

# Commercial Law in the Information Age

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## 1 Introduction

It was my interest in technology that led me to computers and law, legal informatics or whatever we prefer to call this field of law. My late friend and colleague professor Jon Bing proposed electronic payments as an interesting field of study. I was soon introduced to IRI Stockholm and have had a fruitful and lasting cooperation with researchers in Stockholm since then. Professor Roy Goode, then at Centre for Commercial Law Studies at Queen Mary College, London, later at Oxford University, taught me, indirectly through his example and approach, rather than directly, that technology is a tool and that we have to go to the core legal issues of the transaction for which the tools are used, rather than to study the tools as such. The title of this article is derived from the title of Roy Goode's book "Commercial Law".<sup>1</sup>

I use the term "commercial law" the same way as Roy Goode:<sup>2</sup>

"that branch of law which is concerned with rights and duties arising from the supply of goods and services in the way of trade."

But commercial law is not a clearly defined concept:<sup>3</sup>

"Its scope is not clearly defined, and no two textbooks adopt the same approach as to the spheres of commercial activity that ought properly to be included in a work on the subject. There are indeed, some who question whether commercial law is a subject at all."

I have never found it interesting to draw a border around a legal discipline. As long as we know what the core is, I see no reason to discuss if borderline topics should be included in this or that discipline. Various disciplines can bring in different perspectives and complement each other more than they compete. So, I am not going to discuss what is and what is not commercial law.

The information age. We use a more efficient information technology. The old information technology, pen & paper, leather bound protocols, filing cabinets etc have severe limitations. The core concept of the new technology is that information is liberated from the physical data bearers. We can transfer and process data without sending a physical document. We can transfer, and process higher volume of data and we can do it much faster.

All commercial transactions, as well as many consumer transactions, are to a very large extent information exchange and information processing. Changes in the information processing have important legal implications for the transactions in which the information is applied. I will discuss some of them in this article.

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1 The book is now available in a 5th edition, with the title "Goode on Commercial Law" by Ewan McKendrick, from 2016. When I am referring to the book, I am referring to the 4th ed, from 2010, also by Ewan McKendrick, which is the version I have. No Norwegian library had a more recent edition than the 3rd edition when I was searching for it.

2 Goode on commercial law, p. 8.

3 Ibid, p.9.

Many transactions are in practice nothing but information processing. When we are dealing with the most solid of all items, real estate, the transactions are nothing but information processing. There is no delivery truck showing up at our door with the land or house we have bought. We only update the relevant information on ownership. Other prominent examples are the financial markets. More markets than we think are in reality financial markets. The futures markets, where people buy or sell for future delivery at an agreed price, are mainly financial markets. In an oil producing country like Norway, we often get news about the oil prices, and for us high prices are good news. We hear that the price for a given quality of oil, for delivery in for instance three months, are xx USD per barrel. When investors are buying and selling, the end result can be something like this: A shall deliver oil to B, B shall deliver oil to C, and C shall deliver oil to A at a previously agreed price. Instead of shipping the oil, they set off oil against oil, calculate the price differences and pay net balance. No oil is delivered.

I have seen figures saying that only 5% of the oil sold is actually delivered. I do not have the source at hand, but the exact figures are not important in our context. Other commodity markets, like steel, copper, wheat, coffee, cocoa, cotton etc, work the same way. They are to a very large extent financial markets.

Information is in itself a commodity. It can be personal data, or information products like media, movies, recorded music, etc. I will not discuss these markets.

## 2 Formalities

### 2.1 Primary Formal Requirements

If we only “electrify the paper”, by sending documents as attachments to email instead of by traditional snail mail, much will remain the same. In the old days, meaning before the year 2000, it was an issue if a valid contract could be concluded with electronic means. In some countries there was a requirement for a “written and signed” document, for at least some transactions. The transactions could not be concluded with electronic means. Formal requirement for the transaction as such, are what I prefer to call *primary formal requirements*.

This was one of the obstacles that had to be removed, to facilitate electronic commerce. Now the *ecommerce directive*<sup>4</sup> art 9, subparagraph 1, says:

“Member States shall ensure that their legal system allows contracts to be concluded by electronic means.”

There are a few exceptions, in paragraph 2. The most important exceptions are:

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4 Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market ('Directive on electronic commerce')

- (a) contracts that create or transfer rights in real estate, except for rental rights;
- (b) contracts requiring by law the involvement of courts, public authorities or professions exercising public authority;

As there are no restrictions as for which contracts “the involvement of courts, public authorities or professions exercising public authority” can be required, this can be an important loophole. The notaries succeeded in protecting their interests in the process.

We may discuss how “in writing” and “signed” should be interpreted, “In writing” can mean expressed with letters, but not necessarily on paper, for instance in an electronic message. And it can be “signed” with an electronic signature. When we legislate technology, the legislation tends to be very outdated when technology changes, and it ends up causing more problems than it solves. One example is CISG<sup>5</sup> art 13:

“For the purposes of this Convention “writing” includes telegram and telex.”

It is a similar wording in the list of definitions, art 1 no 8, in the “Hamburg rules”.<sup>6</sup>

The Hamburg rules are from 1978 and CISG from 1980. At that time, telex was the most common telecommunication in international trade. In the 1980s telex was superseded by telefax. Telex is still in use in some markets but is of minor importance. I do not know if telegram is still in use. It is no longer in use in Norway. When searching for information on telegram, I mainly get information on an instant messaging service for smartphones and other devices, that seems to have only the name in common with the traditional telegram service.

We do have legislation on other aspects of the use of telegram in articles 32 in the harmonised Nordic laws on contract. Telegram was modern communication technology when these laws were enacted at the beginning of the 20<sup>th</sup> century.

With legislations such as CISG art 13 and the article 32 in the Nordic contract acts, what about more modern electronic messaging, including systems where the messages are received and processed by a computer, without human interference? Should the telex and telegram-rule apply? I will not go into these issues.

When legislating for new technology, we must address the functions performed by the technology in a way that is technology neutral, not the technology as such. A more workable solution for defining “writing” is found in UNCITRAL Model Law on Electronic Transferable Records<sup>7</sup> (MLETR) art 8:

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5 United Nations Convention on Contracts for the International Sale of Goods (Vienna, 1980)

6 United Nations Convention on the Carriage of Goods By Sea, 1978

7 UNCITRAL Model Law on Electronic Transferable Records (2017), adopted 13 July 2017, “[www.uncitral.org/pdf/english/texts/electcom/MLETR\\_ebook.pdf](http://www.uncitral.org/pdf/english/texts/electcom/MLETR_ebook.pdf)”.

