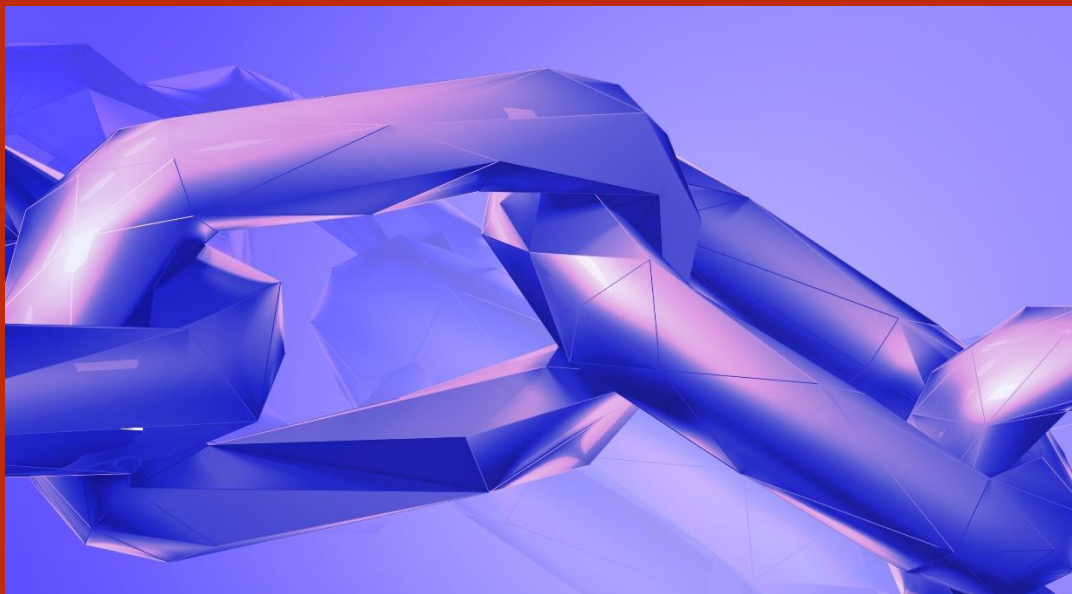




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Blockchain Technology and Smart Contracts in Transportation and International Sales Contracts

Prof. Dr. Elena Orrù

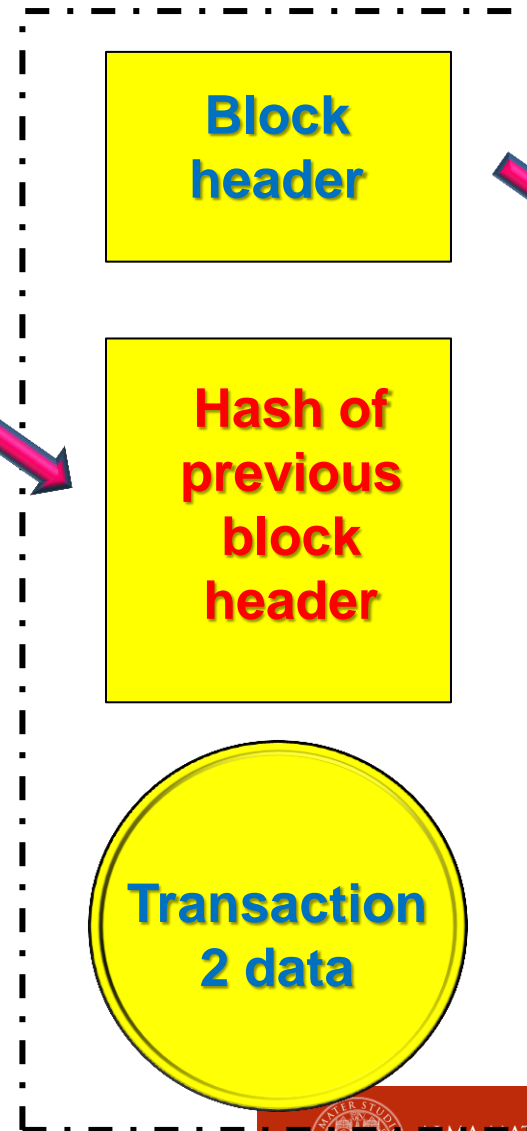
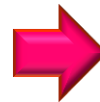
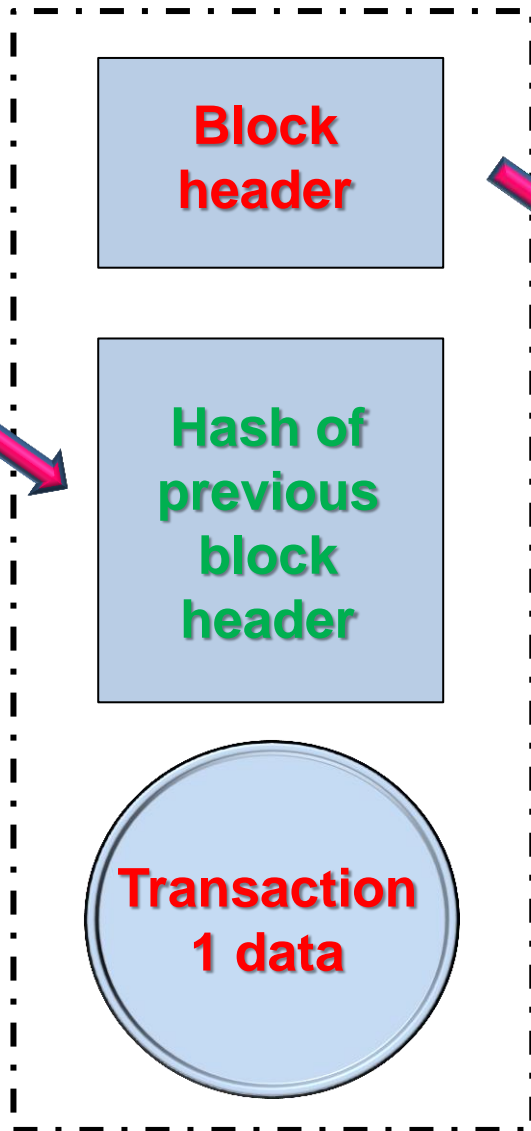
Department of Legal Studies

