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# TradeTrust-enabled Electronic Bills of Lading

A legal and practical analysis of their use in global trade



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This article has been written by **Stephenson Harwood LLP** (in alliance with **Virtus Law LLP**) in collaboration with **IMDA**, with the US law section written by **Blank Rome LLP**. The article is divided into the following Sections and Schedules:

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# 1 Executive Summary

- 1.1 Global trade continues to rely heavily on paper documents, including paper bills of lading (**BLs**), in spite of both their legal, financial and practical drawbacks and inefficiencies and the recent technological advances and legal developments permitting the use of electronic trade documents like electronic bills of lading (**eBLs**).
- 1.2 This article addresses the legal, technical or other concerns which have delayed many global trade players from moving away from the old paper-based way of doing business and harnessing the potential benefits of digitalised trade practices.
- 1.3 **TradeTrust** is well poised to address these concerns and accelerate the digitalisation of global trade. TradeTrust is a digital framework and solution developed by Singapore's Infocomm Media Development Authority (**IMDA**), which enables the issuance, endorsement<sup>1</sup>, verification and transmission of electronic trade documents, like eBLs, between transacting parties and across different digital platforms. TradeTrust's potential application extends to the digitalisation of other classes of transferable records, including but not limited to bills of exchange, warehouse receipts and promissory notes. This article focuses on the 'TradeTrust-enabled' eBLs (which we refer to as TT eBLs).
- 1.4 The twin problems hindering the wider adoption of eBLs in global trade are **the lack of legal and technical interoperability** between available platforms offering eBLs to the market. To date, these platforms have been contract-based, meaning that their use is entirely dependent on all parties in the supply chain being contractual parties to the same platform and rulebook/ user terms, and adopting the same technical requirements for their 'contract-based' eBLs. These features have restricted the extent to which eBLs are able to replicate paper BLs, which in spite of their inefficiencies and drawbacks can be transferred freely across jurisdictions and beyond the immediate contracting parties.
- 1.5 TradeTrust is not a competitor to existing eBL platforms. Instead, TradeTrust provides a solution to the current lack of **technical interoperability** in the market by enabling any party to create and issue its own TT eBLs outside of the confines of any contract-based platform. This is achieved through the use of blockchain technology to create nonfungible tokens (**NFT**) representing the title ownership of a TT eBL. TradeTrust uses the terms '**owner**' and '**holder**', both of which are recorded 'on-chain' on the relevant blockchain network against the NFT of the relevant TT eBL:
- 1.5.1 The owner of a TT eBL is the party with legal title to the underlying goods – they can transfer this legal title by an electronic endorsement of the TT eBL through the relevant blockchain network.
- 1.5.2 The holder of a TT eBL is the party with exclusive control (the electronic equivalent to physical possession of a paper BL) of that TT eBL – they could be the same party as the owner of the TT eBL or a different party. The holder can effect a transfer of ownership of the TT eBL to another party through the relevant blockchain network.
- 1.6 These features allow TT eBLs to replicate in electronic form the core functionalities of paper BLs (evidence of the contract of carriage, receipt for goods and document of title), and they enable users of TradeTrust to create different types of TT eBLs depending on their commercial needs. For example, users may create **Bearer TT eBLs** (where the owner and holder align at any given time) or "**To Order**" **TT eBLs** (where the holder may vary during the life cycle of that TT eBL).

- 1.7 Achieving technical interoperability complements TTeBLs' potential to achieve **legal interoperability**. Rather than requiring all relevant transacting parties to sign up to the same contract-based platform to enable this process (where the platform's rulebook would dictate what that platform's eBLs represent legally), TT eBLs have been designed with technical features aimed at compliance with the criteria for "[electronic transferable records](#)" set out in the United Nations Commission on International Trade Law's (**UNCITRAL**) Model Law on Electronic Transferable Records (**MLETR**)<sup>2</sup>. If parties choose a governing law which is MLETR-compliant or aligned, such as Singapore, English, New York or Delaware law, these legal systems will recognise the legal equivalence of a TT eBL with a paper BL. A summary table of how TT eBLs comply with the MLETR, Singapore, English and US law is provided in **Schedule 2 (Summary Table of Jurisdictional Analysis of TT eBLs)**.
- 1.8 TradeTrust's combination of technical and legal interoperability can help to unlock the full potential of eBLs for buyers and sellers of goods (shippers and receivers), carriers of goods, banks and other financiers who finance the trade of goods, insurers who insure the goods being traded, as well as the developers of applications which enable the issuance, endorsement and transmission of eBLs. TradeTrust's potential and ability to achieve interoperability have already been recognised by a range of influential bodies and standards, including its classification as an "[interoperable digitalisation framework](#)" by the World Trade Organisation (WTO) and the International Chamber of Commerce's (ICC) Digital Standards Initiative<sup>3</sup>.
- 1.9 One of the practical pieces of guidance offered to industry practitioners in Section 8 of the article is that there are measures which can help give parties more certainty when using TT eBLs across MLETR-aligned and/or non-MLETR-aligned jurisdictions, such as expressly choosing a governing law and jurisdiction provision for that TT eBL which is an MLETR jurisdiction, which will likely give a party the ability to enforce any attempt to circumvent this provision by way of an anti-suit injunction.

- 1.10 As for P&I coverage, Section 8 of the Article addresses the IG P&I Clubs' current position on eBLs and pre-approved eBL systems. For eBLs such as TT eBLs which are issued outside of pre-approved systems but which are governed by and comply with the laws of an MLETR-aligned jurisdiction, discussions are ongoing. We expect that where the contractually agreed choice of governing law and jurisdiction of a TT eBL is that of an MLETR-aligned jurisdiction, many of the concerns which the IG P&I Clubs aim to address through pre-approval should be covered off.
- 1.11 As a disclaimer, while this article does assess the key technical features of TradeTrust and TT eBLs, it is drafted to be accessible to a wide readership. For ease of reference, defined terms are italicised for ease of reference and a glossary of terms is provided in Schedule 1 (Glossary of Terms). Additionally, Schedule 2 (Summary table of Legal Analysis of TT eBLs) serves as a quick reference summary of the position under the various legal regimes analysed in this article in respect of TT eBLs. If you have any specific technical questions related to TradeTrust or TT eBLs not addressed in the article, should feel free to contact TradeTrust ([tradetrust@imda.gov.sg](mailto:tradetrust@imda.gov.sg)) for further information or first to consult the [Frequently Asked Questions](#) section of the TradeTrust website. If you had any legal enquiries, please get in touch with Stephenson Harwood LLP ([eBLs@shlegal.com](mailto:eBLs@shlegal.com)).
- 1.12 Information contained in this article is current and correct to the best of our understanding and belief as at the date of first publication and is intended for general information purposes only. It is not intended to provide legal advice and should not be relied on as such. Please take independent legal advice applying anything contained in these materials to specific issues and transactions.
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## 2 The lack of interoperability and the solution of TradeTrust

### The problem of the lack of interoperability

- 2.1 Before discussing TradeTrust, it is important to understand why it was created and what problems TT eBLs are designed to solve.
- 2.2 The digitalisation of global trade has been underway for years, including the development of:
- 2.2.1 electronic versions of paper trade documents, such as eBLs; and
  - 2.2.2 proprietary electronic trade solutions and platforms through which such electronic trade documents may be issued and transferred, commonly known as **eBL Platforms**.
- 2.3 However, these developments have resulted in digital and contractual '**silos**' where transacting parties cannot transact seamlessly with one another using eBLs **unless** they all use the same eBL Platform. In their current forms, eBL Platforms are limited by technical and contractual barriers to achieving the same scale of **interoperability** across platforms which has been possible with paper trade documents as a result of:
- 2.3.1 the different technologies used (whether some form of blockchain technology or otherwise);
  - 2.3.2 the different legal systems and contractual rulebooks which govern the use of their platforms; and
  - 2.3.3 the different data standards and formats utilised.
- 2.4 In light of these limitations to eBL Platforms, paper trade documents including BLs have endured because, in spite of the drawbacks and inefficiencies of relying on physical documents, they can easily be transferred across jurisdictions and beyond the immediate contracting parties.
- 2.5 In the context of eBLs, we refer to interoperability as the ability of users to communicate and transact with one another, both in terms of the technical aspects (such as having mutually recognisable data standards and technical protocols for the eBLs themselves and the systems used) and the legal aspects (specifically, the legal recognition and effectiveness of the eBLs and actions taken in respect of them). We refer to these features as **technical and legal interoperability**.
- 2.6 Without both technical and legal interoperability, an eBL from one eBL Platform cannot be sent in real-time to another eBL Platform if the latter lacks the common digital architecture to read and effect actions on that eBL, and even if that was made technically possible, the parties to each eBL Platform would still sit in different contractual frameworks governing the use of their respective eBLs.

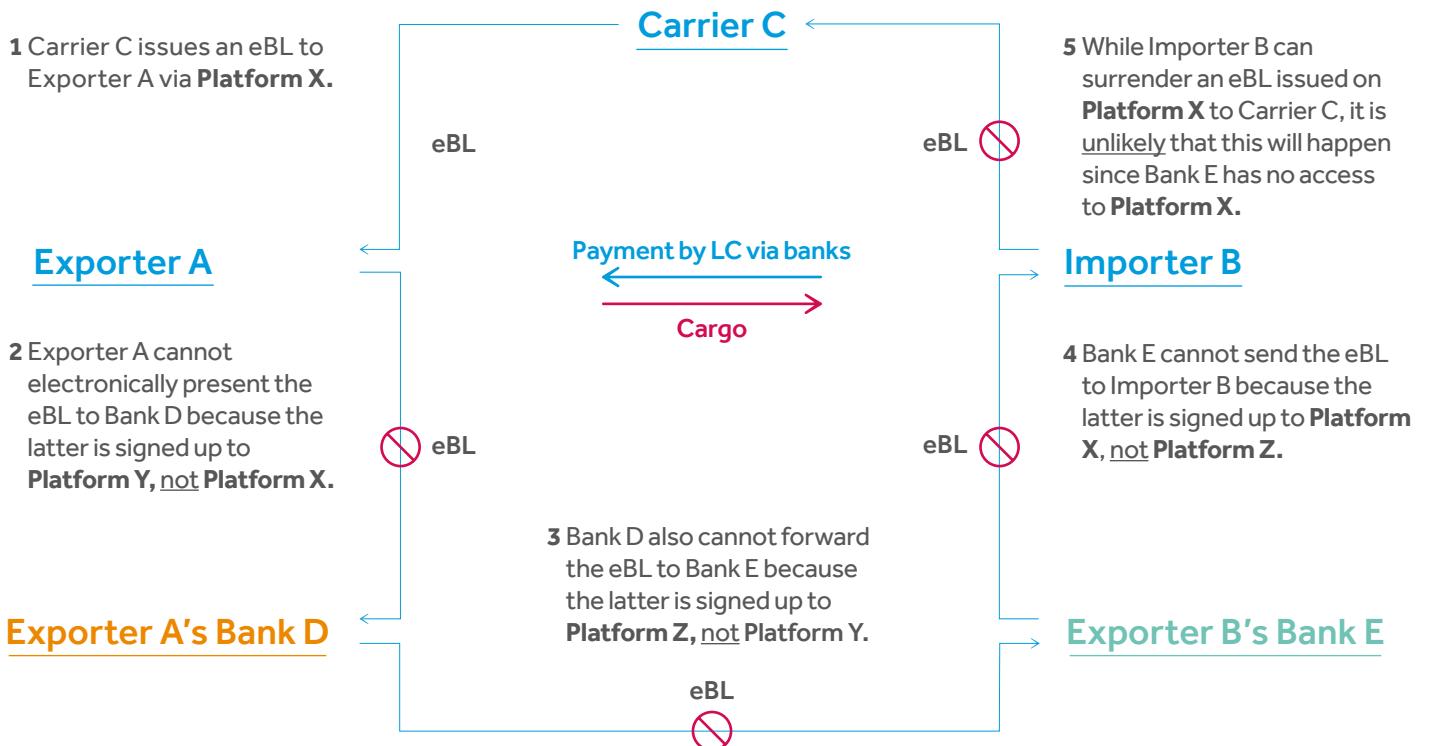


Diagram 1. Source: Stephenson Harwood LLP

2.7 Diagram 1 is an example of the problem posed by the lack of interoperability in the context of a standard sale and purchase of goods by sea utilising a letter of credit where the parties involved attempt to use eBL Platforms:

- 'Exporter A' intends to ship a cargo of crude oil to 'Importer B' onboard 'Carrier C's' vessel. Exporter A, Importer B and Carrier C are each signed up to '**Platform X**' for eBLs. However, 'Exporter A's Bank D' is signed up to '**Platform Y**', and 'Importer B's Bank E' is signed up to '**Platform Z**'.
- Carrier C can issue an eBL to Exporter A, and Exporter A can eventually endorse that eBL to Importer B because they are all on Platform X, meaning they operate in the same digital silo.
- However, Exporter A will be unable to electronically present the eBL to Exporter A's Bank D, and Exporter A's Bank D would be unable to forward the eBL to Importer B's Bank E thereafter.
- This is because the parties are signed up to three different eBL Platforms, which may be based on a different underlying technologies, have different electronic formats, and/or be subject to different contractually-binding rulebooks (including governing law clauses).