“Where the law requires that information should be in writing, that requirement is met with respect to an electronic transferable record if the information contained therein is accessible so as to be usable for subsequent reference.”

In MLETR art 9, signature is defined as:

“Where the law requires or permits a signature of a person, that requirement is met by an electronic transferable record if a reliable method is used to identify that person and to indicate that person’s intention in respect of the information contained in the electronic transferable record.”

In the Hamburg Rules art 14 no 3, the requirement for a signature on a Bill of lading is defined like this:

“The signature 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.”

A signature that is printed in facsimile or stamped, add no security. It will have a mere symbolic and decorative effect.

In EU, electronic signatures are now regulated in the the eIDAS Regulation<sup>8</sup> that came into effect in 2016, superseding the now repealed signature directive.

Another example of a functional approach is the Infosoc-directive<sup>9</sup> art 3 number 1:

“making available to the public of their works in such a way that members of the public may access them from a place and at a time individually chosen by them.”

The current, practical meaning of this phrase is making a work available on the Internet. But no one knows if the Internet, as we know it today, will be the dominating network in 25 or 40 years. If the directive had used the wording “making available on the Internet”, we could run into the same problem as with telex and telegram: A regulation of the technology of the day before yesterday.

The wording in the Infosoc-directive is not elegant, but it covers the functions. I do not have a better wording.

It is a goal to have legislation technology-neutral. The CISG art 13 is an example of legislation that is technology specific. MLETR is at the other extreme, with requirements for “a reliable method is used”, without further specifications. If we try to include everything, the result is often that we end up saying nothing. When the wording is that general, it is almost empty.

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8 Regulation (EU) No 910/2014 of The European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC.

9 Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society.

## 2.2 *Secondary Formal Requirements*

Even if the primary transaction is valid when concluded by electronic means, there may be derived or secondary transactions which require a paper document: Custom clearing, insurance, financing, accounting, taxation etc. The situation will typically be that there have always been paper documents, and they are taken for granted. No one has thought of alternatives. I will include a little story from the infancy of ecommerce.

A Norwegian researcher, doing research on ecommerce, travelled to a conference in Stockholm. She was eager to test SAS' then recently introduced electronic tickets. Everything went fine, until she on her way home went into the duty-free store at Stockholm Arlanda airport. She had picked the items she wanted to buy, but when she should pay, they asked for her boarding pass. She did not have a boarding pass, and they refused to let her buy duty-free items. Knowing how important duty-free goods are for travelling Norwegians, a system that will not allow us to buy our duty-free quota, is bound for failure. It did not take long before this was solved. But as is often the case: They had not thought about this in the planning, and it came as a surprise after the system was implemented.

Norway is one of the few countries where there are no requirements for a contract that create or transfer rights in real estate to be in writing. But if the title or another right in the estate shall be registered in the land registry, which is necessary to get a legally protected title or right, then a document is required. A valid contract transferring a right that cannot be protected, has limited practical value.

But even if we have an electronically transferred and stored document in a traditional form, what we have is a copy of a document, not an original. If we apply for a loan in a bank, banks, at least in Norway, will accept that we sign a letter of credit, scan it and send it to the bank as a pdf-file. This can be a valid contract. But it cannot be a negotiable letter of credit. For a document to be negotiable, we must have the original.

If we conclude a credit agreement by electronic means, and sign at with an electronic signature, we will no longer have a letter of credit. A letter of credit may not be required for the primary transaction, the loan. But at least in Norway, there were formal requirements for a credit agreement to be enforceable. The debtor could accept that a letter of credit could be enforced in collection without a court decision, given that it was confirmed by two witnesses. It is not practical to have an electronic transaction and an electronic signature confirmed by witnesses. The requirement for witnesses was relaxed, so that one witness was enough if the witness was a lawyer, and witnesses were not required if the creditor as a bank or another credit institution. But it still had to be a letter of credit, with explicit acceptance of the enforceability.

These requirements survived three major legislative revisions. In 1987, Norway enacted legislation on securities registry, to facilitate a "paper-less" securities market. The legislation facilitated negotiability for electronic bonds, i.e. electronic, registered credit instruments. But the rules for enforceability and collection were not amended, because no one thought about it. In 1992, we got a new enforcement act, but the old rules were upheld for credit instruments. In

2000 there was a major revision initiative, to remove legal obstacles for electronic commerce. But the enforcement act was seen as procedural law and was as such excluded from the reform. It was not until 2017 that the requirement for a letter of credit was removed from the provisions in the enforceability act. Now the legislation says, “credit agreement”, not “letter of credit”. The debtor still has to explicitly accept enforceability, but it does not have to be in the form of a letter of credit.

It will still take time to clean up the legislation and procedures based on the assumption that there is a paper document representing the primary transaction. But we can believe that the more important issues are dealt with.

### **2.3 *Regulated Documents***

A traditional way of regulating transactions has been to specify a document that meets certain criteria and regulate the use of this document. When the document is used, the regulation applies. It is an indirect approach to regulating transactions. Well known examples are checks, promissory notes, letters of credit (including negotiable letters of credit), bills of lading, etc.

Many of these documents were useful. The rights, including title, was represented by the documents. When the documents were transferred, the rights were transferred. From a legal point of view, it was simple as long as the documentary rules were established. The law of moveable property could be applied to the transaction. The form was the legal version of the magicians’ magic formulas. Magic happened when they were used.

For some, we may change the regulation to facilitate electronic transactions. Bills of Lading exist in electronic form, at least in the name. We may argue if they really are bills of lading or mere electronic alternatives to bills of lading, but I will not go into this question.

But for many of the transactions for which we used regulated documents, we have found alternatives. In MLTER it is opened up for the countries to exclude certain transactions, and in the document are mentioned are documents regulated by Convention Providing a Uniform Law for Bills of Exchange and Promissory Notes (Geneva, 1930) and of the Convention Providing a Uniform Law for Cheques (Geneva, 1931), (the “Geneva Conventions”).