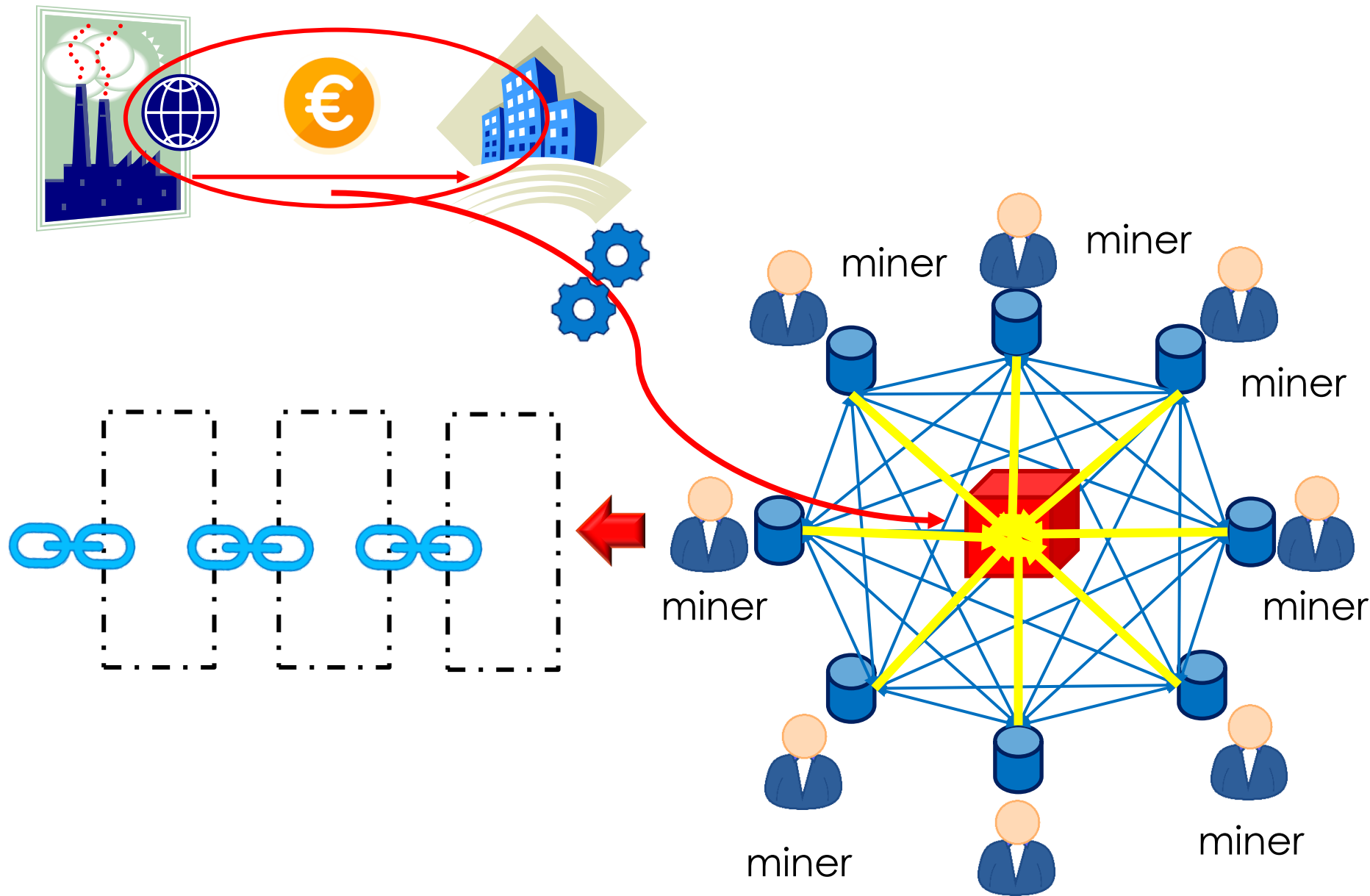
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Setting the Scene

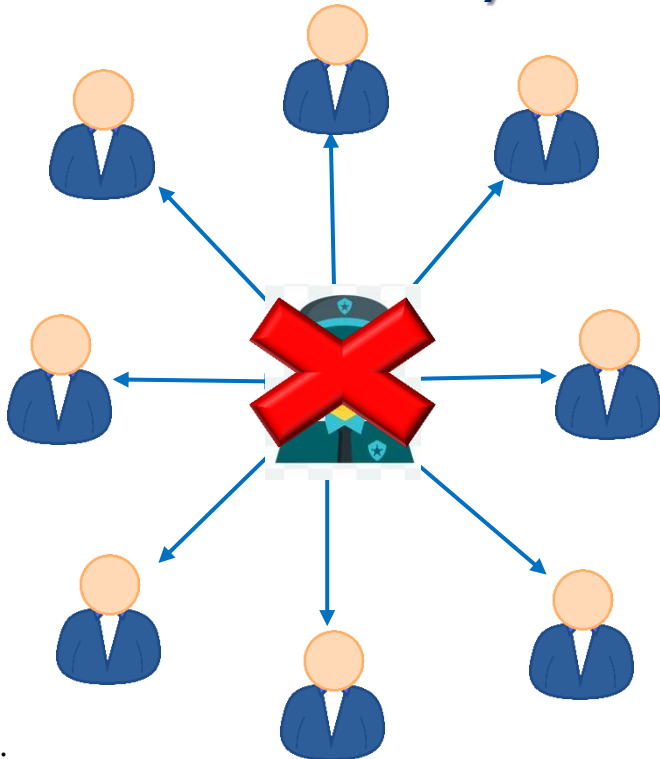
BLOCKCHAIN TECHNOLOGY AND SMART CONTRACTS







Closed centralized system



E.g.:

- Bill Of Lading Electronic Registry Organization (BOLERO),
- essDOCS-Databridge™.