• As such, Exporter A would have to request that Carrier C take the eBL off Platform X and issue it in paper form before it can present it to Exporter A's Bank D. The parties would then most likely revert to the traditional way of transferring the documents, including paper BLs.

- See paragraph 3.21 and Diagram 5 for the same transaction example but using TT eBLs.

2.8 In this example, all parties in the supply chain would need to sign up to a single eBL Platform and operate within the same legal and digital silo in order for the transaction to reap the full benefits that eBL Platforms were designed to offer. Often, this is not practically possible, especially in transactions where the parties in the supply chain are not determined upfront. These legal, technical and administrative burdens have stopped or delayed many from adopting the use of eBLs. This is exacerbated by the commercial reality that the parties involved would vary from transaction to transaction, potentially necessitating the need for each party to sign up and/or pay for access to multiple eBL Platforms.

## What is TradeTrust and how does it achieve interoperability?

- 2.9 In contrast to existing eBL Platforms, TradeTrust is neither a digital platform nor is it designed to be a competitor to any of the existing eBL Platforms. TradeTrust also differs from other initiatives which have created centralised systems because TradeTrust provides a decentralised framework which gives industry players the tools to develop their own digital solutions, rather than imposing a 'one size fits all' model.
- 2.10 TradeTrust is a framework which is designed as a backend solution, sitting beneath the 'Application Layer' built by individual applications or platforms as shown in Diagram 2 below.
- 2.11 There is no centralised TradeTrust portal which parties need to log in to each time they wish to transact, no user terms and conditions governing how parties chose to use TradeTrust and no associated fees payable to IMDA for using TradeTrust.
- 2.12 When developers integrate the TradeTrust framework into their individual applications or platforms, they enable their systems to be connected on the backend to a public blockchain network supported by TradeTrust. For example, a carrier could utilise the TradeTrust framework to create and issue its own bespoke TT eBLs on one of the public blockchains. TradeTrust currently supports connections to the Ethereum, Polygon and XDC public blockchains, with more to be added progressively<sup>4</sup>.
- 2.13 The connectivity, or **technical interoperability**, provided by the access to a public blockchain network allows these applications or platforms to synchronise with each other, even if the end-users are using different applications or platforms, so long as these are TradeTrust-enabled. These parties will be able to issue, endorse, verify and transmit TT eBLs across those different applications or platforms<sup>5</sup>, rather than having to be signed up the same contract-based eBL Platform.

### Tradetrust framework is accessible to all

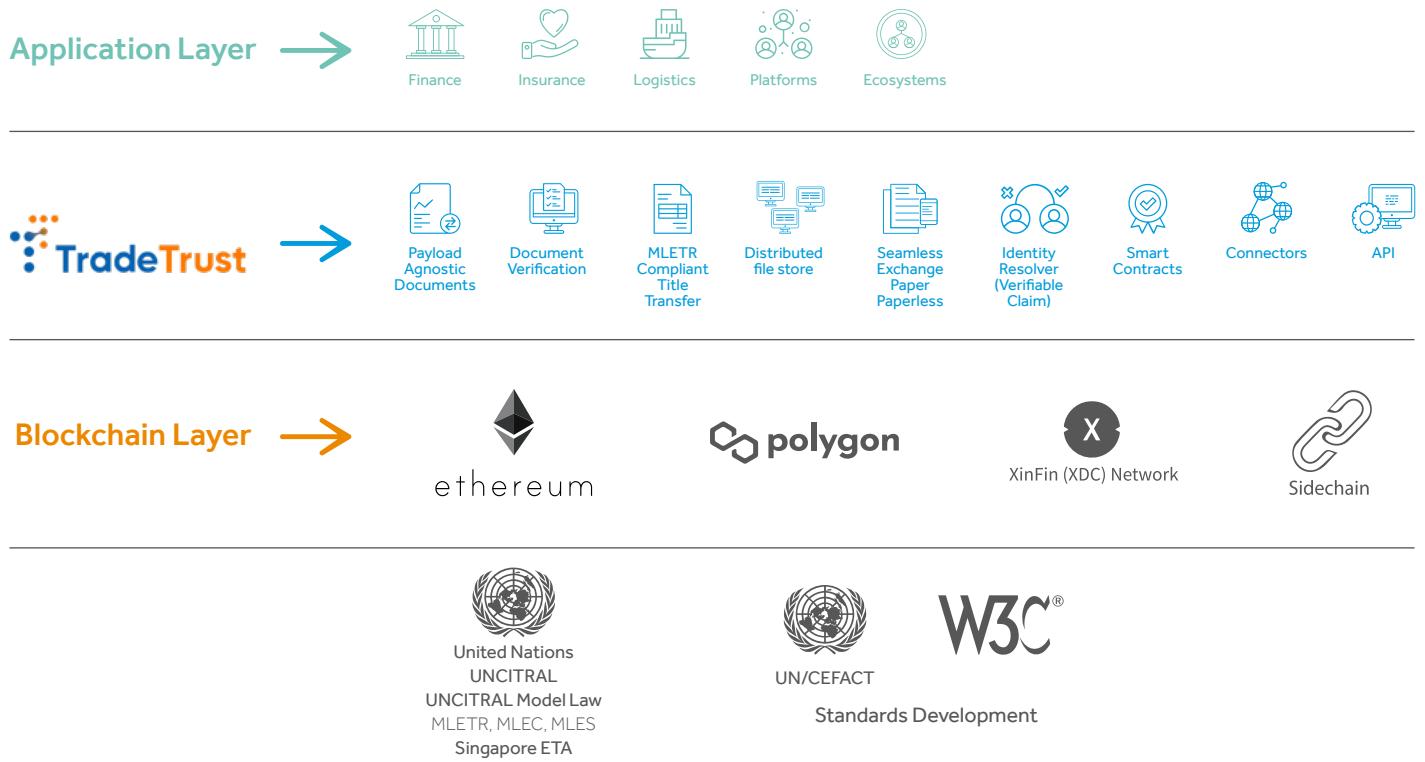


Diagram 2. Source: IMDA

2.14 Apart from its design as a backend framework which connects to a public blockchain, other key features of TradeTrust which supplement its ability to achieve technical interoperability include:

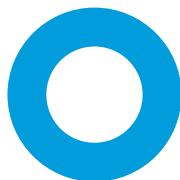
**2.14.1 Open-Source Software (OSS):** TradeTrust has been designed as a 'digital public good', aimed at accelerating the use of electronic trade documents in international trade. To this end, TradeTrust has developed open-source codes, which are freely available on GitHub<sup>6</sup> under an [Apache 2.0 licence](#), and can be integrated easily into any existing or new business system or platform. TradeTrust utilises OpenAttestation in its document issuance, endorsement and verification functionalities. OpenAttestation is registered with the Digital Public Goods Alliance<sup>7</sup> as a digital public good<sup>8</sup>. For more information on the TradeTrust OSS software, please see **paragraph 8.7 (How Parties Can Implement the TradeTrust Software)** below.

**2.14.2 Payload Agnostic:** TradeTrust does not require a particular format for electronic files before they will be accepted for use. Developers can design their bespoke TT eBLs in a data format of their choice (such as those data formats published by The Baltic and International Maritime Council (BIMCO) or the Digital Container Shipping Association (DCSA)), which allows flexibility based on business needs.

2.15 The design principles of TradeTrust are summarised in Diagram 3 below.

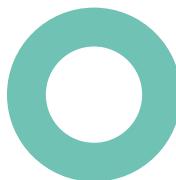
2.16 On a technical level, TradeTrust is an ideal candidate to support the development and uptake in the use of electronic documents in global trade.

### Tradetrust design principles



Public Blockchain

No central governance authority



Data Off-Chain

Preserves data confidentiality



Payload Agnostic

No data format or standard restriction



Open-Source

Full transparency for faster adoption



MLETR\* Compliant

Meet the requirements of the law  
(for electronic negotiable documents)

#### Built on:



#### Aligned to:

Principles for Digital Development  
[\\*https://digitalprinciples.org](https://digitalprinciples.org)

#### Supports:

UN Sustainable  
Development Goals (SDGs)

\*MLETR= Model Law on Electronic Transferable Records published by United Nations Commission on International Trade Law in Sept 2017.



# 3 A Comparison of Paper BLs, Contract-Based eBLs and TT eBLs

3.1 Having given an overview of the wider TradeTrust framework, in this section we focus on the characteristics of TT eBLs and how TT eBLs differ from both paper BLs and the existing contract-based eBLs.

## Paper BLs

3.2 Since its development in its modern form as early as the sixteenth century, the BL has been issued in paper form and fulfils three main functions: **(a) evidence of the contract of carriage; (b) receipt for goods; and (c) document of title.**

3.3 Despite the paper BL's historic centrality to global trade, its use has well-documented drawbacks and inefficiencies, including:

**3.3.1 Delays:** There are often delays in the arrival of paper BLs, which can cause knock-on delays along the supply chain since payment is often contingent on documentary presentation. This can give rise to misdelivery claims, when documentary presentation is commercially dispensed with upon issuance of letters of indemnity.

**3.3.2 Administrative Costs:** The costs of producing and verifying paper documents, and passing them through numerous parties in the supply chain, are significant. For example, a 2022 McKinsey study has estimated that digitalising the bill of lading could save between 10-30% in trade documentation costs, or US\$6.5 billion a year in direct costs<sup>9</sup>.

**3.3.3 Risk of Fraud:** Paper documents are susceptible to fraud both at the point of creation and in transit. This is a significant risk when using paper BLs, which change hands multiple times throughout their life cycle.

**3.3.4 Practical Limitations:** While unprecedented, the global COVID-19 pandemic cast a spotlight on the practical limitations of using paper BLs. For example, supply chain disruptions were caused by difficulties in document transfers and presentation due to office closures and the imposition of quarantine and movement restrictions.

## Benefits of eBLs

3.4 In comparison with the drawbacks and inefficiencies of paper BLs, the potential benefits of eBLs have been widely acknowledged, including:

**3.4.1 Instantaneous Transfer:** eBLs can be transferred almost instantaneously, as opposed to the days or weeks a paper BL spends in transit.

**3.4.2 Cost and Administrative Efficiency:** eBLs can be issued and verified with increased efficiency, such as through automation. This reduces the risks of human error as well as the administrative and environmental costs of using paper BLs.

**3.4.3 Reduced Risk of Fraud:** With the use of technologies such as blockchain, the number of points of vulnerability can be reduced significantly.

3.5 However, the actual uptake in the use of eBLs remains low, giving rise to industry efforts, such as BIMCO's '25 by 25 Campaign<sup>10</sup>', to promote the transition to eBLs.

3.6 The lack of uptake is an indication that the existing contract-based eBLs and eBL Platforms have limitations which are preventing the full potential benefits of eBLs from being realised without a solution to the twin problems of legal and technical interoperability.