I do not know to what extent Bills of Exchange and Promissory Notes are still in use. In Norway they are still in some, but little use, mainly in international transactions, according to bank sources. But I do not have figures. In countries where there are efficient funds transfer systems also for consumer transactions, including debit cards at point of sale, cheques are rarely used. In Denmark the banks stopped cashing cheques from other banks from 1 January 2017. In Norway cheques may still be used but are only used in very small numbers. In some countries they are still in use, but the usage is declining. In France, where many people still use cheques, more and more shops are posting signs saying that they no longer accept cheques. Often the cheques are not processed according to the cheque rules. The data are collected at the point of sale, and the documents will not follow the transactions through the whole process. It is the data, not the documents that are processed. This is called cheque truncation.

When we have effective, widespread and reliable alternatives, we can let the documents, and then the regulations, follow the route of the dinosaurs into extinction. We do not have to repeal the conventions or national legislation. They will die with the dinosaurs they used to regulate.

### **3 Subjective Criteria: A Computer Knows and Understands Nothing**

A computer does what it is programmed to do. A lot of data may be stored in the computers, and the computer may analyse the data in various ways, including finding patterns in the data that correlates with certain actions. But the computer has no knowledge and understands nothing.

According to the harmonised Scandinavian contracts acts, from the beginning of the 20<sup>th</sup> century, an offer can be revoked if the revocation order reaches the offeree before or at the same time as the moment the offer comes to the offeree's knowledge. If the offer is received and read by a human, we can determine when the offer came to his or her knowledge. But if the offer is received by an automated system, which act upon the offer automatically if the specified conditions are met, without anyone knowing, what is the dead-line for revocation of the offer?

"Knowledge" is a subjective criterium that cannot be applied to a computer. A solution could be to implement the rules in CISG part II, on Formation of the contract, articles 15 and 16, for more than contracts for international sales of goods

Art 15 (2):

"(2) An offer, even if it is irrevocable, may be withdrawn if the withdrawal reaches the offeree before or at the same time as the offer."

Art 16

"(1) Until a contract is concluded an offer may be revoked if the revocation reaches the offeree before he has dispatched an acceptance."

The Nordic countries had filed declarations saying that CISG part II on formation of contract did not apply in these countries. Their positions have changed, and CISG part II now applies to international sales of goods, excluding sales between the Nordic countries. But the general principle in the contract acts remain for other contracts: Domestic and intra-Nordic sales, as well as international contracts that are not for sale of goods.

As a computer has no knowledge, a computer cannot act in good or bad faith, were this may be relevant for the validity of a contract, liability etc.

When contracts are concluded by automated systems, subjective criteria such as "knowledge" and good/bad faith are not workable solutions.



## 4 From Two-Party to Multi-Party Transactions

### 4.1 From Two-Party to Three-Party Transactions

If we buy moveable property and pay with cash, the whole transaction can be settled between the two parties: The seller and the buyer. Moveable property can include documents representing certain rights. The seller hands over the goods with one hand and takes cash payment with the other. The deal is done, and everything is settled at the same time.

It is not very realistic that they will use a third-party service in such a situation. But we can add registration of the transaction. If it is a real estate transaction, the seller will probably sign and hand over a document, that shall be registered in the land registry.

Such registries can be a mere information system, where traders are storing evidence. The registration has in itself no legal signification. Many services are only established to give practical solution and are not meant to have any legal signification. But they will at least store evidence, even if they were not designed for this purpose.

The parties can agree to be bound by the registered information. There are, to my knowledge, three systems in operation for “Electronic bills of lading”. They are Bolero, essDOCS and E-Title.<sup>10</sup> They are all contract-based. The parties accept the “club rules”, which give the information held by the systems the same effect as a bill of lading. Bolero and essDOCS are based on information held in a central registry, E-Title is a peer to peer system.

The disadvantage of a contract-based system, is that only those who are party to the contract, will be bound by the information in the system. The mentioned systems for electronic bills of lading have a hybrid solution, where a paper bill of lading can be issued, for instance when the cargo is sold to a party who is not member of the club.

If the system is based on legislation, everyone will be bound by the information, depending on the provisions in the legislation. From the research I have done for this article, I have found that the systems for land registration can vary a lot from country to country. But at least in the Nordic countries, it is based on legislation and the information in the registry are binding, as for title and other rights in the property. I will not discuss these registries any further.

These third parties are often referred to as Trusted Third Parties (TTP). In the eIDAS Regulation, they use the term ‘trust service’, as defined in art 3 no 16, ‘trust service provider’ art 3 no 19, and they also use “qualified trust service” and “qualified trust service provider”. I know it is a lost case when the wording is part of the regulation. But I still find these terms meaningless, bordering on absurd. I may trust someone, based on previous history, supervision, liability, financial resources, guarantees, insurances, etc. They offer what can lead us to trust them. But they do not offer trust, or a trust service.

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<sup>10</sup> For an overview, see UK P&I Club, Legal briefing, electronic bills of lading. “[www.ukpandi.com/fileadmin/uploads/ukpi/Documents/2017/Legal\\_Briefing\\_e\\_bill\\_of\\_Lading\\_WEB.pdf](http://www.ukpandi.com/fileadmin/uploads/ukpi/Documents/2017/Legal_Briefing_e_bill_of_Lading_WEB.pdf)”.

#### 4.2 *From Two-Party to Three Two-Party, to Multi-Party Transactions*

We can start with an everyday example, that will be consumer- more than commercial law. We go to the grocery store and buy food for the next few days. At the checkout, we do as most Norwegians do: We pay with our debit card. We encounter the most important of all transaction: Payment. At least one part of any commercial or consumer transaction is payment. We also get paid salary, we pay taxes etc. When we use a debit card for payment, we initiate a bank transfer.

When we have “money in the bank”, there is no drawer with our name in the bank, filled with banknotes and coins. The bank has borrowed our money and owes us money. When we pay via a bank, we order the bank to credit the specified account for the benefit of the payee and debit the payers account for the same amount.

The transaction can be routed two ways: The payer sends the payment order to the bank, ordering the bank to do the transfer This is called *credit transfer*. Giro and most other bank transfers are credit transfers. Or the payer can give the payor an advice, or authority to collect money from the payer’s account the bank. This is called *debit transfer*. Cheques and direct debit are debit transfers.