Decentralized peer-to-peer system

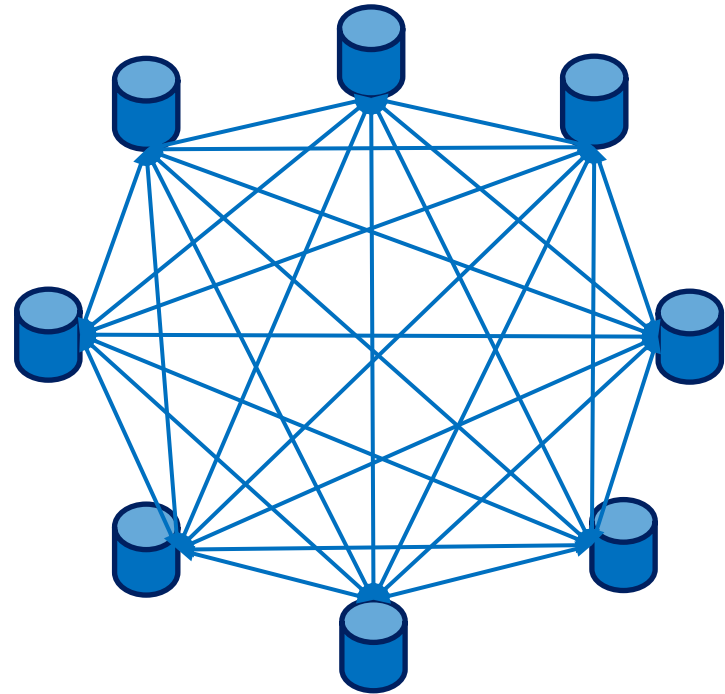


Figure based on K. Takahashi, *Blockchain technology and electronic bills of lading*, in (2016) 22 JIML, p. 203.

User icon by cyberscooty - <http://openclipart.org/detail/171432/user-1-by-cyberscooty-171432>, CC0, <https://commons.wikimedia.org/w/index.php?curid=42452080>



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Main Advantages

- The risk of double spending is almost avoided,
- The transaction is almost simultaneously verified and recorded on every ledger of the decentralized register,
- Fraud/forgeries are almost impossible,
- Delivery of the b/l through the creation of a new token/block in the chain control on the record as in the Rotterdam Rules

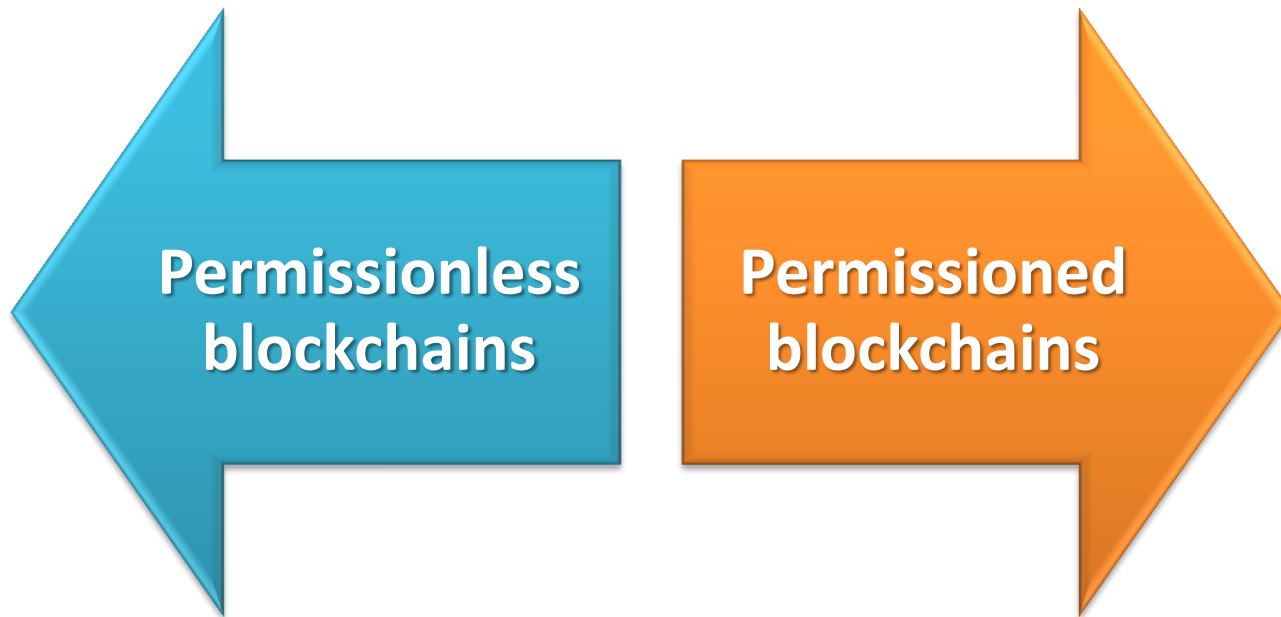


Main Disadvantages

- In open platforms, users are identified only by nicknames,
- No legal certainty, esp. at the int'l level.



A further notation: the different types of blockchain



So ... Is Blockchain a Panacea?

When Is Blockchain Useful?



is not useful when we need only a database
or a platform where to share information

BLOCKCHAIN

is useful where we need to ensure
integrity of the record, avoid forgeries
and double spending

USE
BLOCKCHAIN

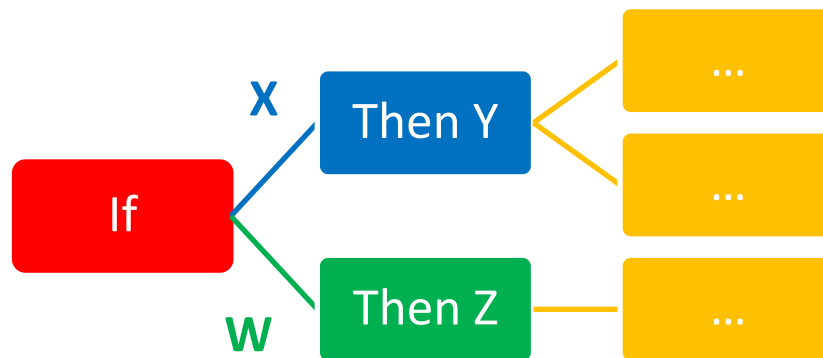


Smart Contracts

«A Smart Contract is a computerized transaction protocol that executes the terms of a contract. The general objectives ... are to satisfy common contractual conditions (such as payment terms) ... and minimize the need for trusted intermediaries»