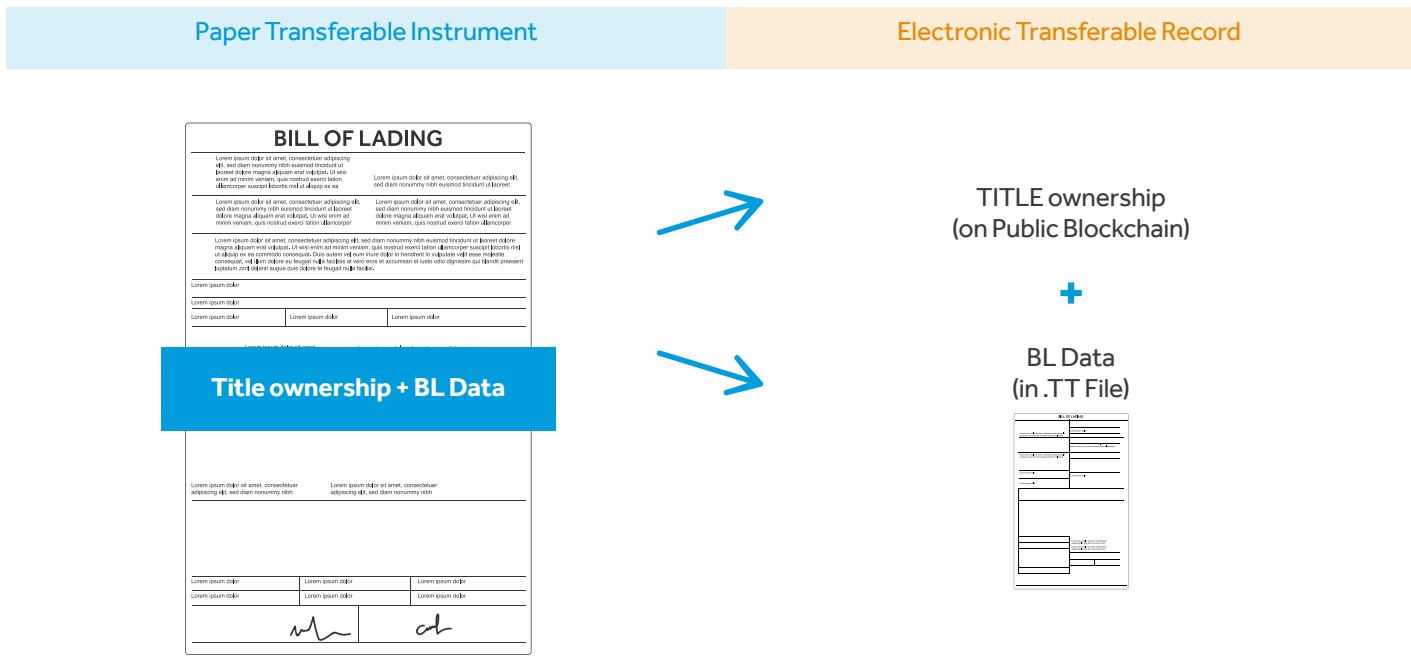
## Contract-based eBLs

- 3.7 In order for eBLs to be considered a viable alternative to paper BLs, they must be able to fulfil the three functions of paper BLs mentioned in **paragraph 3.2**. While the first two functions of a paper BL can be fulfilled by contract easily, it is the third function of a paper BL, as a document of title, which has traditionally been a challenge. This is because not all jurisdictions recognise electronic documents as being capable of "**possession**" and therefore do not treat eBLs as legally equivalent to paper BLs.
- 3.8 Contract-based eBL Platforms<sup>11</sup> have attempted to address this lack of legal interoperability primarily by setting up contractual frameworks (via platform user agreements or rulebooks) to emulate the legal and functional aspects of a paper BL. An example iteration involves contractual parties agreeing to treat the eBLs of that eBL Platform as legally equivalent to paper BLs, including agreeing that the usual effects of an endorsement of a paper BL be replicated by novation of the contract of carriage and attornment of constructive possession of the goods each time the eBL is "**endorsed**" via the eBL Platform. This is coupled with an underlying technology (such as NFTs and smart contracts) which ensures the uniqueness of and establishes exclusive control over those contract-based eBLs.
- 3.9 While the last five years has seen an increase in the number of eBL Platforms being developed<sup>12</sup>, the wider uptake of eBLs appears to still be hindered by the lack of technical and legal interoperability<sup>13</sup>.
- 3.10 On the lack of legal interoperability, the issue presents in two areas:
- 3.10.1 firstly, as existing eBL Platforms are primarily contract-based, rights under a contract-based eBL can only be enforced against parties who are privy to the contract (being the relevant eBL Platform's user agreement or rulebook), and enforcement of these contractual terms remains relatively untested in court; and
- 3.10.2 secondly, contract-based eBLs do not have the same unique legal status as that accorded to paper BLs under national laws in all jurisdictions.
- 3.11 As it stands, contract-based eBLs in isolation do not offer a whole solution to the problems posed by technical and legal interoperability.

## TradeTrust-enabled eBLs or TT eBLs

- 3.12 In many ways, TT eBLs are similar to some other eBLs available in the market in that they employ combinations of underlying technologies (such as blockchain, NFTs and smart contracts) to ensure the uniqueness of and establish exclusive control over the relevant electronic document. This means that anyone already familiar with eBLs would be able to understand the key features of TT eBLs. However, TT eBLs also address the limitations of contract-based eBLs outlined above, which we explore further in this section.

## DEALING WITH TRANSFERABLE DOCUMENTS (BL AS EXAMPLE)



*Diagram 4. Source: IMDA*

# The Two Components of a TT eBL

3.13 In summary, a TT eBL is made up of two components

- the 'BL data' component and the record of title ownership component, as shown in Diagram 4.

**3.14 The BL data component of a TT eBL** is a data file containing the 'human readable' elements of the TT eBL, including details of the relevant parties and the cargo. There is no prescribed data format which must be used, as noted above at **paragraph 2.14.2** (payload agnostic). Parties can transfer this BL data component of a TT eBL however they choose, including by simply attaching the data file to an email.

3.15 It is the design of the **record of title ownership component of a TT eBL** which is the distinguishing feature of TT eBLs and which allows a TT eBL to overcome the challenges posed by technical and legal interoperability. Therefore, the majority of this section focuses upon this component.

3.16 The unique record of title ownership component of a TT eBL is represented electronically by an NFT, which forms part of the TT eBL. This is recorded on the relevant public blockchain with reference to the owners' and holders' wallet addresses and accessed using the associated public and private keys. When a transaction is initiated, the smart contract cryptographically linked to the TT eBL will verify the wallet address(es) of the relevant owner and holder against the party initiating a transaction, and will only permit the transaction upon successful verification. These transactions will be recorded on the immutable ledgers of the relevant public blockchain and the records will be linked to the NFT of the TT eBL, acting as the digital version of the chain of endorsements which would usually be printed on the back of a paper BL.

3.17 Note that the NFT does not represent the TT eBL in its entirety in the sense that it does not contain the BL data component. This ensures that confidential commercial information contained in the BL data component of the TT eBL is kept 'off-chain'. Created using a cryptographic hash function, the NFT contains a hash derived from the BL data component of the TT eBL, meaning that the two components of a TT eBL, while distinct, are linked by this hash. If the NFT were to be removed, the remaining electronic document would no longer qualify as a properly functioning TT eBL.

3.18 TradeTrust designed this system to enable the verification of the authenticity (or singularity) and provenance of TT eBLs on two fronts:

3.18.1 the hash contained in the NFT links the 'on-chain' record of the title ownership component to the off-chain BL data component of the TT eBL. In the event that the BL data component is altered after the creation of the NFT, this would alter the hash such that the document would fail the document integrity test; and

3.18.2 the on-chain record of title ownership component of a TT eBL contains an immutable and pseudonymous record of the relevant owner and holder's wallet address, which allows the verification of the party which is entitled to transfer any given TT eBL by way of endorsement or surrender it.

## Owners and Holders of TT eBLs

3.19 TradeTrust uses the concepts of "**owner**" and "**holder**" in TT eBLs, which we use throughout this article:

3.19.1 **Owner** – The party who owns or has title to the goods represented by the TT eBL. This is the party entitled to take delivery of those goods from the carrier by surrendering the TT eBL. In the context of a paper BL, the 'owner' would either be the named party (such as in To Order or straight BLs) or the party who has physical possession of the paper BL (such as in the context of a Bearer BL).

3.19.2 **Holder** – The party who 'holds' the TT eBL at any given time. In the context of paper BLs, this would be the party with physical possession of the paper BL. For TT eBLs, the holder is the party with 'exclusive control' over the TT eBL<sup>14</sup>.

3.20 The TradeTrust framework permits the owner and holder to be different parties. Where the owner and holder of a TT eBL are the same party, they would be both the party with title to the underlying goods and the party with exclusive control over the TT eBL. If the holder is not also the owner of the TT eBL, the holder would not be able to take delivery of the relevant goods from the carrier. On the other hand, a holder who is not also the owner may practically prevent the owner from taking delivery from the carrier by retaining control over the TT eBL – the smart contract function would not recognise an instruction to surrender the TT eBL originating from the wallet address of the owner who is not likewise the holder.

3.21 As mentioned above, the on-chain record of title ownership and NFT component of a TT eBL identifies the owner and holder of that TT eBL and enables the updating and verifying of the owner and holder (either together or separately). In the scenario of a TT eBL which is a "**To Order**" BL, the 'holder' will be updated as the TT eBL is transferred along the supply chain, while the 'owner' would stay the same, unless endorsed along the way. Using the same transaction as outlined in Diagram 1 above but using TT eBLs instead of contract-based eBLs, this distinction can be outlined as follows in this Diagram 5:

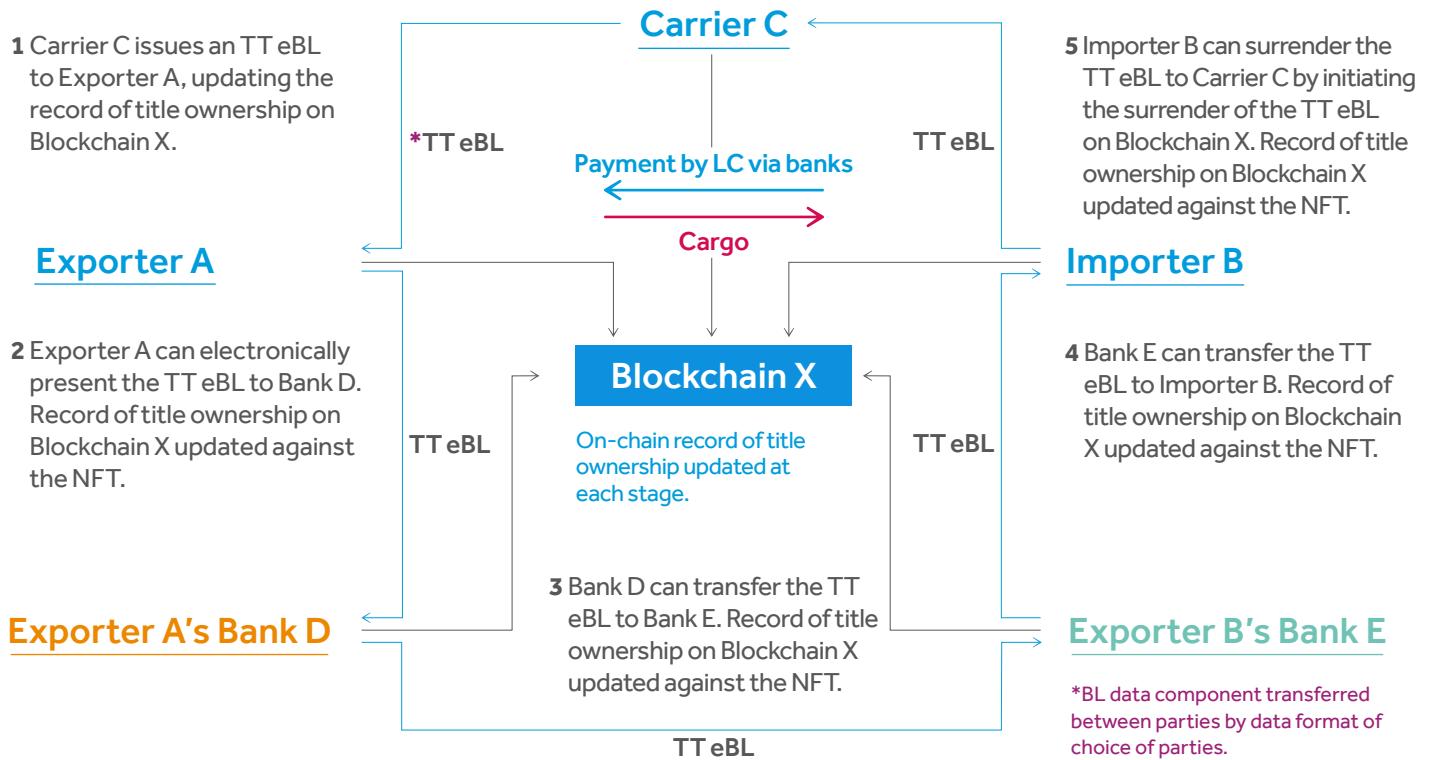


Diagram 5. Source: Stephenson Harwood LLP

3.22 Possible scenarios based on the transaction in Diagram 5 include:

Table 1. Scenarios involving the use of TT eBLs.

2. Transfer by Exporter A of TT eBL to Bank D	3. Transfer by Bank D of TT eBL to Bank E	4. Transfer by Bank E of TT eBL to Importer B	5. Surrender by Importer B of TT eBL to Carrier
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#### Scenario 1 – Holder and Owner for a Bearer TT eBL (Owner and Holder are aligned)

Holder	Exporter A	Bank D	Bank E	Importer B
Owner	Exporter A	Bank D	Bank E	Importer B

#### Scenario 2 – Holder and Owner for an "To Order of Importer B" TT eBL (Owner and Holder vary)

Holder	Exporter A	Bank D	Bank E	Importer B
Owner	Importer B	Importer B	Importer B	Importer B

#### Scenario 3 – Holder and Owner for an "To Order of Bank E" TT eBL (Owner and Holder vary)

Holder	Exporter A	Bank D	Bank E	Importer B
Owner	Bank E	Bank E	Bank E	Importer B

3.23 Note that TradeTrust's use of the terms 'owner' and 'holder' differs from the terms used in the MLETR. In the MLETR, neither 'owner' or 'holder' are defined terms, although the undefined term 'holder' is used to denote the party entitled to claim performance of the obligation embodied in the relevant "["transferable document or instrument<sup>15</sup>"](#). Unless indicated otherwise, we use the terms 'owner' and 'holder' with the meanings ascribed by TradeTrust, and proceed on the basis of a TT eBL being in the form of a bearer BL for simplicity.

## How a TT eBL Functions in Practice

3.24 Using Scenario 1 from Table 1 above as an illustration, we summarise below how TT eBLs function, from issuance through to surrender:

### 3.24.1 Creating and Issuing a TT eBL

- (a) A party must choose which TradeTrust-supported public blockchain to issue the TT eBL on. This will be the public blockchain which every party using that TT eBL will connect to during its life cycle.
- (b) Once the BL data component of the TT eBL is ready, the issuer will issue the TT eBL via its application or platform. On the backend, the TradeTrust framework will initiate the creation of an NFT representing the title ownership of the TT eBL, which will be recorded exclusively on the relevant public blockchain network.
- (c) During the issuance process, the issuer must specify the identities of the owner and holder of that TT eBL. In the context of a Bearer TT eBL, the wallet address of the party which is both owner and holder of the TT eBL will then be linked to the NFT of that TT eBL and recorded on the public blockchain.