On-line payment at the point of sale does not really fit these categories. The payment order is sent via the payee’s terminal, but the order is sent and authorised by the payer.

If the payer and payee are using the same bank, the result is that the bank owes a bit more to the payee, and a bit less to the payer. But this is not a three-party transaction. The execution of the payment order and debiting of the payer’s account, and the crediting of the payee’s account are two separate, but interdependent transactions. This will become clearer if there are more than one bank in the transaction.

We can use this example. I am using the Norwegian bank DNB, and I am shopping in a shop that has an account with the bank Nordea. When I order a payment, I cannot just say debit my account in DNB and credit the shops account in Nordea. My bank will send a payment order to Nordea, ordering them to credit the given account, and debit DNB’s account with Nordea. DNB will debit my account, and credit Nordea. The result will be an imbalance between DNB and Nordea, which will have to be cleared and settled. I have a contractual relationship with my bank, and the payee has another contractual relationship with Nordea. The balance between DNB and Nordea will eventually be settled via their accounts with the central bank. This will give us four interdependent, but separate transactions.

#### 4.3 *Payment Clearing, Netting and Settlement*

I will introduce the concepts of payment clearing, netting and settlement here, which we will need to understand a bit further down the road. I will start form the example where I used my debit card issued by the bank DNB to pay to a shop that uses the bank Nordea. The transaction lead to an imbalance between the two banks. During the day, there will be thousands of such transactions, and there will be transactions the other way: Customers using debit cards issued by Nordea

to pay in shops with accounts in DNB. And there are more banks than the two I mentioned. And there are other payments, initiated with other payment instruments. There will not be a payment from one bank to the other for each such transaction. The transaction costs will be too high.

The transactions from a given period will be summed up. It can be done once a day, or several times during the day. The net balance between the banks are calculated in the clearing process. At the end of the day, DNB owes money to Nordea, or vice versa. Then the net balance is paid, which is the settlement. A large number of transactions are settled in one interbank payment.

Usually the net balances between each pair of banks that are participating in the clearing, are calculated. The next step is to calculate the net-net balance: Some banks have to pay to the pool of banks in the clearing, others will receive money. I will not go into details about this process.<sup>11</sup>

Before the settlement is completed, there are open credit balances between the banks, which give credit and liquidity risks. If the money is made available to the payee before the settlement, the payee's banks extend an unsecured, short time credit to the payee. As long as the amounts of money at stake are not too high, the risks are acceptable. Our grocery shopping will not lead to risks the banks cannot handle.

When a bank calculates its clearing position, and thus the amount of money needed on the clearing account to settle its net balance, it will include payment due from other banks. If one bank fails to pay, the other banks may not have sufficient funds on their clearing accounts. If one fails, we may have a domino-effect, known as systemic risk. We will come back to systemic risk in paragraph 7.3.

In the *Report of the Committee on Interbank Netting Schemes of the Central Banks of the Group of Ten countries*,<sup>12</sup> published by Bank for International Settlements (BIS), is formulated six principles for interbank netting schemes:

- I. Netting schemes should have a well-founded legal basis under all relevant jurisdictions.
- II. Netting scheme participants should have a clear understanding of the impact of the particular scheme on each of the financial risks affected by the netting process.
- III. Multilateral netting systems should have clearly defined procedures for the management of credit risks and liquidity risks which specify the respective responsibilities of the netting provider and the participants. These procedures should also ensure that all parties have both the incentives and the capabilities to manage and contain each of the risks they bear and that limits are placed on the maximum level of credit exposure that can be produced by each participant.
- IV. Multilateral netting systems should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an

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11 A good overview is given in the "Report on Netting Schemes", known as the Angell report form 1989, published by BIS. "[www.bis.org/cpmi/publ/d02.pdf](http://www.bis.org/cpmi/publ/d02.pdf)".

12 "[www.bis.org/cpmi/publ/d04.pdf](http://www.bis.org/cpmi/publ/d04.pdf)" p. 3-4.

inability to settle by the participant with the largest single net-debit position.

- V. Multilateral netting systems should have objective and publicly-disclosed criteria for admission, which permit fair and open access.
- VI. All netting schemes should ensure the operational reliability of technical systems and the availability of back-up facilities capable of completing daily processing requirements

The committee was chaired by Alexandre Lamfalussy, general manager of BIS. The report is often referred to as the Lamfalussy-report, and the principle the Lamfalussy-principles. There is also another report known as Lamfalussy report, the EU-report “Regulatory process in financial services”,<sup>13</sup> which I am not going to cover.

The Lamfalussy-principles are specifically targeted at multilateral netting, but at least the principles I, II, V and VI could be adopted to service infrastructures in general. I have not often seen analyses of “legal basis under all relevant jurisdictions”. Without this, it is not possible to have a clear understanding of the risks.

For high value payments, such as we may have in the commercial and even more in the financial markets, the risks may be too high. For high value transactions, speed and security is important. The payee wants to have the money available at the same moment as they are sent, but the payee’s bank will not extend an unsecured credit for the large sums of money, not even for a few hours. On the other hand, these transactions are not as price sensitive as the low value, high volume transactions.

High value transactions are usually settled one by one in real time, in what is often referred to as “gross settlement”, thus avoiding the credit-and liquidity risks in the net clearing.

#### **4.4 *UNCITRAL Model Law on Electronic Transferable Records (2017) MLETR***

I have already mentioned this model law, adopted 13 July 2017. The objectives are explained in the Explanatory note to the model law, paragraph 4:

“Transferable documents and instruments are essential commercial tools. Their availability in electronic form may be greatly beneficial for facilitating electronic commerce in international trade as this could allow for their faster and more secure transmission, among other benefits. Electronic equivalents of transferable documents and instruments may be particularly relevant for certain business areas such as transport and logistics, and finance. The introduction of electronic transferable records may also offer an opportunity to review existing commercial practices and introduce new ones. Moreover, a fully paperless trade environment may not be established without their use.”

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<sup>13</sup> [“ec.europa.eu/info/node/11713/”](http://ec.europa.eu/info/node/11713/).

I agree that we should be able to use transferable instruments in electronic form. But the model law gives a very rudimentary legal framework. The main provision is art 7, 1:

“An electronic transferable record shall not be denied legal effect, validity or enforceability on the sole ground that it is in electronic form.”