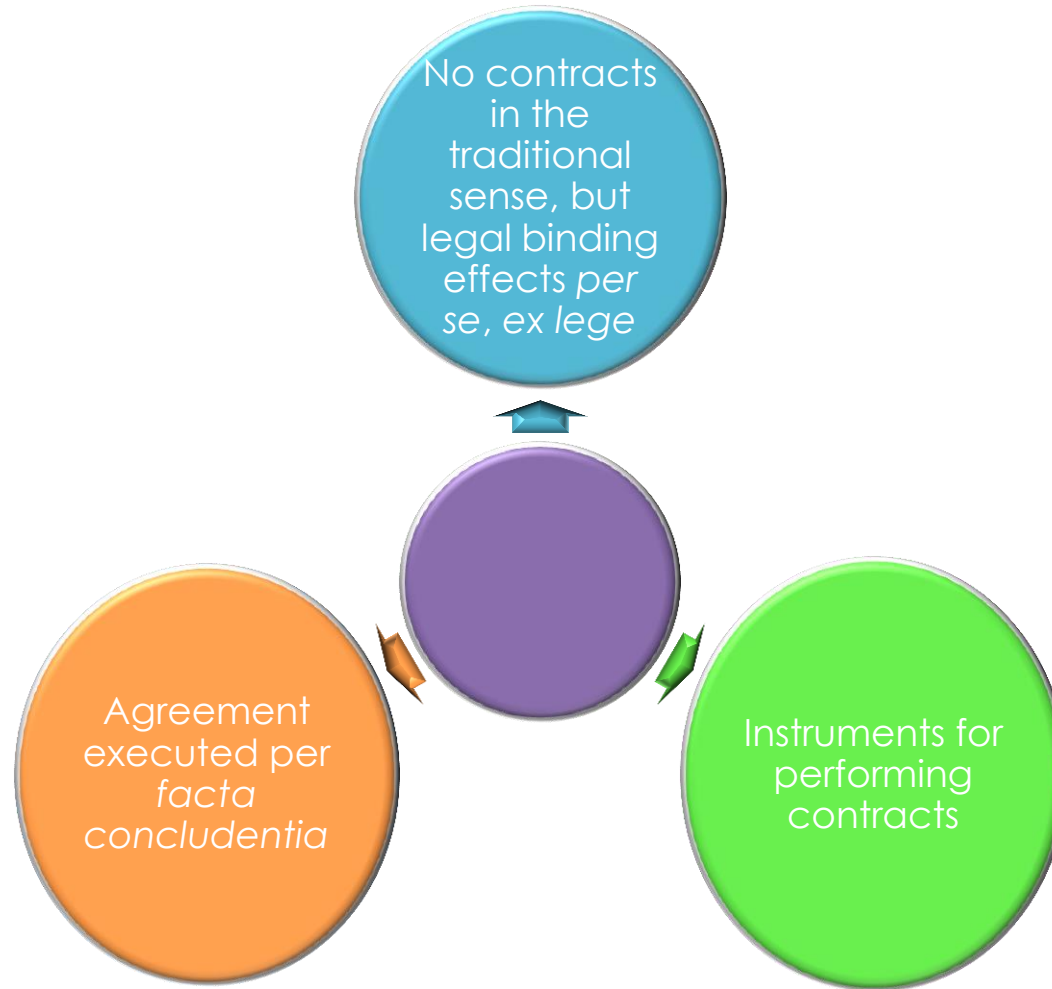
(Nick Szabo, 'Smart contracts', 1994)

«Automatic Contract»



Source of the picture to the right: Wikimedia Commons

What Is Smart Contract's Nature?