### 3.24.2 Endorsing a TT eBL

- (a) Only a party who is recorded as the owner and holder can endorse the TT eBL in favour of another party.
- (b) The endorsement is simply the creation of a new block on the public blockchain recording the endorsee's wallet address against the NFT – they become the new owner and holder. Once this process is completed, the endorser will no longer have any rights to initiate any further actions (including endorsements) on that TT eBL, as the smart contract linked to the TT eBL will no longer recognise its wallet address as having such rights.
- (c) The public blockchain records each endorsement against the NFT such that the chain of endorsements of a TT eBL can be traced back to the point of issuance. This record is 'pseudonymous' as the details of the relevant parties are not recorded on-chain in human-readable text but instead, only their wallet addresses are available for verification.

### **3.24.3 Amending and Cancelling a TT eBL or Changing the Medium of a TT eBL**

- (a) Once a TT eBL is issued, an immutable record of title ownership is recorded on the public blockchain network which cannot be amended. As noted above, if the BL data component of the TT eBL were to be amended after issuance, the amendments would break the hash linking that BL data component to the NFT, with the result that the TT eBL would fail the document integrity test. As such, if an amendment is required, the owner and holder must surrender the TT eBL to the relevant carrier, along with a request to issue a new TT eBL with the required amendments. Along with the issuance of the new TT eBL with amendments, a new NFT linked to the amended BL data component will also be created.
- (b) This process likewise applies where a party requests to 'split' or 'switch' a TT eBL, whereby the owner and holder must surrender the TT eBL to the relevant carrier, along with a request to issue split or switch TT eBLs.
- (c) Where a party requests to convert the TT eBL to paper form, the owner and holder must likewise surrender the TT eBL to the relevant carrier along with a request for a paper BL to be issued with the necessary information<sup>16</sup>. Similarly, a TT eBL can only be cancelled by way of the owner and holder surrendering the TT eBL to the relevant carrier.

### **3.24.4 Surrendering a TT eBL to a Carrier**

- (a) In lieu of surrendering an original paper BL, a party who is both the owner and holder of a TT eBL will surrender the TT eBL to the carrier in order to claim delivery of the underlying goods.
- (b) Since the TradeTrust smart contract only allows surrender by a party who is both the owner and holder of the TT eBL, the carrier will easily be able to verify the correct party entitled to the claim delivery of the underlying goods.
- (c) Once verified, the carrier should trigger the cancellation of the TT eBL, which would take that 'spent' TT eBL out of circulation and prevent any further actions being taken in respect of it.

- 3.25 In addition to the technical features outlined above, parties who use TradeTrust-enabled eBL applications or platforms can take comfort from the fact that TradeTrust and TT eBLs have been designed with MLETR-compliance in mind. The below legal analysis in **Section 4** sets out how TT eBLs satisfy the key legal requirements for equivalence of singularity, exclusive control and integrity enshrined in the MLETR.



# 4 A Legal Analysis of TT eBLs and the MLETR

## Functional and Legal Equivalence of eBLs under the MLETR

4.1 In 2017, UNCITRAL adopted the MLETR<sup>17</sup> to encourage and support the use of electronic versions of certain “[transferable documents or instruments](#)”, being a special class of paper instruments that entitle the holder to claim performance of the obligations set out within, and to transfer such right to claim performance of the obligations by transferring possession of the instrument itself to another holder<sup>18</sup>. BLs are the prime example of a transferable document or instrument. For the MLETR, the electronic version of transferable document or instrument, like an eBL, is classified as “[electronic transferable record](#)<sup>19</sup>”. The rationale behind the adoption of the MLETR is that the most jurisdictions lack laws which specifically recognise the legal equivalence of electronic transferable records with their paper counterparts.

4.2 To date, Singapore, Abu Dhabi Global Market, Bahrain, Belize, Kiribati, Papua New Guinea, Paraguay and, most recently, the United Kingdom, have enacted MLETR-compliant national legislation<sup>20</sup>.

4.3 The MLETR contemplates that electronic transferable records<sup>21</sup> should be treated as **legally equivalent**<sup>22</sup> to their paper counterparts if they are **functionally equivalent**. Functional equivalence is in turn dependent on the electronic record fulfilling the MLETR’s requirements<sup>23</sup>, which we refer to throughout as the MLETR’s ‘**Criteria**’. These Criteria can be summarised as follows:

4.3.1 The electronic record must contain the same information as would be contained in a paper transferable document or instrument (**Same Information**)<sup>24</sup>; and

4.3.2 **A Reliable Method** must be used to: (i) identify that electronic record as the electronic transferable record (**Singularity**); (ii) render that electronic record capable of being subject to exclusive control (**Exclusive Control**); and (iii) retain the integrity of the electronic record (**Integrity**)<sup>25</sup>.

4.4 We assess how TradeTrust and TT eBLs fulfil the MLETR Criteria below and also provide a jurisdictional analysis in **Sections 5 to 7**. To avoid repetition, we will refer to the relevant parts of this **Section 4** in our jurisdictional analysis of TT eBLs where the same analysis applies.

## Criterion 1 – Same Information

4.5 An electronic transferable record must be an electronic record which “[contains the information that would be required to be contained in a transferable document or instrument](#)<sup>26</sup>”.

4.6 Under Criterion 1, an electronic record qualifies as an electronic transferable record where there is a corresponding (paper) transferable document or instrument. This is fulfilled in the case of an eBL which contains the same information as would be in a paper BL.

4.7 Typically, a paper BL will include information such as the names and addresses of the shipper and receiver, the shipment date, shipment details, records of endorsements, an acknowledgment of receipt of the goods and the terms on which the goods are to be carried (being all the information required for it to fulfil the 3 key functions of a BL outlined in **paragraph 3.2** above). For an eBL to be an MLETR-compliant electronic transferable record, it needs to include, in an electronic form, all of the same information as a paper BL.

4.8 TT eBLs comply with Criterion 1 because they are designed to contain in electronic form all the information necessary for a TT eBL to fulfil the three key functions of paper BL by way of the two<sup>27</sup> components of a TT eBL. These comprise the off-chain BL data component and the on-chain record of title ownership component represented by the NFT, as summarised from **paragraph 3.13** above.

4.9 The MLETR further requires that information contained in an electronic transferable record must be “[accessible so as to be usable for subsequent reference](#)<sup>28</sup>” in order to fulfil any legal requirements for such information to be in writing. In the context of TradeTrust, the information contained in both components of a TT eBL is accessible for subsequent reference in different ways:

#### 4.9.1 BL Data

The data file containing the BL data component of a TT eBL, including the human readable information, can be opened and viewed by any party with whom that data file is shared, either by using TradeTrust's default document renderer or a custom renderer built for a particular application or platform.

This data component should contain all the information and data fields present in a paper BL, including the identities of the parties, the description of the goods and the terms of shipment, apart from the on-chain record of owners and holders.

#### 4.9.2 Record of owners and holders

The on-chain record of title ownership of a TT eBL is accessible on the relevant public blockchain network on a pseudonymous basis<sup>29</sup>. This means that while the identity of the owner and holder of a TT eBL is not itself recorded on-chain, ensuring confidentiality, their identity could be ascertained for verification purposes by reference to their wallet address contained in the recorded blocks linked to the NFT of that TT eBL.

4.10 The MLETR also recognises the legal equivalence of the endorsement of electronic transferable records with the endorsement of paper BLs "if the information required for the endorsement is included in the electronic transferable record<sup>30</sup>". This requirement is satisfied by TT eBLs because the means of identifying the owner and holder of a TT eBL is recorded in blocks on the public blockchain, with reference to the title owner and holder's wallet address acting as a unique identifier. Each time an endorsement of a TT eBL occurs, an entry of the new wallet address associated with the new owner and holder is made through the creation of a new time-stamped block on the public blockchain network.

### Criterion 2 – Singularity

- 4.11 An electronic record must also use a reliable method "to identify that electronic record as the electronic transferable record<sup>31</sup>".
- 4.12 Criterion 2 addresses the need for 'singularity', by requiring reliable identification of the relevant electronic transferable record as the functional equivalent of a paper transferable document or instrument<sup>32</sup>. This is important in order to determine who is uniquely entitled to performance of the relevant obligations, such as the receiver's right to delivery of goods pursuant to the eBL, so that multiple claims of the same obligations are avoided<sup>33</sup>.
- 4.13 TT eBLs comply with Criterion 2 through the use of the NFTs. TT eBLs are tokenised by creating a unique NFT for each TT eBL, which is recorded on the relevant public blockchain. This NFT then acts as an identifier for which electronic record is the unique operative record. The TT eBL effectively becomes cryptographically sealed as an immutable reference to that BL data component as recorded at a single point in time. The NFT of a TT eBL will remain unique and unaltered throughout the life cycle of the TT eBL, regardless of any transfers or endorsements of the TT eBL.
- 4.14 The 'singularity' characteristic of a TT eBL ensures that it cannot be transferred twice by one party – any second attempt to transfer title in the TT eBL would fail because the ledger on the public blockchain would provide evidence that the transferor's wallet address is no longer associated with the NFT of the TT eBL, and as a result the smart contract would refuse to action the second attempt to transfer title in the TT eBL.
- 4.15 It is common practice for parties to retain copies of documents for their records – nothing prevents a party from saving the file containing the BL data component of a TT eBL for future reference. Notwithstanding this, the retained copy cannot be '**double spent**' given the use of the on-chain NFT.

## Criterion 3 – Control

- 4.16 An electronic record must use a reliable method “[to render that electronic record capable of being subject to control from its creation until it ceases to have any effect or validity<sup>34</sup>](#)”. In addition, where the law requires or permits possession of a transferable document or instrument, that requirement is met if a “[reliable method](#)” is used “[to establish exclusive control of that electronic transferable record by a person; and to identify that person as the person in control<sup>35</sup>](#).”
- 4.17 “[Control](#)” is not defined, although the Explanatory Note to the MLETR indicates that it is intended to be the functional equivalent to the notion of [possession](#).
- 4.18 Criterion 3 should be read closely with Criterion 2, which together are aimed at preventing the possibility of multiple claims for performance of the same obligation<sup>36</sup>. Although they are complementary, control and singularity are different: a single party may have exclusive control over multiple versions of the same electronic record, or multiple parties may have joint control over a single electronic record, for example if more than one person has access to a private key or a ‘multi-sig’<sup>37</sup> private key is used.
- 4.19 **TT eBLs comply with Criterion 3** because TradeTrust utilises smart contracts which hold the NFTs and subjects them to rules which mimic possession of a paper BL. For example, only the valid owner and holder whose wallet address matches the on-chain record associated with the NFT of a TT eBL is capable of transferring (and thereby controlling) that TT eBL by way of endorsement.
- 4.20 The smart contract checks the wallet address of this identifiable party<sup>38</sup> who is initiating a transfer of the TT eBL through the use of its private key. It is only when the smart contract has verified that the wallet address of this party matches that of the relevant TT eBL’s owner and holder that the transfer will be effected. The use of the private key for the intended transaction acts as the owner and holder’s digital signature.
- 4.21 TradeTrust cannot control how parties choose to keep their private keys secure or with whom they share their private keys. As a result, more than one person may have access to a private key needed to initiate a transfer of owner and holder of a TT eBL on the public blockchain, but the effect remains that only the private key-holder of the associated wallet has the means of controlling that TT eBL. This is permissible under the MLETR as control does not need to be ‘singular’. The control does however need to be ‘exclusive’ in that one party’s exercise of control will deprive others from controlling that asset. TradeTrust does ensure that only the valid owner and holder is given exclusive control because only that one party may exercise control by using that private key. Further, the transferor loses exclusive control of the TT eBL once it initiates a transfer which is recorded on-chain.

## Criterion 4 – Integrity

- 4.22 An electronic record must use a reliable method “[to retain the integrity of that electronic record<sup>39</sup>](#)”.
- 4.23 ‘[Integrity](#)’ in Criterion 4 relates to whether the information contained in an electronic transferable record remains “[complete and unaltered apart from any change which arises in the normal course of communication, storage and display<sup>40</sup>](#)”. This includes the integrity of any “[authorised change](#)” made during its life cycle. Authorised changes mean changes agreed upon by the parties to the contractual obligations related to an electronic transferable record<sup>41</sup>. For eBLs, this would include transfers of the eBL by way of endorsement.
- 4.24 **TT eBLs comply with Criterion 4** because TradeTrust incorporates both the use of public blockchains for recording owners and holders of a TT eBL, from the point of issuance through to endorsements until cancellation, and the protection of the integrity of this information through the use of cryptographic hash function to incorporate a hash into the NFT of a TT eBL derived from the BL data component as at the time of issuance of the TT eBL.

4.25 Integrity is further assured because there is **no single point** of weakness in the public blockchains compatible with the TradeTrust framework through which on-chain data can be compromised. This is in contrast to certain centralised (non-blockchain) systems like traditional databases maintained by organisations – in those systems, the managing organisation is typically the point of weakness.