The criteria in MLETR are often vague, with wording like “reliable method”, without further specification.

In transport and finance we have had computerised systems with a kind of “transferable documents” for a long time. I do not find “transferable documents” a good expression when there are no documents, as is often the case in the financial sector. But it may work for hybrid systems, like the systems for electronic bills of lading.

MLETR is meant to be technology neutral. It is said in the explanatory text, paragraph 18:

“The Model Law provides generic rules that may apply to various types of electronic transferable records based on the principle of technological neutrality and a functional equivalence approach. The principle of technological neutrality entails adopting a system-neutral approach, enabling the use of various models whether based on registry, token, distributed ledger or other technology.”

Token-based technology is the technology used for the non-successful attempts with electronic money. Distributed ledger is a generic term for blockchain and similar technologies, mainly known from cryptocurrencies.

The MLETR is a “one size fits all” solution. I am sceptic to address these issues on general and high level as this. MLETR addresses obstacles to electronic commerce. As long as electronic transferable records are denied legal effect in some countries, this will prevent contract-based clubs for electronic trading, like we have in shipping. But it does not give much guidance as to how to set up these systems.

It is a model law and will have no legal effect before legislation based on the model law is enacted in a number of countries, or maybe in the EU. It remains to be seen if and how it will be followed up.

#### **4.5 *Models for Representing Title and Rights***

There are basically three models for systems representing title and rights.

The basic model is possession, the model for most moveable property. We can have symbols, normally documents, representing the title or the rights. The documents have traditionally been in the form of paper. A token-based system will be a kind electronic document.

Another model is to notify the party who shall perform, it could be the debtor or the carrier, about who is entitled to what shall be delivered. This is the model used for non-negotiable letters of credit under the Nordic laws, and it is also applied to credit not formalised by letter of credit. In Norway it is also applied

for life insurance policies. Some early pilots for electronic alternatives to bills of lading were based on this principle. The carrier was notified about changes in title to the cargo.

This is a workable solution as long as it is only a question of who is entitled to an undisputed performance. For a more complex set of rights, it may not be a good solution. A bill of lading has these three different functions:

- a contract of carriage of goods.
- a receipt for cargo accepted for transportation,
- a document of title that must be presented for taking delivery at the destination.

As a bill of lading is a contract of carriage to which the carrier is party, it cannot be the carrier who hold the definitive, binding version of this contract. The carrier is the one who should give the receipt for the cargo, and it cannot be the carrier who holds the receipt. It is only a good solution as for the title to claim the cargo at the destination.

For credit it can be a credit agreement telling the amount and other conditions, which can be presented as evidence in case of at dispute about the content of the obligation, and notification only affect the entitlement, here who is the creditor to receive payment.

The third model is a third-party registry, known from land registry and several securities markets. It can be a central registry, which is the most common model, or decentralised with decentralised ledgers, as for blockchain. Many “nodes” are keeping copies of the database and confirm transactions. I cannot see this as an efficient solution, and it is very difficult to draft legislation as long as no parties are identified.

When communication was slow, registration was not a workable solution in markets with high transaction speed and high volume. Documents could pass from hand to hand, and the law of moveable property could be applied to the transactions: The rights were transferred, and the transaction completed when the transferee got possession of the document. There had to be specific legislation supporting the transactions, for instance to have negotiability.

The main disadvantage of documents is that they must be handed over. As long as the parties are at the same place at the same time, this is not a problem. But if the parties are at different places, for instance when shares in a Norwegian company is sold from an investor in Stockholm to an investor in New York, we get a problem. To send the documents takes time, it is expensive and there are risks involved.

With computer-based system and telecommunication, it is faster, cheaper and more secure to send messages and update information systems (registers), than to transport documents.

The problem could be dealt with in two ways: Immobilisation or dematerialisation. Both are based on registration. Immobilisation means that the documents or other assets are deposited, but not moved. A registry telling who owned the deposited assets was maintained. Legally, it was still the documents

that represented the rights. From a legal point of view, it was an easy solution. No legislation had to be changed. But it was just another layer on top of the document-based system, and a half-way solution. To take a full step into the modern world, it was necessary to get rid of the documents. They had to be dematerialised. The registration as such represented the values.

#### **4.6 *Trading Systems and Right Registry***

The electronic securities systems in Denmark and Norway were set up as combined trading systems and rights registries. I was very much involved in drafting the legislation and setting up the system in Norway. In retrospect, I can only say: We did not know that we were doing. On the other hand, the system has been running for more than 30 years, without any major problems.

I cannot answer for Denmark, as I was not involved in the preparation of the Danish system. But the Norwegian legislation was to a large extent modelled on the Danish legislation, and the systems in Norway were based on the Danish systems. These issues were not discussed in the preparatory documents in Denmark, so my guess is that they did not understand them either.

Trading, where the parties enter into agreements for buying and selling securities, are very different from registration of titles etc when the transactions are settled. If the systems are integrated, the functions should at least be clearly separated.

### **5 *Deterritorialisation and Reterritorialisation***

#### **5.1 *Deterritorialisation***

Above in paragraph 4.1 I used an example with a two-party transaction. We can make this a securities transaction. We can rewind the time and pretend that we are before 1984 and dealing in Danish bonds. 1984 was the year Denmark switched to a paperless bond-market. The parties could meet anywhere and conclude the transaction. But they had to be in the same place at the same time.

In a computer and telecom-based market, the buyer and seller can be anywhere, as long as they have a telecommunication connection. One party can be sailing in the Pacific, the other could be sitting in Base Camp near Mount Everest, waiting for the weather conditions to be suitable for climbing.

The transaction, or at least a part of it, has been deterritorialised.

#### **5.2 *Reterritorialisation***

It is a paradox that the deterritorialised transaction at the same time will be more strongly linked to a specific territory, which may not be the same territory where the parties are. I am in France when I am writing this. If we use the pre-1984 Danish bond example, I could have met with for instance an Englishman, and done the transaction here in France. We could agree on a price in British Pounds

(GBP), French Francs (the Euros did not exist in 1984), or any other currency, and settle the payment in cash here in France. There were of course also ways to do transactions at distance, but I will not go into that.