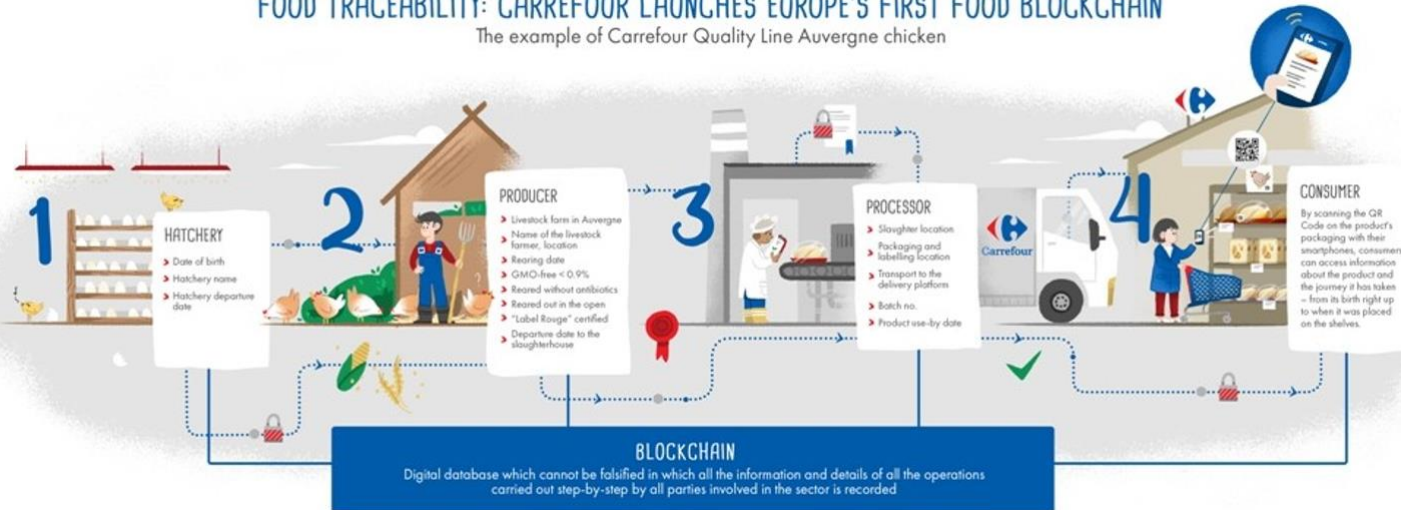
BLOCKCHAIN TECHNOLOGY AND SMART «CONTRACTS» IN TRANSPORT AND SALES CONTRACTS



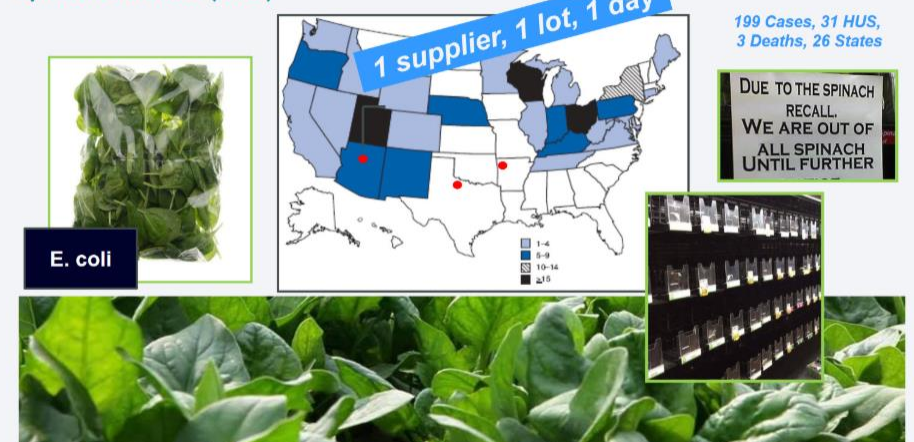
Food Traceability

FOOD TRACEABILITY: CARREFOUR LAUNCHES EUROPE'S FIRST FOOD BLOCKCHAIN

The example of Carrefour Quality Line Auvergne chicken



Spinach Outbreak (2006)



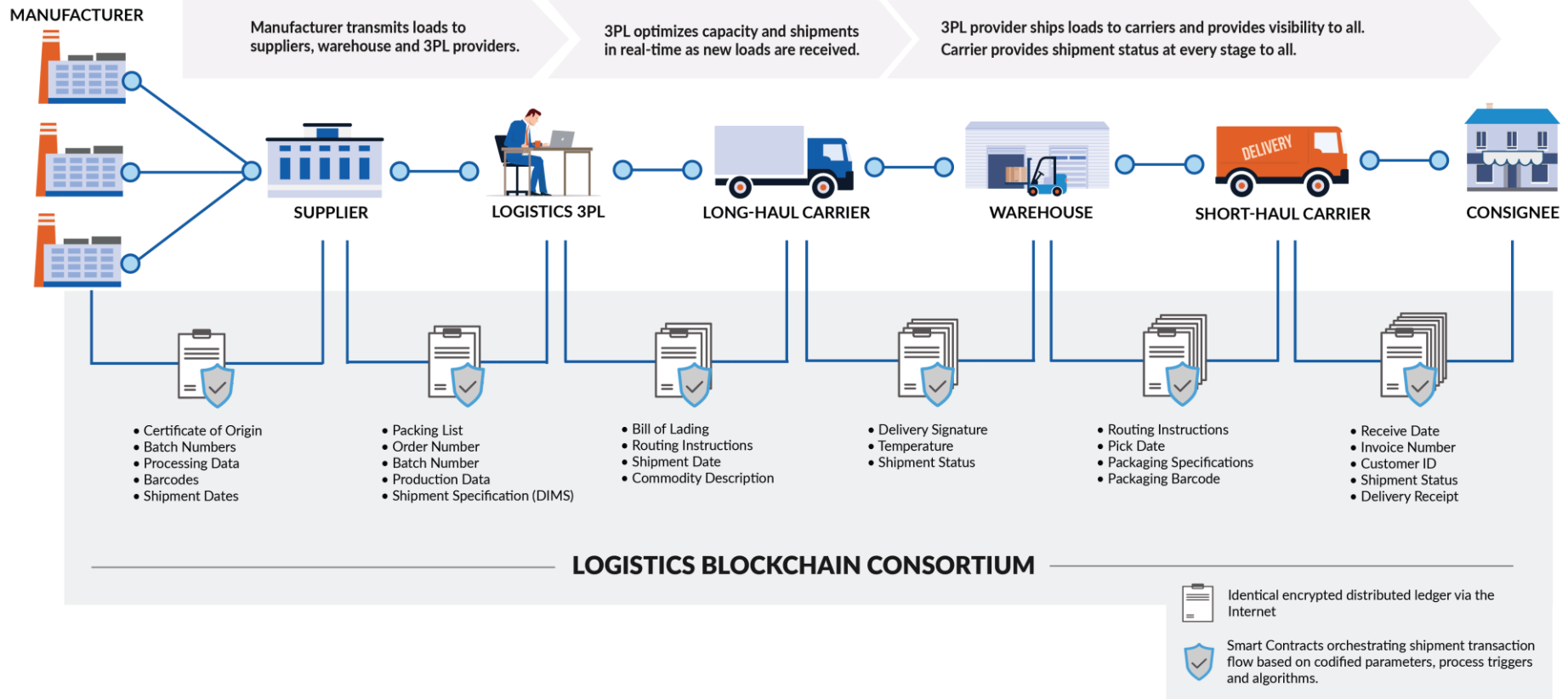
Source of the pictures:

<https://www.carrefour.it/azienda/ufficiostampa/blockchain/>;
<https://www.economyup.it/retail/carrefour-primo-europa-usare-la-blockchain-tracciare-prodotti/>; <https://www.altoros.com/blog/blockchain-at-walmart-tracking-food-from-farm-to-fork/>

SOURCE: Frank Yiannas and Walmart are the source for this slide content!