4.26 Hypothetically, even if an unauthorised party gained access to the relevant public blockchain and altered any of the blocks, this would only alter the blocks as recorded on that particular version of the ledger. The alteration would not be replicated across all copies of the ledger on the public blockchain because it would be rejected by the public blockchain's verification protocols. Further, as each block is connected through the cryptographic hash function and the public blockchain records the time when any data is added, any amendment made to a chain of connected blocks would stand out.

4.27 In the case of a TT eBL, the MLETR's concept of "**authorised changes**" would refer to an endorsement of the TT eBL, which results in the wallet address linked to the NFT of a TT eBL being updated to that of the new owner and holder. Such a transfer creates a new block on the relevant public blockchain, and the wallet address records of all previous owners and holders remain on-chain, allowing verifying parties to trace the chain of endorsements back to the point of issuance.

## Criterion 5 – Reliable Method

4.28 Criteria 2 to 4 are each premised on singularity, control and integrity being achieved through the use of a "**reliable method**"<sup>42</sup>. As set out above, TradeTrust uses the following methods to achieve singularity, control and integrity: NFTs, smart contracts, and a combination of cryptographic hashing and the authorised public blockchains respectively.

4.29 Whether a particular method qualifies as reliable against the MLETR's reliability standard is a question of fact. Rather than prescribing what a reliable method is, the MLETR sets out an illustrative and non-exhaustive list of technology-neutral factors which are considered relevant to assessing the reliability of a method<sup>43</sup>. On this basis, it is not necessary to demonstrate if or how the TradeTrust framework meets all these criteria, although we summarise by way of example how **TT eBLs comply with Criterion 5** with reference to a few of the most relevant MLETR reliability factors:

### 4.29.1 "**Any operational rules relevant to the assessment of reliability**"

As public blockchain networks, there is no central authority or related set of contractual rules governing the public blockchains currently supported by TradeTrust. However, there are operational rules designed to provide reliability which are embedded in the respective network's digital architectures in the form of the consensus mechanisms. These consensus mechanisms govern how data is validated and then immutably recorded on the relevant ledgers of the networks and they differ depending on the type of network in question<sup>44</sup>.

### 4.29.2 "**The assurance of data integrity**"

As described above in relation to Criterion 4 (Integrity), in addition to the use of the consensus mechanism to validate data, this data is recorded on-chain in the public blockchain using a cryptographic hash function. This gives users and assessing authorities further assurance that the information recorded on-chain cannot be tampered with by hackers. Also, the integrity of the off-chain BL data component of a TT eBL can be checked against the on-chain record of owners and holders linked to the NFT of that TT eBL.

#### 4.29.3 "The security of hardware and software"

Security is widely accepted to be one of the key benefits of using decentralised and public blockchain networks, which are what TradeTrust uses. The greater the number of nodes performing the consensus mechanism for a blockchain network, the more secure that network is – public blockchains typically have many more nodes than private blockchains, making them inherently more secure. As noted above, even if a hacker gains unauthorised access to one user's hardware, it cannot gain access and manipulate data recorded on every users' copy of the ledger on the public blockchain from that one entry point. Each user has an identical and immutable copy of the transactions ledger made on the public blockchain, and any attempt to manipulate the recorded data would result in a failure of that unauthorised amendment being validated by the relevant consensus mechanism.

#### 4.29.4 "The existence of a declaration by a supervisory body, an accreditation body or a voluntary scheme regarding the reliability of the method"

The rationale for this factor is that a declaration or accreditation by such an authoritative body may ensure a minimum level of reliability of such a method. See also **paragraph 5.19** below which refers to the ETA 2010's provision for such a system, which is yet to be implemented.

#### 4.29.5 "Any applicable industry standard"

TradeTrust's technical methods have been designed to be compatible with the growing body of international standards for digital trade documents and digital assets being produced by international bodies. Examples of alignment with developing standards include:

- (a) the United Nations Centre for Trade Facilitation and Electronic Business's (**UN/CEFACT**) White Paper on "**Transfer of MLETR-Compliant Titles<sup>45</sup>**", which assesses the application of the MLETR criteria to electronic transferable records, and specifically references TradeTrust in Section 6 (Annex: Technical Guidance);

- (b) the World Trade Organisation (WTO) and the International Chamber of Commerce's (ICC) Digital Standards Initiative has produced a "Standards Toolkit for Cross-border Paperless Trade"<sup>46</sup> is designed to provide an overview of existing standards and promote interoperability. It recognises TradeTrust as an "**interoperable digitalisation framework**" that supports the exchange of electronic trade documents in cross-border paperless trade; and
- (c) the International Institute for the Unification of Private Law's (**UNIDROIT**) development of a set of draft principles and commentary on digital assets and private law (the **UNIDROIT Principles**)<sup>47</sup>. The UNIDROIT Principles only apply to digital assets capable of "**control**", as defined in its 'Principle 6'<sup>48</sup>. The Trade Trust framework provides a means of establishing such control, as further set out in relation to Criterion 3 (Control) above.



# 5 A Legal Analysis of TT eBLs and Singapore Law

## The Electronic Transactions Act 2010

5.1 In 2021, Singapore amended the Electronic Transactions Act 2010 (**ETA 2010**) to adopt the MLETR with only minor modifications. The amendments consisted of a new Part 2A of the ETA 2010 and deletion of what was then Item 2 to the First Schedule of the ETA 2010<sup>49</sup>. These amendments are part of a wider and ongoing initiative by the Singapore government to enable the creation and use of electronic forms of transferable documents and instruments, including BLs, promissory notes and bills of exchange, both domestically and internationally<sup>50</sup>.

5.2 Among other things, the ETA 2010 gives legal recognition to electronic transferable records such as eBLs under Singapore law. These will have legal effect even as against parties who are not part of a contractual framework, and will not be denied legal effect, validity or enforceability solely on the ground that they are electronic in form<sup>51</sup>.

5.3 The ETA 2010's criteria for qualifying electronic transferable records in essence aligns with the MLETR. We set out below how TT eBLs comply with the requirements of the ETA 2010.

## Qualifying Documents and the Applicable Criteria under the ETA 2010

5.4 Both the ETA 2010 and the MLETR use the same definition of "[transferable documents or instrument](#)", although the ETA 2010 provides a non-exhaustive list of three examples of qualifying documents, namely, a bill of exchange, a promissory note and a BL. It was intended by the drafters to leave the list open, so that any other document or instrument that is or may in the future acquire the status of a transferable document or instrument would fall within the definition<sup>52</sup>.

5.5 By the application of the substantive law of Singapore, the ETA 2010 also adopts the same position as the MLETR in excluding **straight BLs**<sup>53</sup>, as they are not considered negotiable instruments under Singapore law<sup>54</sup> and thus not a "[transferable document or instrument](#)" for the purposes of Section 16A(1) of the ETA 2010.

5.6 The criteria for establishing whether an electronic document qualifies as an electronic transferable record under the ETA 2010 is substantially identical to that under the MLETR. As such, while we set out a summary of the relevant analysis below, please refer to the fuller analysis in **Section 4** above to avoid repetition.

## Criterion 1 – Same Information

5.7 **This Criterion is the same as that of Criterion 1 of the MLETR.** Under the ETA 2010, the information contained in an electronic record must be same as that which "[would be required to be contained in the \[equivalent\] transferable document or instrument](#)"<sup>55</sup>.

5.8 **TT eBLs comply with Criterion 1** for the same reasons as set out in **paragraphs 4.5 to 4.10** above, which should be referred to for the fuller detailed analysis. In summary:

5.8.1 **the BL data component** of a TT eBL contains all the information which is required for a document to fulfil the three key functions of a BL, other than the on-chain record of the owners and holders of the TT eBL; and

5.8.2 **the on-chain record of owner and holder** of a TT eBL records the cryptographically hashed wallet addresses of every owner and holder from the point of issuance until cancellation against the NFT of that TT eBL. This is also known as the chain of endorsements.

5.9 As is the case with the MLETR, the ETA 2010 recognises that an electronic transferable record can be made up of constituent parts<sup>56</sup>, each of which may fulfil a different function. It is therefore permissible under the ETA 2010 for an electronic transferable record such as a TT eBL to comprise both an off-chain BL data component as well as an on-chain NFT and associated record of wallet addresses.

## Criterion 2 – Singularity

- 5.10 **This Criterion is substantially identical to Criterion 2 of the MLETR.** Under the ETA 2010, a reliable method must be used to “identify that electronic record as the authoritative electronic record constituting the electronic transferable record<sup>57</sup>”.
- 5.11 The ETA 2010 adds a qualifier that the electronic record must be identified as “authoritative”, which the MLETR had intentionally refrained from adding in its drafting<sup>58</sup>. Notwithstanding, the term is likely to be given its ordinary meaning, namely an electronic record which can be trusted as true and correct, since this term is not used elsewhere in the ETA 2010. As such, in our view, this is unlikely to indicate any substantive difference from Criterion 2 of the MLETR.
- 5.12 **TT eBLs comply with Criterion 2** as they each have a unique NFT recorded on-chain on the relevant public blockchain, which acts as the digital fingerprint of that TT eBL. We refer also to the fuller analysis set out in **paragraphs 4.11 to 4.15** above.

## Criterion 3 – Control

- 5.13 **This Criterion is the same as that of Criterion 3 of the MLETR.** Under the ETA 2010, a reliable system must be used to “render that electronic record capable of being subject to control from its creation until it ceases to have any effect or validity<sup>59</sup>”. Like the MLETR, the ETA 2010 does not define “control”.
- 5.14 **TT eBLs comply with Criterion 3** for the same reasons as set out in **paragraphs 4.16 to 4.21** above, which should be referred to for the fuller detailed analysis. In summary, TradeTrust utilises smart contracts to distinguish and establish who is a holder and/or owner of the TT eBL at any given time and defines the actions that each can take once their identity has been verified. The smart contract function ensures that a TT eBL cannot be double spent.

## Criterion 4 – Integrity

5.15 **This Criterion is the same as that of Criterion 4 of the MLETR.** Under the ETA 2010, a reliable system must be used to “retain the integrity of that electronic record<sup>60</sup>”.

5.16 **TT eBLs comply with Criterion 4** for the same reasons as set out in **paragraphs 4.22 to 4.27** above, which should be referred to for the fuller detailed analysis. In summary, one would expect that the only changes which would be made to a TT eBL would be that of endorsement, which is ordinarily an “authorised change” within the meaning of Section 16H(2) of the ETA 2010. The requirement to retain the integrity of both the off-chain BL data and the on-chain endorsement chain is achieved in TradeTrust through the use of the cryptographic hash function in combination with an NFT. Because the NFT is created using a hash from the off-chain BL data component of a TT eBL, if the BL data component is later amended, the hash would be different from the one recorded on-chain in the NFT.

## Criterion 5 – Reliable System

5.17 **This Criterion is the same as that of Criterion 5 of the MLETR.** Under the ETA 2010, each of Criteria 2 to 4 must be achieved using a “reliable method<sup>61</sup>”.

5.18 Like the MLETR, the ETA 2010 was drafted with the intention of being technology neutral and therefore it does not define reliability. It does however adopt the same non-exhaustive list of factors as that under Article 12 of the MLETR.

5.19 Sections 16O(2) and (3) of the ETA 2010 also introduce a presumption of reliability for methods used by an accredited electronic transferable records management system provider which is registered, licensed, accredited or recognised in accordance with regulations made under Section 16Q of the ETA 2010. At the time of writing, we understand that the accreditation programme has yet to be launched and no providers have yet been accredited.

5.20 **TT eBLs comply with Criterion 5** for the same reasons as set out in **paragraphs 4.28 to 4.29** above, which should be referred to for the fuller detailed analysis.



# 6 A Legal Analysis of TT eBLs and English Law

## The Development of the Electronic Trade Documents Act 2023

- 6.1 The legal treatment of BLs under the laws of England and Wales is covered by a mixture of legislation and common law<sup>62</sup>.
- 6.2 The recently passed Electronic Trade Documents Act 2023 (the **ETDA**), which took effect on 20 September 2023<sup>63</sup>, was designed to address the fact that the previous law of the United Kingdom<sup>64</sup> did not recognise the legal equivalence of the electronic counterparts (like eBLs) of certain paper trade documents (like BLs)<sup>65</sup>.
- 6.3 The ETDA was drafted by the **Law Commission** of England and Wales (the Law Commission) to align with the MLETR “**insofar as possible**<sup>66</sup>” but tailored specifically to the laws of England and Wales.
- 6.4 The ETDA takes “**the least interventionist approach to reform**<sup>67</sup>”, so that the previous laws and customs of England and Wales applicable to paper trade documents are extended to their electronic counterparts without any significant modification of those laws. The Law Commission concluded that for the ETDA to achieve this aim, it must explicitly allow for the **possession** of electronic trade documents.
- 6.5 The ETDA’s criteria for qualifying electronic trade documents are closely aligned with the MLETR’s criteria for qualifying electronic transferable records. We set out below where the ETDA diverges from the MLETR, and how TT eBLs comply with the requirements of the ETDA. To avoid repetition, we refer to the analysis in **Section 4** to the extent that the ETDA and MLETR criteria align.

