries or a central registry. It's not possible to store or copy the entries in the blockchain, but rather the private key to reassign them. The unique features of blockchain based tokens, raise a vast amount of legal question that would go far beyond the capacity of a thesis like this to answer. Having said this, many legal issues have been discussed and written extensively about by Japanese Professor Koiji Takahashi of the university of Doshisha University Law School, which work I recommend deeply, as it offers a unique insight into the matter.⁵⁶

⁵⁶ http://www.uncitral.org/pdf/english/congress/Papers_for_Programme/30-TAKAHASHI-Implications_of_the_Blockchain_Technology_and_UNCITRAL_works.pdf - Implications of the Blockchain Technology for the UNCITRAL Works (last accessed 7. May 2018), <https://www1.doshisha.ac.jp/~tradelaw/PublishedWorks/BlockchainTechnologyElectronicBL.pdf> - Blockchain technology and electronic bills of lading (last accessed 27. April 2018)

With principles such as technological neutrality and functional equivalence, the existing works are flexible enough to accommodate the blockchain technology. While there are a few unanticipated issues which the technology raises, they may be dealt with by further developing those works. We must also mention that UNCITRALs work on e-commerce in general has been crucial for the process of getting to where we are.

Hopefully this thesis will contribute to the debate around the use of e-B/Ls and serve as an illustration of the various issues that needs to be fixed in order for the use of e-B/L to increase.

Literature list:

- http://www.uncitral.org/uncitral/en/uncitral_texts/transport_goods/rotterdam_status.html (accessed on the 21. April, 2018)
- <https://treaties.un.org/doc/publication/unts/volume%201155/volume-1155-i-18232-english.pdf> - The Vienna Convention of 1969.
- Hans Petter Graver: "Vanlig juridisk metode? Om rettsdogmatikken som juridisk sjanger", Tidsskrift for Rettsvitenskap, 2008
- Falkanger, Scandinavian Maritime Law: The Norwegian perspective
- William Porter Bennett, The history and present position of the Bill of Lading as a document of title, Cambridge, 1914
- Chris Reed, Ian Walden, Cross-border Electronic Banking: Challenges and Opportunities, second edition, published 2014
- https://www.ukpandi.com/fileadmin/uploads/uk-pi/Documents/2017/Legal_Briefing_e_bill_of_Lading_WEB.pdf (accessed in Dec. 2017)
- <https://cdn2.hubspot.net/hubfs/326699/Gated%20Files/Bolero%20Insights%20-%20The%20benefits%20and%20potential%20savings%20of%20digital%20presentations.pdf?submissionGuid=f69fe68e-acfb-43bd-a1df-c92606f5d60b> (accessed easily by typing a made-up name, email address and company name).
- UNCITRAL (United Nations Commission on International Trade Law): Model Law on Electronic Commerce with Guide to Enactment 1996.
- Diedrich, A Law of the Internet? Attempts to Regulate Electronic Commerce, 2002 Journal of Information Law and Technology and Polanski, A New Approach to Regulating Internet Commerce, 2002 Electronic Communication Law Review, page165. Available here: http://www2.warwick.ac.uk/fac/soc/law/elj/jilt/2000_3/diedrich
- Miriam Goldby, Legislating to facilitate the use of electronic transferable records: A case study, Reforming the law to facilitate the use of electronic bills of lading in the United Kingdom
- Francesco Berlingieri: International Maritime Conventions (Volume 2): Navigation, Securities, Limitation of Liabilities and Jurisdiction, Information Law from Routledge (Abingdon 2015)

- <https://cdn2.hubspot.net/hubfs/326699/Gated%20Files/The%20Bolero%20Rulebook.pdf?submissionGuid=13c30427-1df3-4f88-90a6-e8e10b17e91f> – The Bolero Rule book (Easily accessible by typing a made-up name, email address and company name)
- Alan Mitchelhill, Bills of Lading: Law and Practice, Second Edition, Springer, 21. nov. 2013, page 1 and William Porter Bennett, The history and present position of the Bill of Lading as a document of title, Cambridge, 1914,
- UNCTAD ‘The use of transport documents in international trade’ (2003) (UNCTAD/SDTE/TLB/2003/3)
- Miriam Goldby Electronic Documents in Maritime Trade: Law and Practice (Oxford University Press 2013) 11.06
- Miriam Goldby ‘Electronic bills of lading and central registries: what is holding back progress?’ (2008) 17(2) Information & Communications Technology Law 125, 132
- Michael Sturley, Tomotaka Fujita and G van der Ziel The Rotterdam Rules: The UN Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea (Sweet & Maxwell London 2010)
- http://www.uncitral.org/pdf/english/congress/Papers_for_Programme/30-TAKAHASHI-Implications_of_the_Blockchain_Technology_and UNCITRAL_works.pdf - Implications of the Blockchain Technology for the UNCITRAL Works (last accessed 7. May 2018),
- <https://www1.doshisha.ac.jp/~tradelaw/PublishedWorks/BlockchainTechnologyElectronicBL.pdf> - Blockchain technology and electronic bills of lading (last accessed 27. April 2018)