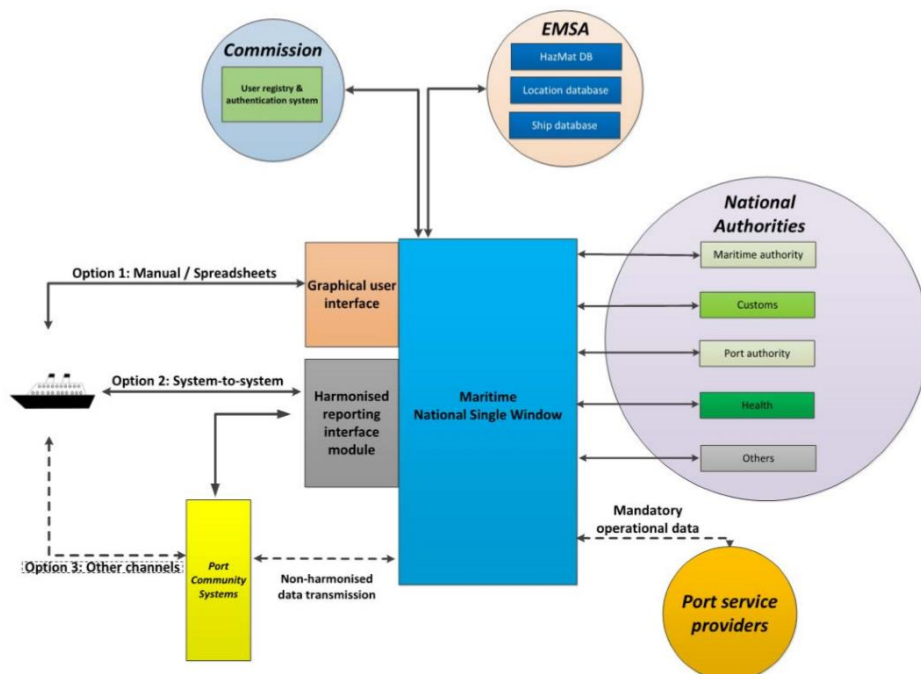
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International Carriage and Sales of Goods

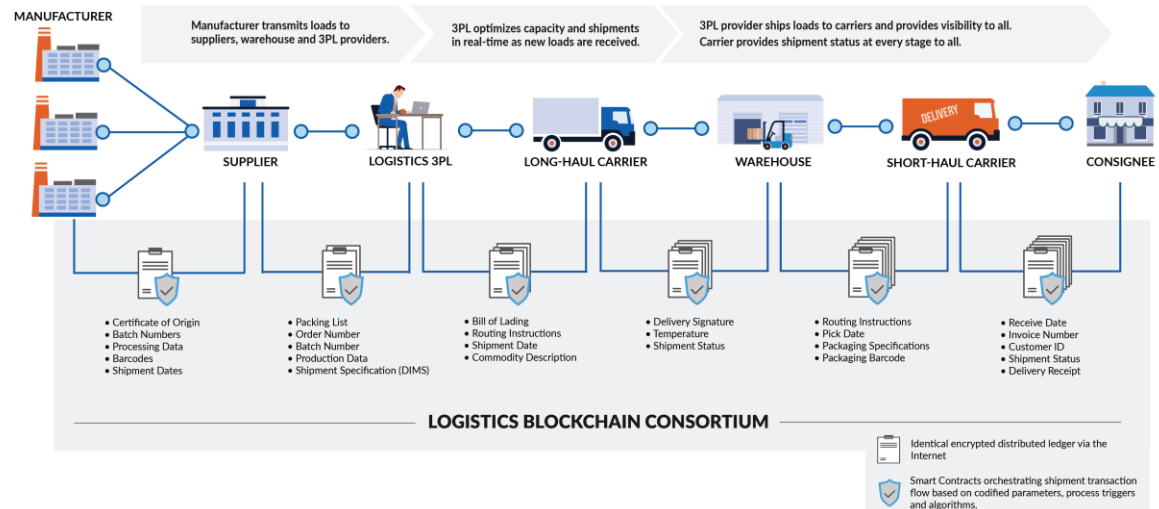




Today Challenges And Needs in the Shipping Sector



EMSWe



International Carriage of Passengers

Standard compensation in the event of denied boarding, delays or cancellations



Regulation (EC) No 1371/2007

- Delay > 60 minutes → reimbursement of the full cost of the ticket for the part of the journey not made; or
 - continuation or re-routing under comparable transport conditions at the earliest opportunity or at a later date at the passengers' convenience, or
 - a minimum compensation equivalent to:
 - ⌚ 25% of the ticket price for a delay of 60 to 119 minutes;
 - ⌚ 50% of the ticket price for a delay of 120 minutes or more.



Regulation (EU) No 1177/2010

- reimbursement or rerouting in situations of cancellation or of delay at departure of more than 90 minutes;
- compensation of between 25 % and 50 % of the ticket price in situations of delay in arrival or cancellation of journeys