## Divergence From the MLETR Over Possession

- 6.6 The main distinction between the MLETR and the ETDA lies in their approaches to the legal concept of possession.
- 6.7 As discussed in relation to Criterion 3 (Control) of the MLETR in **Section 4**, the MLETR establishes a link between the concepts of possession and control, providing that control is the “**functional equivalent to the fact of possession**<sup>68</sup>”, and that any law requiring or permitting possession of paper trade documents should apply to their electronic counterparts if the latter are capable of exclusive control<sup>69</sup>.
- 6.8 Rather than simply recognising control as the functional equivalent of possession, the ETDA explicitly extends the concept of possession so that qualifying electronic trade documents, as well as paper trade documents, **are capable of possession**: “**a person may possess, indorse and part with possession of an electronic trade document**<sup>70</sup>”.
- 6.9 The ETDA establishes that a qualifying electronic trade document, like a TT eBL, can be possessed both factually and constructively<sup>71</sup> – in other words, paper and equivalent electronic trade documents should have the same legal treatment irrespective of their format.
- 6.10 The Law Commission’s rationale for this divergence from the MLETR is that it provides the most seamless solution to ‘plug in’ these electronic trade documents to the existing English legal apparatus for paper trade documents<sup>72</sup>. Extending the concept of possession is also designed to avoid the risk that, while functionally identical to their paper counterparts, qualifying electronic trade documents might still not be the subject of possessable treatments and remedies available to the paper counterparts<sup>73</sup>.
- 6.11 The ETDA does not prescribe what constitutes possession of electronic trade documents on the basis that as this will depend upon the facts in question and should be assessed as a matter of common law<sup>74</sup>. In summary, possession is established by demonstrating the two necessary elements of: (a) factual custody and control; and (b) the accompanying intention<sup>75</sup>. For an intangible asset like a TT eBL, element (a) could be demonstrated by knowledge of the relevant private key, as this knowledge enables that party to exercise exclusive control over the TT eBL as discussed in relation to MLETR Criterion 3 (Control).

## Qualifying Documents and the Applicable Criteria under the ETDA

- 6.12 The terminology used for qualifying paper and equivalent electronic documents in the ETDA is different from that used in the MLETR, although their meanings broadly align.
- 6.13 Instead of the MLETR's "[transferable documents or instrument](#)", the ETDA uses the term "[paper trade document](#)"<sup>76</sup>. Both terms refer to the special class of documents which entitle the holder to performance of obligations embodied in the document<sup>77</sup>.
- 6.14 Whereas the MLETR definition of transferable documents or instruments does not include a list of qualifying documents<sup>78</sup>, the ETDA's definition of paper trade documents includes a non-exhaustive list of qualifying documents, which includes BLs<sup>79</sup>.
- 6.15 One further area of divergence is that, unlike the MLETR, the ETDA does not exclude **straight BLs** from qualifying as paper trade documents. This is on the basis that even though they are not truly transferable within the narrow legal meaning of the term (and therefore they are not true documents of title), possession is still integral to claiming performance under a straight BL<sup>80</sup>. The straight BL may name the relevant consignee but that consignee still needs possession of the straight BL in order to claim delivery of the goods from the carrier.
- 6.16 Instead of the MLETR's "[electronic transferable record](#)", the ETDA uses the term "[electronic trade document](#)"<sup>81</sup>. Nevertheless, their meanings are aligned, as an electronic trade document is simply the electronic equivalent of a paper trade document if the criteria of the ETDA are fulfilled.
- 6.17 We set out the ETDA criteria below with reference to TT eBLs. To the extent that any of the ETDA's criteria align with those of the MLETR, we refer the reader to the relevant analysis in Section 4 above.
- 6.18 This Criterion aligns with Criterion 1 of the MLETR. To qualify as an electronic trade document under the ETDA, the information contained in an electronic document must be same as that which would be required to be contained in the equivalent paper trade document<sup>82</sup>.
- 6.19 **TT eBLs comply with Criterion 1** for the same reasons as set out in **paragraphs 4.5 to 4.10, and 5.8** above regarding the off-chain and on-chain components of TT eBLs, which should be referred to for the fuller detailed analysis.
- 6.20 In line with the MLETR, the ETDA also recognises that an electronic trade document can be made up of a number of constituent parts<sup>83</sup>, each of which may fulfil a different function. The ETDA is technology neutral, although the accompanying Law Commission and government guidance does give the example of a "[unique cryptographic "token" allocated to a system user](#)" forming one such component, and that control of the document may be "[exercised by means of the document's underlying data structure \(such as the token\)](#)"<sup>84</sup>. Therefore, it is permissible under the ETDA for an electronic trade document to comprise both an off-chain BL data component as well as an on-chain record of owners and holders whose wallet addresses are linked to the NFT, such as how TradeTrust has designed TT eBLs to function.

## Criterion 1 – Same Information

- 6.21 **This Criterion aligns with Criterion 2 of the MLETR.** To qualify as an electronic trade document under the ETDA, a reliable system must be used to "[identify the document so that it can be distinguished from any copies](#)"<sup>85</sup>.
- 6.22 **TT eBLs comply with Criterion 2** for the same reasons as set out in **paragraphs 4.11 to 4.15** above regarding the use of NFTs, which should be referred to for the fuller detailed analysis.

## Criterion 3 – Control

- 6.23 This Criterion aligns with Criterion 3 of the MLETR. To qualify as an electronic trade document under the ETDA, a reliable system must be used to:
- 6.23.1 “secure that it is not possible for more than one person to exercise control of the document at any one time<sup>86</sup>;”
- 6.23.2 “allow any person who is able to exercise control of the document to demonstrate that the person is able to do so<sup>87</sup>; and
- 6.23.3 “secure that a transfer of the document has effect to deprive any person who was able to exercise control of the document immediately before the transfer of the ability to do so (unless the person is able to exercise control by virtue of being a transferee)<sup>88</sup>.”
- 6.24 The Law Commission’s accompanying guidance explains that the ETDA treats each of these provisions as a separate “gateway criteria” which are required to be satisfied in order to qualify as an electronic trade document<sup>89</sup>. Notwithstanding, the collective effect of the above three provisions of the ETDA is that a qualifying electronic trade document must be amenable to exclusive control. In line with ‘control’ being a single Criterion for the MLETR, we have analysed these gateway criteria together.

- 6.25 Like the MLETR, the ETDA does not define “control”. However, unlike the MLETR, it does clarify that that “a person exercises control of a document when the person uses, transfers or otherwise disposes of the document (whether or not the person has a legal right to do so)<sup>90</sup>”, and whether a party has the ability to exercise control in such a manner is a question of fact rather than being legal or rights-based<sup>91</sup>. The ETDA itself does not explain what use, transfer or dispose mean but the accompanying statutory guidance explains that “use” was included to cover positive and negative scenarios where a party has the ability to use the relevant document without also being able to transfer or dispose of it (although simply reading or viewing the document does not constitute use of that document)<sup>92</sup>. For example, under a possessory security interest like a pledge, the relevant bank or pledgee has the right to prevent the pledgor from dealing with the pledged document, notwithstanding that the pledgee cannot further transfer or dispose of that pledged document<sup>93</sup> (unless it becomes entitled to take enforcement action under that pledge). The meanings of “transfer” and “dispose” are clearer despite not being specifically defined in the statutory guidance, with the former including endorsement of a BL and the latter including the cancellation of a BL<sup>94</sup>.
- 6.26 TT eBLs comply with Criterion 3 for the same reasons as set out in paragraphs 4.16 to 4.21 above regarding the operation of the smart contract mechanism to only initiate the instruction to effect an endorsement of a TT eBL originating from the wallet address of the valid owner and holder, which should be referred to for the fuller detailed analysis.

## Criterion 4 – Integrity

### 6.27 This Criterion aligns with Criterion 4 of the MLETR.

To qualify as an electronic trade document under the ETDA, a reliable system must be used to “protect the document against unauthorised alteration<sup>95</sup>”.

6.28 Although the ETDA does not use the word “integrity<sup>96</sup>”, the accompanying statutory guidance explains that this provision is concerned with the document’s integrity and that ““Integrity”... means that the document has not been interfered with or altered without the requisite authority<sup>97</sup>”. This aligns with the meaning assigned to integrity in the MLETR<sup>98</sup>.

6.29 TT eBLs comply with Criterion 4 for the same reasons as set out in paragraphs 4.22 to 4.27 above regarding the use of the features of the public blockchain networks and the cryptographic hash function to prevent unauthorised amendments to on-chain data, which should be referred to for the fuller detailed analysis.

## Criterion 5 – Reliable System

### 6.30 This Criterion aligns with Criterion 5 of the MLETR.

To qualify as an electronic trade document under the ETDA, each of Criteria 2 to 4, which together in practical terms demonstrate the functional equivalence of electronic trade documents with paper trade documents, must be achieved using a “reliable system<sup>99 100</sup>”.

6.31 Like the MLETR, the ETDA was drafted with the intention of being technology neutral and therefore does not define reliability or prescribe the features of a reliable system. The accompanying guidance simply states that “reliable” means “that an electronic system meets certain standards in the way that it operates<sup>101</sup>”.

6.32 The ETDA provides a non-exhaustive list of factors which a court may take into account when asked to consider the reliability of a particular system for electronic trade documents<sup>102</sup>. These reliability factors are substantively based on the MLETR reliability factors<sup>103</sup> as shown in Table 2 below.

6.33 TT eBLs comply with Criterion 5 for the same reasons as set out paragraphs 4.28 to 4.29 above, which should be referred to for the fuller detailed analysis.

Table 2. Comparison of Reliability Factors under the MLETR and ETDA.

MLETR Reliability Factors	ETDA Reliability Factors
Any operational rules relevant to the assessment of reliability.	Any rules of the system that apply to its operation.
The assurance of data integrity.	Any measures taken to secure the integrity of information held on the system.
The ability to prevent unauthorized access to and use of the system.	Any measures taken to prevent unauthorised access to and use of the system.
The security of hardware and software.	The security of the hardware and software used by the system.
The regularity and extent of audit by an independent body.	The regularity of and extent of any audit of the system by an independent body.



# 7 A Legal Analysis of TT eBLs and US (New York and Delaware) Law

## Electronic Documents of Title in New York and Delaware

7.1 The legal status of BLs under US law is primarily addressed under the Uniform Commercial Code (**U.C.C.**), which is a comprehensive set of laws governing all commercial transactions in the US. The U.C.C. is not federal law, but is rather a collection of model laws that are designed to serve as a guide for individual states to use when they draft statutes involving commercial contracts<sup>104</sup>. Both New York and Delaware have adopted the U.C.C., referred to as the **NY U.C.C.** and **Delaware U.C.C.** respectively - we refer to the U.C.C. as adopted in both states using the term **New York and Delaware U.C.C..**

7.2 Article 7 of the U.C.C. governs documents of title, and it informed the drafting of the MLETR. Therefore, the treatment of electronic documents under the MLETR and the U.C.C. is closely aligned.

7.3 The U.C.C. accommodates electronic mediums of contract. In this regard, the New York and Delaware U.C.C. contemplates that BLs (as well as other documents of title) may be either tangible or electronic, and provides guidelines for both. Electronic documents of title are "[evidenced by a record consisting of information stored in an electronic medium](#)<sup>105</sup>" and may be delivered by "[voluntary transfer of control](#)<sup>106</sup>".

7.4 Electronic documents of title (including eBLs) are legally effective, valid and enforceable under the U.C.C.<sup>107</sup>. In particular, under the New York and Delaware U.C.C., BLs<sup>108</sup> (whether negotiable or non-negotiable)<sup>109</sup> are "[documents of title](#)<sup>110 111</sup>".

7.5 The treatment of eBLs as valid documents of title under the New York and Delaware U.C.C. is supplemented by other statutes (in particular, the Uniform Electronic Transactions Act (**UETA**) and the Electronic Signature in Global and National Commerce Act<sup>112</sup> (**E-Sign Act**) which together establishes the US law position on electronic contracts and signatures generally. It should however be noted that portions of the U.C.C. override these statutes in certain respects, in particular, the treatment of documents of title such as eBLs. For example, the E-Sign Act is superseded, in relevant part, by Article 1 of the U.C.C.

### 7.5.1 The E-Sign Act

The E-Sign Act (federal statute) which applies to all US states was passed to facilitate the use of electronic records and signatures in interstate and foreign commerce by ensuring the validity of legal effect of contracts entered into electronically. The E-Sign Act pre-empts state laws which are inconsistent to the extent of its inconsistency, unless that state law is the UETA or establishes sufficient alternative procedures for the use and/or acceptance of electronic signatures and records consistent with the E-Sign Act.

### 7.5.2 UETA

The UETA similarly addresses the recognition of electronic records and signatures. The UETA preceded the E-Sign Act and differs from it in that the UETA only applies to the states that have adopted it.