Today, we cannot do this. We can make the agreement. But when we settle, we must send a message to the Danish securities registry, VP (Værdipapircentralen), ordering them to transfer the bonds. If we were doing the paper-based transaction here in France, the transaction would probably be governed by French law, unless we agreed to do the transaction under another country's law. We no longer have this choice. The securities' side of the transaction will be settled in Denmark and will be governed by Danish law. We cannot contract out of that situation. The transaction has been reterritorialised.

We can make it even more complicated. The payment will be cleared and settled in the country of the currency, under the law of this country. If the Englishman and I today had agreed on a transaction in Danish bonds, to be paid in GBP transferred to the sellers account, the securities' side of the transaction would be governed by Danish law and the payment side of the transaction by English law. It could still be part of the transaction that would be governed by French law, or the law of our choice. But it is starting to get complicated.

It also gets complicated at an operational level. To get delivery vs payment, the two systems must be synchronised so that payments and securities are released at the same time.

It we should be in the home country of both transactions, for instance trading in Danish bonds in Denmark with payment in Danish kroner (DKK), there should be no major problems. But if the transaction as a whole is under three different jurisdictions, governed by the laws of three different countries, then we may be up for a few unpleasant surprises.

Some banks learned a lesson from this in 1986. It was the time when Mohammad Gadhafi was really the bad guy, short time after the Lockerby bomb on the Pan Am flight. 8 January 1986 the then president in USA, Ronald Reagan, issued an executive order, ordering all Libyan state deposits in US banks to be frozen.

Many large USD deposits are done in banks outside USA, in what is known as the Eurodollar market. For USD deposits in US banks, there must be paid a deposit insurance premium, also for deposits far above the limit for any deposit insurance coverage. When the USD is deposited outside USA, no such premium has to be paid, which again means that the depositor can get a slightly higher interest.

The Libyan Arab Foreign bank had two such deposits in the US owned banks' subsidiaries in London, Manufacturers Hanover Trust and Bankers Trust. 300 mill USD in one bank, 200 mill USD in the other. Sums worth fighting for. They had account agreements saying that the money should be transferred to a trading account in New York in the daytime, New York time, and transferred to London over-night. This is a quite common arrangement, as it is the over-night balance that is the basis for calculating the deposit insurance premium.

In UK, they could not accept an extraterritorial application of a US executive order. The banks were US owned but were operating in UK under UK law. The US answer was something like this: We do not interfere in what banks are doing in London, we only stop the clearing in New York.



In the cases *Libyan Arab Foreign Bank v Bankers Trust Co* [1989] Q.B. 728 and *Libyan Arab Bank v. Manufacturer Hanover Trust* ([1989] 1 Lloyd's Rep 608) the courts discussed the choice of law issue and concluded that the contract was governed partly by US/New York law, partly by UK law. It was a rather complicated situation, as it would be a criminal offense under US law to transfer the money, and a clear breach of contract under UK law not to transfer the money. There was a way out of this situation. The Libyan Arab Foreign bank could sue the US owned banks in UK for breach of contract, and the court could award damages denominated in GBP, which the court did. US authorities could not interfere with a GBP transfer in London. The end result was that the US authorities gave license to the transfers.

The situation came as an unpleasant surprise to the banking business, and it illustrates a problem relevant for many other businesses: A transaction may involve a party in a third country. This is the situation that affect people trying to transfer USD to Cuba. Due to the US embargo on Cuba, transfers to Cuba will be stopped in New York. There are large amounts of USD on frozen accounts in New York, money that were meant to be transferred to Cuba. If you shall transfer money to Cuba, use Euros, Canadian dollars, Swiss Francs or any other currency than USD.

In complex transactions, at least transactions of some value, we need to know in which countries each part of the transaction will take place, if it will be under this countries' jurisdiction and law, and how that may affect the transaction.

The first of the six Lamfalussy-principles for multilateral netting, referred above in paragraph 4.3, could with minor modifications be adopted to many systems for global trading:

- VII. "Netting schemes should have a well-founded legal basis under all relevant jurisdictions."

The first challenge will be to understand the systems in use, and to find out which are the relevant jurisdictions.

### 5.3 *Obscured by Clouds*

"Cloud computing" has been a buzzword for some time. It is one of the marketing terms coined to mislead rather than to inform. Up in the clouds, there are nothing but moisture. No data is stored up there.

We have heard comparisons with the AC-grid. Just as we can have electric power in the socket, we can have computing power. But there is one important difference: Electric power is only down-stream. We do not upload any data to the power plants. As long as we get the electricity, we usually do not care, and do not know from where it is coming. Where our data is stored and processed, is another matter. The service providers do not want us to know. They want to store and process our data where it is convenient for them.

They are convenient. I am using the cloud service Dropbox, which makes it easier for me to work on this article and other manuscripts at many locations and several computers. But I would at least be hesitant to use a service like this for

business-critical information or processes. Then I would know more about the system, where data is stored, and the processing takes place, etc.

## 6 Soft Infrastructures

Infrastructure is defined like this in Oxford dictionary:<sup>14</sup>

“The basic physical and organizational structures and facilities (e.g. buildings, roads, power supplies) needed for the operation of a society or enterprise.”

Organizational structures are included, but all the examples given are physical structures. The importance and complexity of organisational structures, which I call soft infrastructures, are often underestimated.

Hard, physical infrastructure are of little help if we do not have the organisational structures to utilise it. We have the traditional organisations running the physical infrastructures, like telecom companies, railway companies etc. But the modern infrastructures, to facilitate services, are cooperation between organisations. We need contracts and standards.

I will again use banks as example. I can easily transfer money to most part of the world, and I can use my Visa and MasterCard worldwide an on the net. This is possible because the banks have agreements and agreed on standards. The banks established their own telecommunication network, SWIFT, to get more efficient telecommunication at the time when telex still was the telecomservice used in international trade. But it is the soft infrastructure, not the hard infrastructure that make this possible.

VISA and MasterCard are two interesting examples. It is the local banks that enter into agreements both with users (card holders) and sellers. I have an agreement with my bank in Norway and can use my Visa and MasterCard worldwide in shops, hotels and restaurants etc, that have agreements with their local banks. The main assets in these two companies are the networks and the brand name.