Regulation (EC) No 261/2004

- Flight cancellation / denied boarding / delay > 3 hours

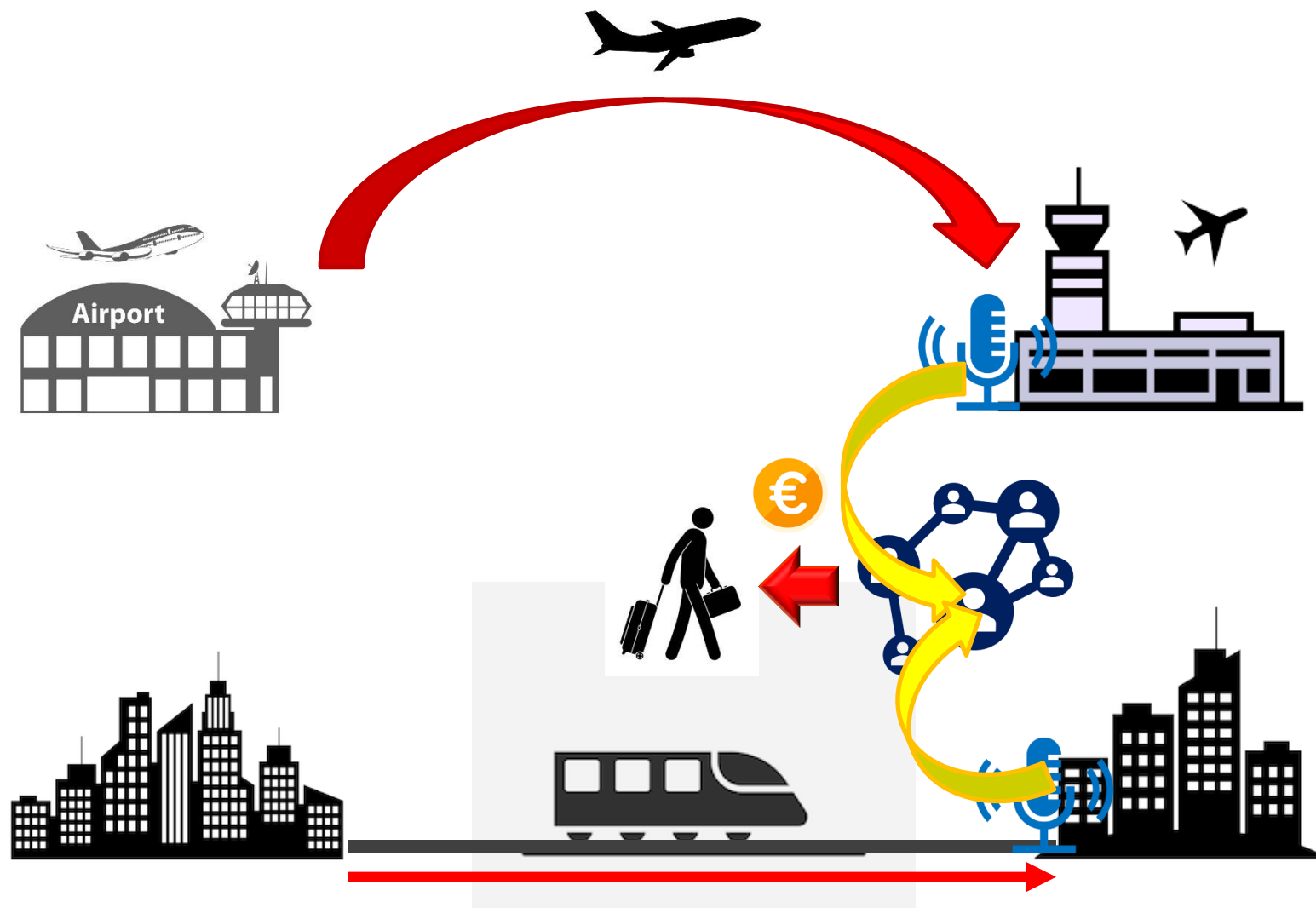
- ⌚ EUR 250 for all flights of 1500 kilometres or less;
- ⌚ EUR 400 for all intra-Community flights of more than 1500 kilometres, and for all other flights between 1500 and 3500 kilometres;
- ⌚ EUR 600 for all flights not falling under (a) or (b).

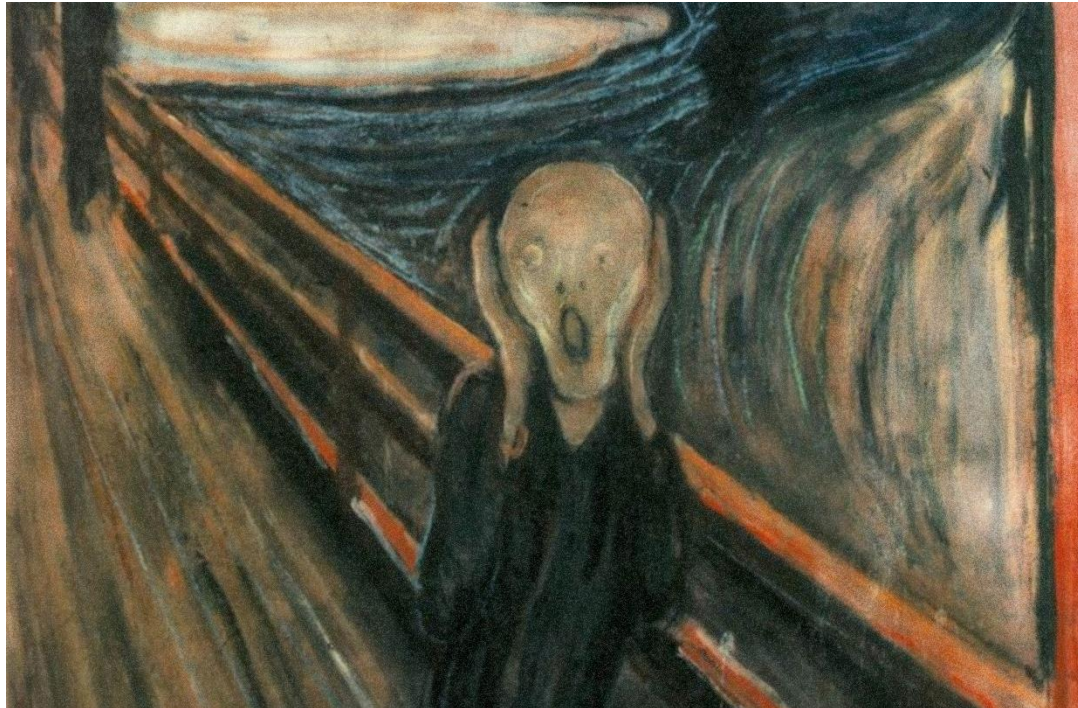


Regulation (EC) No 181/2011

- Cancellation / delay > 120 minutes

- ⌚ continuation or re-routing to the final destination, at no additional cost and under comparable conditions, as set out in the transport contract, at the earliest opportunity; or
- ⌚ reimbursement of the ticket price, and, where relevant, a return service by bus or coach free of charge to the first point of departure, as set out in the transport contract, at the earliest opportunity, or (when the carrier fails to offer the above choice to the pax)
- ⌚ compensation amounting to 50 % of the ticket price.