- 7.6 It bears mentioning that New York has not enacted UETA (whereas Delaware has)<sup>113</sup>, and thus UETA has no effect on New York law. The correct New York statute governing electronic contracts and signatures is the Electronic Signatures and Records Act (**ESRA**), which gives an electronic document the same “[force and effect as those records not produced by electronic means](#).” However, ESRA is pre-empted by Article 7 of the U.C.C., which controls documents of title. Accordingly, the relevant U.C.C. definitions and related provisions provide the primary statutory basis for the legal effectiveness, validity, and enforceability of an electronic document of title such as an eBL under New York law.
- 7.7 Absent the provisions of the U.C.C., there is very little positive authority – under either state or federal law – governing eBLs. In this regard, there are two statutes which govern bills of lading – (1) the U.S. Carriage of Goods by Sea Act (**US COGSA**), which applies to shipments to and from the United States, provides that carriers shall issue BLs, but does not require that they be issued on paper, and is otherwise silent on eBLs; and (2) the Pomerene Act, which is limited to domestic transportation, or international transportation if originating from a U.S. port, is similarly silent on BLs in electronic form<sup>114</sup>.
- 7.8 While there have been no court decisions that directly address the use of eBLs, there have been some decisions in the Second Circuit, which includes courts in New York, Connecticut and Vermont, and the Ninth Circuit, which includes courts in California, Alaska, Oregon, Washington, and Arizona, among others, that recognize that eBLs are presumptively valid and may be transmitted electronically.

## Control and Transfer of Electronic Bills of Lading Under New York and Delaware Law

7.9 An eBL must meet certain requirements under the New York and Delaware U.C.C., which are broadly aligned with those of the MLETR as set out in Section 4 above. We summarise these criteria below and set out how TT eBLs comply with these criteria.

### Criterion 1 – Same Information

7.10 This Criterion is **broadly aligned with that of Criterion 1 of the MLETR**.

7.11 Under the New York and Delaware U.C.C., an electronic document of title like an eBL must contain in electronic form the same information as is required to be included in a paper BL necessary for it to fulfil the three key functions of a BL. **It can therefore be said that the Same Information Criterion applies under New York and Delaware law, in line with Criterion 1 of the MLETR.**

7.12 **TT eBLs comply with Criterion 1** for the same reasons as set out in **paragraphs 4.5 to 4.10** above, which should be referred to for the fuller detailed analysis.

## Criterion 2 – Singularity

- 7.13 Under the New York and Delaware U.C.C. § 7-106(b) (which is analysed further in relation to Criterion 3 below), a party to the contract "should be able to identify the single authoritative copy which is unique and identifiable as the authoritative copy." For an eBL to qualify as an electronic document of title, the system used to create, store and transfer that electronic document must be capable of creating a single authoritative version of that document, which must be distinguishable from mere copies generated from that authoritative version. While copies could be made and the location of the authoritative version could change, the authoritative version must always be identifiable as such – analogous to an original paper bill of lading. As a result, non-authoritative copies of eBLs must be easily identified as being only copies.
- 7.14 It can therefore be said that **the Singularity Criterion applies under New York and Delaware law, in line with Criterion 2 of the MLETR.**
- 7.15 TT eBLs comply with Criterion 2 for the same reasons set out in Sections **4.11 to 4.15** above, which should be referred to for the fuller detailed analysis.

## Criterion 3 – Control

- 7.16 Under the New York and Delaware U.C.C. §7-502(a), the "holder" of an electronic document of title is "the person in control of a negotiable electronic document of title." See the analysis of the terms "owner" and "holder" as used by both TradeTrust and the MLETR in **paragraph 3.19** above. Further, under the New York and Delaware U.C.C., a holder of a BL (whether electronic or tangible), is entitled to delivery of the goods, subject to certain excuses for non-delivery. The holder to a bill of lading which has been duly negotiated acquires "(1) title to the document; (2) title to the goods; and (3) all rights accruing under the law of agency or estoppel, including rights to goods delivered to the bailee after the document was issued."
- 7.17 Therefore, as noted above, "**control**" is integral to the analysis of qualifying electronic documents of title under New York and Delaware law, one which **broadly aligns with Criterion 3 of the MLETR**. We set out the requirements for establishing control below.
- 7.18 Like the MLETR, "**control**," as it relates to an electronic document of title, is not defined and it is treated as the conceptual equivalent to possession and endorsement of a physical document of title<sup>115</sup>. Controlling an electronic document of title is stated to be analogous to "a person with a tangible document of title deliver[ing] the document by voluntarily transferring possession," and "a person with an electronic document of title delivers the document by voluntarily transferring control<sup>116</sup>."

7.19 Under the New York and Delaware U.C.C., “control<sup>117</sup>” over an electronic document of title requires a reliable system which evidences the transfer of interests in the electronic document of title. While New York and Delaware law recognise that parties to a contract are generally free to reach agreements on whatever terms they prefer, it is important to note that parties to a contract “may not by contract provide that control exists.” Rather, the test for “control” is a factual analysis that depends on whether:

7.19.1 a general test for control has been satisfied<sup>118</sup>; or

7.19.2 the so-called “safe harbour” test applies<sup>119</sup>.

Under this provision, at any point in time, a party should be able use the relevant system to identify the single authoritative copy of an electronic document of title which is unique and identifiable as the authoritative version. This does not prevent copies from being made – the system must however establish which is the one authoritative version of the electronic document of title. If the safe harbour test is satisfied, the system in question will be deemed to meet the general test<sup>120</sup>.

7.20 The “general” test for control set forth in subsection (a) provides: “A person has control of an electronic document of title if a system employed for evidencing the transfer of interests in the electronic document reliably establishes that person as the person to whom the electronic document was issued or transferred.”

7.21 The “key to having a system that satisfies this test is that identify of the person to which the document was issued or transferred must be reliably established<sup>121</sup>”. The identification of the holder may be accomplished by passwords or other encryption methods such as registries. The drafters of this section of the U.C.C. specifically left it to the market to develop sufficient technologies to determine “control.”

7.22 A system satisfies subsection (a), and a person is deemed to have control of an electronic document of title, if the document is created, stored and assigned in such a manner that:

- (1) “a single authoritative copy of the document exists which is unique, identifiable, and, except as otherwise provided in paragraphs (4), (5), and (6), unalterable;
- (2) the authoritative copy identifies the person asserting control as:
  - (A) the person to which the document was issued; or
  - (B) if the authoritative copy indicates that the document has been transferred, the person to which the document was most recently transferred;
- (3) the authoritative copy is communicated to and maintained by the person asserting control or its designated custodian;
- (4) copies or amendments that add or change an identified assignee of the authoritative copy can be made only with the consent of the person asserting control;
- (5) each copy of the authoritative copy and any copy of a copy is readily identifiable as a copy that is not the authoritative copy;
- (6) any amendment of the authoritative copy is readily identifiable as authorized or unauthorized.”

7.23 In summary, qualifying electronic documents of title must be capable of being exclusively controlled by a single person, and the system used to exercise this control must identify this party as the having this ability to exercise control.

7.23 **TT eBLs comply with Criterion 3** for the same reasons as set out in paragraphs **4.16 to 4.21** above, which should be referred to for the fuller detailed analysis.

## Criterion 4 – Integrity

### 7.25 This Criterion aligns with Criterion 4 of the MLETR.

A person is deemed to have control of an electronic document of title, if a system creates a single authoritative copy of the document “which is unique, identifiable, and, except as otherwise provided in paragraphs (4), (5), and (6), unalterable<sup>122</sup>. ”

7.26 Although the New York and Delaware U.C.C. does not use the word “integrity”, the statutory language and accompanying comments make clear that this provision is concerned with the document’s integrity in that the system must ensure the document is “unalterable.” This aligns with the meaning assigned to integrity in the MLETR.

7.27 TT eBLs comply with Criterion 4 for the same reasons as set out in paragraphs 4.22 to 4.27, which should be referred to for the fuller detailed analysis.

## Criterion 5 – Reliable Method

7.28 There is no list of non-exhaustive reliability factors in US law, as is the case in the MLETR. Rather, a court will review the reliability of a system on a case-by-case basis and apply the applicable U.C.C. provisions.

7.29 As set out above, under the New York and Delaware U.C.C., for a system to replicate an electronic document of title which is functionally “equivalent” to a physical bill of lading, the system must establish a “single authoritative copy [of the document]... which is unique, identifiable and...unalterable” and must ensure that all copies that are not authoritative, including copies of the authoritative copy, must be “readily identifiable as a copy that is not the authoritative copy.”

7.30 To provide for the electronic equivalent of possession and endorsement, there must be only one holder at any point in time and that holder must be able to transmit the record to the next holder in a manner which can be independently verified, if required. At the instant of transmission, the transferring party relinquishes its status as holder and the receiving party gains that status.

7.31 Further, to achieve functional equivalence, the electronic document does not have to mirror precisely the operation of a physical bill of lading, but the holder of the electronic document must be in much the same position as the holder of the physical bill of lading.

7.32 For example, the technical features of the system should include, but are not limited to:

7.32.1 Each user should have a unique account in which to create, generate, send, receive and store an electronic record;

7.32.2 The system should allow for one holder of the electronic record at any one time;

7.32.3 Provisions for when a user has a right of control over the electronic record;

7.32.4 Provisions for when a user transfers the right of control of an electronic record to another user and the recipient immediately becomes the new holder and the transferor loses the right of control;

7.32.5 Provisions for how the electronic records are issued, endorsed, produced, returned, and whether the electronic documents are negotiable, incorporate the terms of the Contract of Carriage, and/or are issued under a documentary credit.

Given the overlap between this Criterion and the previous Criteria, it can be said that **on the basis that TT eBLs comply with the other Criteria, they also comply with Criterion 5.**



# 8 Advice to the Market on Using TT eBLs

This Section addresses some of the key legal concerns which different industry players may have when using TT eBLs:

## Section No. ETDA Reliability Factors

8.1	Common BL Claims
8.2	Features of TT eBLs which Simplify Misdelivery Claims
8.3	MLETR and Non-MLETR Jurisdictions
8.4	P&I Considerations
8.5	Document Review and Compliant Presentations
8.6	Taking Security
8.7	How Parties Can Implement the TradeTrust Software

## 8.1 Common BL Claims

8.1.1 Most BL claims arise from damage to the cargo carried pursuant to the BL. The cargo claimant under the BL will commonly argue that the carrier has failed to either:

- (a) exercise due diligence before and at the beginning of the voyage to make the ship seaworthy, to properly man and supply the ship, and to ensure the holds are fit to receive the goods<sup>123</sup>; or
- (b) properly and carefully load, handle, stow, carry, keep, care for and discharge the goods delivered<sup>124</sup>.

8.1.2 The use of eBLs, such as a TT eBL, will likely simplify the proof of the factual elements of title to sue in respect of such claims (see further below). Using a TT eBL will have the same impact as using a paper BL on such claims, so long as the choice of law clause in the TT eBL selects a jurisdiction which recognises eBLs as bills of lading and/or documents of title<sup>125</sup>.

8.1.3 It is in the area of misdelivery claims where the use of TT eBLs may have a game changing impact on the industry. Such claims are relatively rare, but are extremely high value when they do arise.

8.1.4 The carrier's fundamental obligation under a BL is to deliver the cargo to the lawful holder of the BL. If the carrier fails to do so, he is liable to the lawful holder for misdelivery and may be in breach of the obligations under Art. III R.2 of the Hague-Visby Rules (HVR)<sup>126</sup>.

8.1.5 In spite of this, carriers regularly deliver cargo without the production of paper BLs. They are willing to take the substantial risk involved (which is not covered as a matter of course under the usual insurances available to carriers), rather than delay the vessel.

8.1.6 The most common reason given for the inability to present the original paper BL at the discharge port is that it is stuck in the banking system. To deal with this problem and avoid delay to vessels, it is market practice for carriers to agree to discharge cargo without production of the original paper BL. Instead, the carrier will deliver against a Letter of Indemnity (LOI), usually provided by the charterer of the ship. In agreeing to do so, the carrier is taking a big bet (up to the full value of the cargo carried, often significantly more than the value of the ship itself) on the solvency of the LOI provider.

8.1.7 Trade finance banks also rely on BLs as security for the transactions which they finance. If the cargo is lost in transit and the bank's customer becomes insolvent (possibly even as a result of the loss of the cargo), the bank's security would be seriously impaired if the BL in the hands of the bank did not afford rights of suit against a carrier for loss in transit or loss arising from failure to keep and care for the cargo properly.

8.1.8 If the bank goes unpaid by its customer, it will want to enforce its security. It may do this by suing the carrier under the BL for misdelivery, if the carrier has delivered the cargo to someone other than the bank, at a point in time when the bank was the lawful holder of the BL.

## 8.2 Features of TT eBLs which Simplify Misdelivery Claims

8.2.1 Using TT eBLs will not mean the end of misdelivery claims. However, it will **significantly reduce** the risk of those in the value chain (most particularly carriers) unwittingly opening themselves up to the possibility of such claims.