Banking is a rather obvious example. And it is an example of corporation, not one dominating company like for instance Google. But we know little about these infrastructures that we are dependent on. Some aspects can be regulated by contract, including choice of law for contractual issues. But will we have access to our data if the service provider goes bankrupt? Will our personal data, pictures etc be regarded as an asset that can be sold by a liquidator?

It can be of critical importance to have access to the infrastructures. It is not too difficult to establish a bank if one has the sufficient amount of money available. But if the bank is denied access to the payment infrastructures, they cannot operate and compete in the market. This applies to all businesses that need access to a network, like telecom, transport and I assume other businesses that I do not know.

I will once again refer to one of the Lamfalussy-principles, this time principle V:

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<sup>14</sup> “en.oxforddictionaries.com/definition/infrastructure”.

- V. Multilateral netting systems should have objective and publicly-disclosed criteria for admission, which permit fair and open access.

Others who are denied access to payment systems, will also in practice be out of business. When the US government forced Visa and MasterCard to block donations to WikiLeaks, it caused severe problems. WikiLeaks won a court case at Iceland, that said that this was a breach of Icelandic contract law.<sup>15</sup> Visa and MasterCard said that “WikiLeaks was “engaging in or facilitating” illegal activity”. MasterCard later broke the ranks, and started to allow payments to WikiLeaks.<sup>16</sup> I find this action from the US government, Visa, MasterCard, as well as PayPal and Western Union unacceptable and probably illegal. It is another reminder telling that one should take the political risk into consideration when dealing with US based company. The risk has increased with the now unpredictable president in US.

## **7 Risks in Automated, Global Transactions**

### **7.1 Political Risk**

We should always take the political risk into consideration when undertaking international transactions. The political stability in the country. And the risk of political interference. I have already mentioned two examples of political interference from the US government, blocking banking transactions in London and the blocking of donations to WikiLeaks.

### **7.2 The Risk of Time, the Herstatt-Risk**

Herstatt Bank was a small German bank, based in Cologne. It was active in the foreign exchange market. In 1974 the Federal Banking Supervisory Office (BAKred) discovered that Herstatt had open exchange positions amounted to 2 billion Deutsche Mark (DM), eighty times the bank’s limit of DM 25 million DM.<sup>17</sup> When the severity of the crisis in the bank became obvious, the failure of the bank could not be avoided.

June 26., 1974 Herstatt Bank had bought Deutsche Mark (DEM), that should be paid in US Dollars (USD). At the time, the settlements between banks were done in the afternoon, at the end of the banking day. The DM settlement was done in Frankfurt in the afternoon Frankfurt time. The USD settlement would take place in New York in the afternoon New York time, six hours later, due to the time difference. In the meantime, BAKred had withdrawn Herstatt Bank’s license, and the bank went into liquidation.

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15 “[www.theguardian.com/media/2012/jul/12/wikileaks-court-victory-visa](http://www.theguardian.com/media/2012/jul/12/wikileaks-court-victory-visa)”.

16 “[www.theregister.co.uk/2013/07/05/wikileaks\\_credit\\_card\\_donations\\_restored/](http://www.theregister.co.uk/2013/07/05/wikileaks_credit_card_donations_restored/)”.

17 Bank Failures in Mature Economies, BIS Working Paper No. 13, April 2004, p. 5. “[www.bis.org/publ/bcbs\\_wp13.pdf](http://www.bis.org/publ/bcbs_wp13.pdf)”.

When the USD payment was due, the bank was bankrupt and under liquidation, and no USD was paid. Attempts to revoke the payments, failed.<sup>18</sup> From this incident, the banking sector learned the risk of global dealing across time zones. It took some years to develop and implement systems necessary to solve the problem. Now these systems are generally running 24/7/365 and settlements are done in real time.

### 7.3 *Systemic Risk*

I mentioned the systemic risk in net clearing systems in paragraph 4.3.

The banking sector learned another lesson 20 November 1985. Bank of New York (BONY) was a major player in the bond market in New York. More than 32.000 government securities transactions were waiting to be processed. According to one source, the value of the transactions was 32 billion USD.<sup>19</sup> The bank's computer system began to corrupt these transactions by overwriting records. As a consequence, the bank could not determine which customers that should be charged for which securities and for what amount.<sup>20</sup> They paid out for securities bought, but did not receive payment for securities sold. Within a few hours they had a deficit of 23,4 billion USD on their trading account with Federal Reserve. Federal Reserve stopped further payments from the account. No one questioned the bank's solidity, but it was an acute liquidity crisis.

It is hard to find good documentation about the situation. I was in New York and Washington DC, discussing payment systems with representatives from Federal Reserve, clearing organisations and commercial banks a few years after the incident, and will supplement the information from memory, which is not a very reliable source. 32.000 transactions were the maximum the system in BONY could handle at the time, and the problem started when this number was exceeded. When further payments from BONY's trading account were stopped, the problem was spreading in the market, as others did not get paid by BONY. The situation was threatening the entire market, including the financing of US government deficit, which is largely financed in the bond market.

Nobody questioned the solidity of BONY. It was a liquidity problem, caused by a technical failure. They did not have money available at the right account at the right time.

It was a hard and expensive lesson about systemic risk. It costed BONY 5 million USD in interest, and an unknown amount to sort out the problems and in damaged reputation. I have not seen any estimates about the costs for other market operators that were hit by the problems.