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What does happen when:

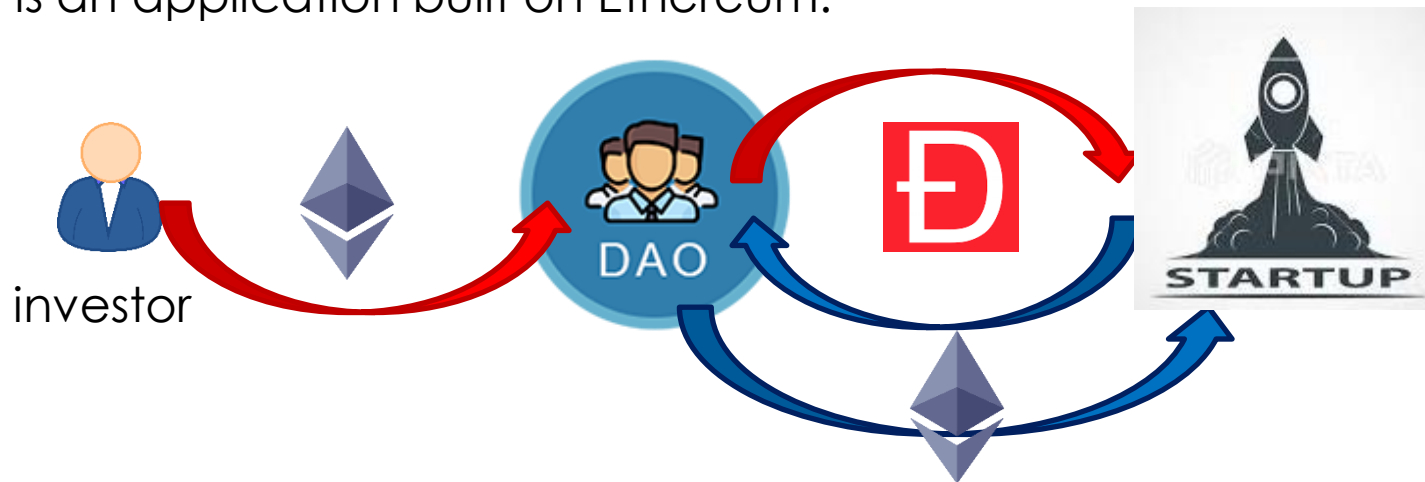
- The contract is void?
- The pax wants to exercise her/hir rights according to the 1999 Montreal Convention?
- Grounds for terminating the contract have meanwhile arisen?

What about the need to enforce general «interpretable» principles, such as the principle of good faith?



The DAO case

DAO (Decentralized Autonomous Organization) = the first digital decentralized investment fund, meant to enable financing of start-ups. It is an application built on Ethereum.



Be aware: according to some users:

«Code is law. If the code of the DAO allowed this hack, the hack is legit»



WHAT ABOUT LAW SOURCES?



The General Law

- **International law:**

- The **UN Convention on the Use of Electronic Communications in International Contracts**, 23 November 2005:

- Art. 1, para 1: “This Convention applies to the use of electronic communications in connection with the formation or performance of a contract between parties whose places of business are in different States”.

- Art. 2, para 2: “2. This Convention **does not apply** to bills of exchange, promissory notes, consignment notes, **bills of lading**, warehouse receipts or any transferable document or instrument that entitles the bearer or beneficiary to claim the delivery of goods or the payment of a sum of money”.

- **Many different domestic laws.**



In Italy

According to art. 8-ter of the decree-law No 135 of 14 December 2018, as modified by the law No 12 of 11 February 2019, the Agency for Digital Italy (AgID) will have to define the technical requirements that must be possessed by blockchain platforms and smart contracts.



No technological neutrality



What about the law governing

- Cases where the contract is void,
- The principle of good faith and its enforcement,
- Termination of the contract.



UNCITRAL Model Laws

- UNCITRAL Model Law on Electronic Commerce del 1996-1998:
 - **Functional equivalent approach**: “electronic equivalents to transport documents”, also as “one or more data messages”.
- UNCITRAL Model Law on Electronic Signatures del 2001
- UNCITRAL Model Law on Electronic Transferable Records 2017 (MLETR):
 - **Electronic transferable record**: an electronic record including all the information that would render a paper document lawfully transferable, in order to entitle its holder to claim the performance of the obligation indicated in the document and to transfer the right to performance of the obligation indicated in the document through the transfer of that document. ➡ It includes the bill of lading.
 - **Principle of technological neutrality**.
 - **Exclusive control** as functionally equivalent to the constructive possession of the electronic transferable record.

However, no rules specifically addressing the transfer and negotiability of the e-b/l.



The most topical example

ELECTRONIC BILLS OF LADING



The International Shipping Law

The **Hague-Visby Rules**: art. 1, let. b): “contracts of carriage covered by a bill of lading or other similar document of title”.

The Hamburg Rules: Art. 1, para.s 7 and 8:

«"Bill of lading" means a document which evidences a contract of carriage by sea and the taking over or loading of the goods by the carrier, and by which the carrier undertakes to deliver the goods against surrender of the document. A provision in the document that the goods are to be delivered to the order of a named person, or to order, or to bearer, constitutes such an undertaking».

«"Writing" includes, inter alia, telegram and telex».

Art. 14:

«1. When the carrier or the actual carrier takes the goods in his charge, the carrier must, on demand of the shipper, issue to the shipper a bill of lading.

2. The bill of lading may be signed by a person having authority from the carrier. A bill of lading signed by the master of the ship carrying the goods is deemed to have been signed on behalf of the carrier.

3. 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 no inconsistent with the law of the country where the bill of lading is issued».



Contract Clauses and Models

- CMI's *Rules for electronic bills of lading*, 1990,
- BIMCO's "Electronic bill of lading clause", 2014,
- ICC eUCP 500, 2002. Last edition: eUCP 600 in force since 1st July 2019,
- P&I cover for BOLERO, essDOCS – Databridge™, E-title™.



Lex mercatoria?



Conclusions

Whereas, as for most of the contracts and relationships involved in international sale and carriage of goods, the existing provisions could be considered sufficient to lawfully enable blockchain and smart contracts, resorting to the same solutions applied for «traditional» relationships with regard to many of the issues previously described, this does not seem to be true for e-bill of lading.



- Basis in contract clauses,
- Necessity to coordinate the different contracts,
- «Paramount clause», choice of law and choice of forum clauses.





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