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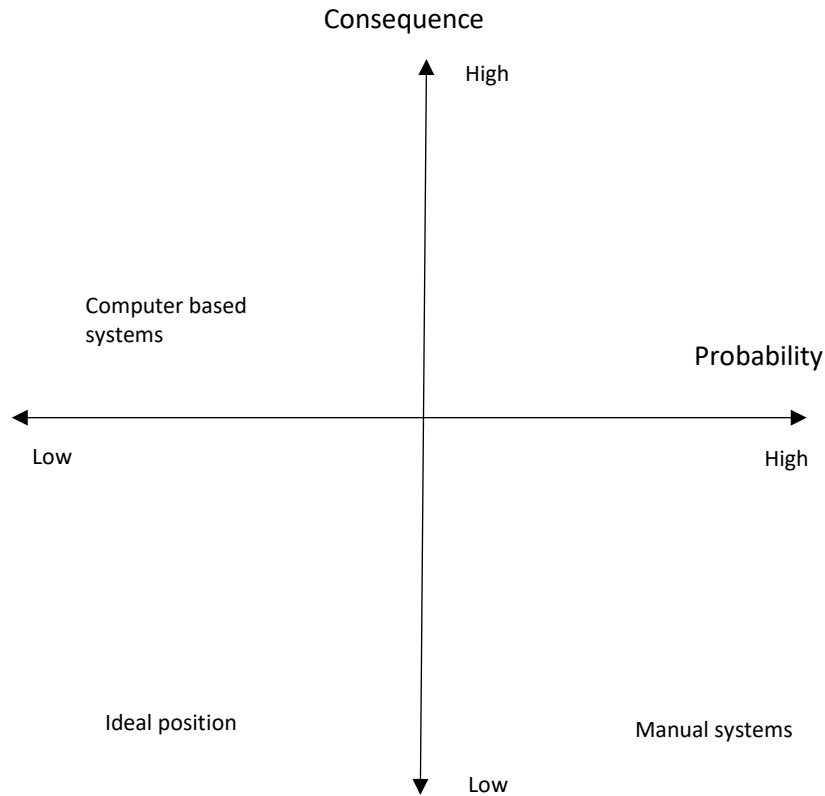
18 *Delbrueck & Co., Plaintiff-appellant, v. Manufacturers Hanover Trust Company, Defendant-appellee*, 609 F.2d 1047 (2d Cir. 1979)

19 Edward E. Ogheneovo: *Software Dysfunction: Why Do Software Fail?* Journal of Computer and Communications, 2014, 2, 25-35, [http://file.scirp.org/Html/4-1730064\\_45351.htm](http://file.scirp.org/Html/4-1730064_45351.htm)

20 Tom Forester, Perry Morrison: *Computer Ethics: Cautionary Tales and Ethical Dilemmas in Computing*, p. 113-114.

## 8 Risk Profiles and the Traditional Lawyer Approach

Risk is a function of two components: Probability for unwanted incidents to happen, and consequences if they happen. This is a figure that is often used to illustrate the risks. We want to be in the lower left corner.



Manual transactions tend to place themselves in the lower right corner. We know that they will occur, but the consequences can be dealt with. The problem will usually affect one transaction and those who are party to transaction. Automated systems tend to drift to the left and go up. It is less likely to have an unwanted incident. But if it happens, the consequences tend to be more severe. The incident in Bank of New York in 1985, is an example. The incident affected the system and thus 32.000 transactions, not just a single transaction.

The traditional lawyer approach is to deal with problems case by case, when they occur. This is an approach that may work if the problems occur rather frequently, without too severe consequences. Or as long as we are in the lower right corner. When we move towards the upper left corner, we can no longer take this approach. We must take a proactive approach. We need to analyse and assess the risks before the operation starts.

As lawyers, we need to understand how the systems work. We cannot treat them as black boxes and just look at the input and output. We must open the black boxes and analyse what is happening inside them.

My experience is that it is hard to get the information needed as basis for a legal analysis of these systems. We need information on the transactions, the flow and processing of information. We will often find glossy marketing information, or maybe some economic analyses that do not address what is of legal importance. And we have the rather detailed technical information. We will often have to go to the technical information and construct the flow and processing of information from there. It is difficult, at least it has been difficult for me. It is very useful to have someone who knows the technology as “sparring partner” in the process: Someone we may ask “is my understanding of the system correct?” Sometimes I have gotten the answer “yes, you may describe the system like that”. Other times I have been told that I got it all wrong, and I have to go back and do it all over again.

As lawyers we often tend to think that we must have the right legal outcome, almost at any price. Sometimes we must accept that it can be at better solutions to deal with the consequences, if we do not get the right result. When I was working with retail payment systems in the early 1980s, I asked one representative of one bank how they dealt with signature control on paper-based payment orders (giro). He answered that transactions under a threshold value were not controlled at all. For obvious reasons, he did not tell what the threshold value was. With my lawyer’s instincts, I asked: What if an unauthorised payment order is accepted gets through? The we pay, was the answer. It would be to expensive to implement the controls, and it was a better solution to pay compensation when something got wrong.

When we were setting up and preparing the legislation for a “paperless” securities market in Norway, we wanted to maintain the negotiability from the paper documents, including priority rules in case of a conflict between transactions. At the time, the system did not operate in real-time. The rule was that transactions registered the same day would have the same priority, which is not a workable solution. Only one can get the right as creditor if it is a bond, or the right to vote if it is a share. But when it is only financial interests at stake, it is sufficient to prevent the loss if someone is denied the right he or she should have had. Instead of going for the correct legal outcome, guarantees and insurance could be a better solution.

We have to analyse the different kinds of transactions. If it is life and health, critical property like people’s homes, voting right at the general assembly in a limited company, etc, a mere financial compensation will not be sufficient. We cannot do as Ford did in the infamous Ford Pinto case. The fuel tank at the Ford Pinto model was constructed so it would easily catch fire in case of an accident. Ford calculated that it would be more expensive to modify the construction, than to pay damages to those killed or injured in accidents.<sup>21</sup>

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21 For more on the case, see for instance *Lee Iacocca's Pinto: A fiery failure*, *Automotive News*, June 16, 2003, <http://www.autonews.com/article/20030616/SUB/306160770/lee-iacoccas-pinto:-a-fiery-failure>

## **9 Some Conclusions**

I will start with the most predictable conclusion in any research paper: More research is needed.

We need more legal research. Too often, those who are financing or running research focusing on other aspects of technological development, want to have some lawyers onboard. They are not really interested in legal research, but rather in cheap lawyers. But legal consultancy is not legal research, even if it is consultancy to a research project. Only lawyers and legal researchers can identify the issues of interest for legal research. We should not spend our time answering questions asked by people who do not understand the legal issues. This is legal consulting and should be charge appropriate lawyer's fees. We have been part of a few of these projects, but we no longer do. Legal research institutions should focus on legal research, not offer cheap legal consultancy services.

We need sector specific research, on how changing business practices need a new legal basis. Many markets should be researched. I have been working with some of these issues related to payment services, financial services, intellectual property, and to a lesser extent transport and telecom. There are research and studies on internet governance and cloud computing. Energy markets should also be an interesting case, and I am sure there are other markets that I do not know.

On top of the sector specific studies, we need some more general studies. This article may be a late start.