- 8.2.2 The paper BL system results in a situation where the carrier (who is responsible for delivering them to the proper party) often delivers against a LOI and has no idea who in fact is the lawful holder of the BL at the time of discharge of the goods. It is even less likely that the carrier will know who is the lawful holder at the time when the goods are released from a warehouse onshore to the ultimate receiver, which could be long after the completion of discharge.
- 8.2.3 The use of TT eBLs will make the current lawful holder of the TT eBL patently clear to those with access to the on-chain record of title ownership linked to the NFT for that TT eBL.
- 8.2.4 The industry may still make a commercial decision to use LOIs, for example, if the financing bank is unwilling to give up being the owner and holder of the TT eBL as security for the underlying trade finance loan. However, now a carrier will know the true identity of the lawful holder of the TT eBL at the point of delivery. This will allow the carrier to know the risk which it is taking by delivering against an LOI and provide an ability to seek clarification from the lawful holder if the carrier is ordered to deliver the cargo to anyone else.
- 8.2.5 The common practice of issuing paper BLs in triplicate will not be necessary for a TT eBL. Commonly, a paper BL will include words such as "**IN WITNESS whereof the Master or Agent of the said Vessel has signed the number of Bills of Lading indicated below all of this tenor and date, any one of which being accomplished the others shall be void**<sup>127</sup>." This gives rise to the possibility of one original of a paper BL issued in triplicate falling into the wrong hands and being presented by the wrong person to take delivery of a cargo<sup>128</sup>, albeit banks generally require the presentation of the full set<sup>129</sup>. This possibility can be eliminated or mitigated by the use of a TT eBL.
- 8.2.6 The issue of title to sue is also likely to become less complicated with TT eBLs. Title to sue is a complex matter, which carriers regularly contest when defending cargo claims brought pursuant to paper BLs. A key factual aspect of this defence is determining who is the lawful holder of the BL at the relevant time. With TT eBLs, title transfers throughout the life cycle of the transaction are

recorded on the public blockchain on which the relevant TT eBL has been issued, by linking the NFT to the wallet address of each party who at any point is or has been the lawful holder of the TT eBL. Moreover, only one party can ever be the lawful holder of the TT eBL at any one time<sup>130</sup>. This will significantly simplify the exercise of determining the lawful holder of a TT eBL for the purposes of any cargo claims made pursuant to the TT eBL.

- 8.2.7 The use of blockchain to record ownership of a TT eBL will also reduce the possibility for fraud during the period of any given transaction, as compared with paper BLs. The same risks of input of fraudulent or inaccurate data will be present at the point of creation of a TT eBL as for a paper BL. The safeguards against the creation of fraudulent eBLs are the same safeguards that exist against the creation of fraudulent 'original' paper BLs. However, it will be possible to eliminate or mitigate the risk of a TT eBL itself being replaced by a fraudulent eBL created by an intermediate party purporting to be that TT eBL during the carriage of a cargo as it is not possible to alter the BL data component of the TT eBL – if such an attempt is made, the hash will also be altered and will no longer match the hash contained in the NFT. Any such attempt will thus result in the incoherence of the blockchain records and make the attempted fraud obvious. Although "**fraud will always find a way**<sup>131</sup>" the result is that the system is likely to be much harder for fraudsters to exploit.
- 8.2.8 The possibility of loss of a TT eBL will be all but eliminated as compared to the possibility of loss of a paper BL. That being said, if a party loses its private key, it loses access to any TT eBLs which it holds or possess<sup>132</sup>. This scenario would be equivalent to the loss of a paper BL, and an equivalent procedure would be followed.

- 8.2.9 All of these features of TT eBLs are likely to result in a reduction of the common factual and legal issues which need to be proven in connection with claims under BLs. This should be an attractive feature for all concerned in the value chain and in particular Defence Clubs and other insurers.

### 8.3 MLETR and Non-MLETR Jurisdictions

Table 3. Example measures for using eBLs for cross border trade in MLETR and non-MLETR jurisdictions.

Cross-border trade which... Involves an MLETR- jurisdiction	Does not involve an MLETR- jurisdiction
Measures that can be undertaken.	<p>Expressly state the law and jurisdiction of the TT eBL to be that of an MLETR jurisdiction.</p> <p>Expressly state the law and jurisdiction of the eBL to be that of an MLETR jurisdiction. This will allow an enforcing party to seek an anti-suit injunction against attempts to bring proceedings in a non-contractual forum and reduce the risk of the non-recognition of the TT eBL.</p>

- 8.3.1 Where a TT eBL incorporates a choice of law clause selecting the law of a jurisdiction which has implemented the MLETR (or which otherwise legally recognises eBLs), such as Singapore or English law, that TT eBL will most likely be considered in accordance with the MLETR as applied under the relevant domestic law and be treated as equivalent to a paper bill of lading. That is the same position with regard to express choice of law and jurisdiction as under the current law.
- 8.3.2 If however the TT eBL incorporates a choice of law clause selecting the law of a jurisdiction which does not legally recognise eBLs as bills of lading, the legal status and validity of the TT eBL will be determined in accordance with the laws of that jurisdiction. As a result, it may not have the same status as a paper bill of lading, though it would likely still be recognised as a valid contract.
- 8.3.3 It follows that the use of an express choice law and jurisdiction clause which incorporates both the law and jurisdiction of a jurisdiction which has implemented the MLETR gives parties the most certainty that a TT eBL will be fully recognised as a bill of lading.
- 8.3.4 The importance of both clauses selecting an MLETR jurisdiction is borne out in the following example. If the relevant cross border trade involves a non-MLETR jurisdiction or if the TT eBL selects a non-MLETR jurisdiction in the jurisdiction clause, it is possible that the courts of the non-MLETR country will not recognise a TT eBL even if the law of an MLETR jurisdiction has been chosen as the governing law. On the contrary, if the relevant cross border trade involves a non-MLETR jurisdiction and the parties have selected (for example) Singapore law and jurisdiction in the TT eBL, the injured party would likely be entitled to obtain an anti-suit injunction in the Singapore Courts preventing the attempt to bring proceedings in a non-contractual forum and potentially also damages for breach of the jurisdiction clause.

### 8.4 P&I Considerations

- 8.4.1 As noted by BIMCO, the P&I Clubs are the "gatekeepers" for the current eBLs solution providers approved by the International Group of P&I Clubs (IG)<sup>133</sup>. P&I Clubs are concerned that eBLs issued by their members fulfil the three principal functions of a bill of lading<sup>134</sup>. The purpose of the MLETR is to ensure that eBLs perform these principal functions and this aspect has already been comprehensively covered above. Nevertheless, there are some points which go beyond the MLETR and which P&I Clubs are likely to want to see covered in an eBL.
- 8.4.2 The IG generally makes cover discretionary for bills of lading which do not incorporate a contract of carriage containing defences which are no less favourable to the member than the Hague or Hague-Visby Rules defences<sup>135</sup>. There remains a risk that a non-MLETR jurisdiction will not recognise an eBL as a bill of lading, in which case such jurisdictions may consider that these defences do not apply. However, if the parties select the law and jurisdiction of an MLETR jurisdiction as the law and jurisdiction of the eBL, then this risk can be mitigated in the manner set out in **paragraph 8.3** above.

8.4.3 The IG P&I Clubs are generally prepared to cover risks in relation to eBLs from a system which the relevant Club has pre-approved<sup>136</sup>. The conversation about the cover for eBLs which are governed by and comply with the laws of an MLETR jurisdiction, though issued outside of these pre-approved systems, is ongoing. In the shorter term, since TT eBLs are system agnostic, they are capable of being used by and alongside a system which has been pre-approved by the IG P&I Clubs. Cross platform validity is a major strength of TT eBLs as noted above and this is likely to provide further flexibility. In the longer term however, if the contractually agreed law and jurisdiction of a TT eBL is that of an MLETR jurisdiction, we expect that many of the concerns which the IG P&I Clubs aim to address through pre-approval should be covered off.

8.4.4 IG P&I Club cover is also provided to the extent that the risks covered would also arise in respect of a paper bill of lading. This means that carriers using eBLs are currently also well advised to obtain cyber risks insurance. As noted in an April 2020 update from one of the IG P&I Clubs, given the expansion of potential cyber-attacks on shipping companies, it is prudent for companies to have such cover in any event as part of their business risks insurance package<sup>137</sup>.

8.4.5 Finally, P&I Clubs are also concerned that an eBL can always be converted to paper form, which in any event is a requirement under the MLETR<sup>138</sup>. This is important in order to preserve the option of reverting to paper BLs in unfriendly jurisdictions or vis-à-vis parties who are not yet able or willing to accept eBLs in their transactions. We understand that TradeTrust, as a backend solution, is agnostic as to a change of medium in that it does not interfere with users' ability to convert a TT eBL into paper form. Practically, what is envisioned is that the owner and holder must surrender the TT eBL to the relevant issuer along with a request to issue a paper BL which has a statement indicating a change of medium inserted within (see also Article 18 of the MLETR and **paragraph 3.24.3(c)** above). The below Diagram 6 is an example of endorsement chain which can be produced along with the converted BL:

## Endorsement Chain

Action / Date	Owner	Holder
Document has been issued 7th Jul 2023, 10:57 am	0x96166b8382637489CE16G9A	0x96166b8382637489CE16G9A
Transfer holderhip 23rd Jul 2023, 10:07 pm		0x96166b8382637489CE16G9A
Endorse change of ownership 23rd Jul 2023, 10:09 pm	0x96166b8382637489CE16G9A	
Document surrendered to issuer 23rd Jul 2023, 10:10 pm		
Surrender of document accepted 23rd Jul 2023, 10:11 pm		

Diagram 6. Source: IMDA

## 8.5 Document Review and Compliant Presentations

- 8.5.1 The benefits of transacting parties using eBLs over paper BLs for parties, including banks, are that the time and administrative burden of manually checking and verifying the relevant trade documents is greatly reduced, as is the risk of accepting fraudulent BLs. With TT eBLs, a party can easily and quickly verify that a TT eBL is the valid and authoritative version by reference to the unique NFT of the TT eBL, and the on-chain record of title ownership linked to that NFT.
- 8.5.2 This will enhance the speed and efficiency of trade finance processes like documentary presentations under letters of credit.
- 8.5.3 The UNCITRAL's efforts to digitalise trade documents through the MLETR has been complemented by the International Chamber of Commerce's (**ICC**) recent supplementary and standalone rules, like the supplementary electronic rules to the Uniform Customs and Practice for Documentary Credits (**UCP**), known as the **eUCP**<sup>139</sup>, and the Uniform Rules for Digital Trade Transactions (**URDTT**), which provide legal certainty that financiers can accept electronic data in place of paper documents. While the eUCP accommodates the presentation of electronic documents, the ICC describes them as being "**not fully digitalised**" due to parties' ongoing reliance on manual reconciliation processes, whereas the URDTT is designed for transactions which are "**totally digitised**".<sup>140</sup>
- 8.5.4 Both the eUCP and the URDTT are designed to be technology neutral and to align with the MLETR. For example, like the MLETR<sup>141</sup>, the URDTT states that any law requiring or permitting transfer, delivery or possession shall be satisfied in respect of an electronic record if the addresses obtains "**exclusive control**" of the electronic record<sup>142</sup>.

## 8.6 Taking Security

- 8.6.1 The lack of certainty in many jurisdictions on the legal status of eBLs has deterred some financial institutions from treating security over eBLs as legally equivalent to security over paper BLs. This has exacerbated the reliance on paper documents, with some financial institutions insisting upon paper BLs so that they can be delivered to their possession to perfect their possessory security interests, such as pledges.
- 8.6.2 The analysis in the previous Sections of this article demonstrates that security over TT eBLs using an MLETR jurisdiction minimally for its choice of law would give these institutions some certainty.
- 8.6.3 Using TT eBLs could also simplify the process of taking security over BLs, and avoid the need to receive and hold large volumes of paper BLs. If a bank wishes to perfect its security over goods financed under transferable BLs (like certain Bearer or To Order BLs) by taking control or possession of the BLs, it can require the secured party to update the on-chain record of title ownership to link the NFT of the financed TT eBL to the bank's wallet address. This would ensure that the bank has control as the factual equivalent to possession of the TT eBL.
- 8.6.4 Possessory security interests like pledges require a transfer of possession of the secured property. If BLs are pledged to a bank, the bank will have a pledge over the underlying goods, however this can interfere with the receiver's need to possess the pledged BL in order to surrender it to the carrier and claim delivery of the goods. A common solution is for a bank to transfer possession of the BLs to the receiver in return for a trust receipt, which is an undertaking from the receiver giving the bank legal rights over the goods and any proceeds connected to the goods.
- 8.6.5 The use of TT eBLs would not impair any legal rights of control granted to a bank under such a trust receipt. By updating the public blockchain records to link the NFT of the pledged TT eBL to the wallet address of the receiver, the bank would be divesting itself of factual control and possession of the TT eBL but not the legal control afforded by the trust receipt which would remain in place and follow the goods after the surrender of the TT eBL.

## **8.7 How Parties Can Implement the TradeTrust Software**

In summary, using TradeTrust's software entails taking the following actions:

### **Actions for Developers**

8.7.1 The entities which have developed or are developing applications or platforms which issue and allow the transfer of eBLs should download TradeTrust's OSS software and ensure that this is incorporated into the digital architecture of their applications and platforms as a backend solution.

### **Actions for Users of eBLs**

8.7.2 Parties in global trade who use or wish to use TT eBLs should ensure that the developers of the applications and platforms which generate their eBLs have incorporated TradeTrust's OSS software so that they can be assured that they are transacting using TT eBLs. In this way, these parties do not need to download the TradeTrust OSS software themselves, and the functionality of the TradeTrust-supported public blockchain networks, which enable the creation of NFTs, will be built into the TT eBLs which they will then use.

8.7.3 The OSS software is made available under an Apache 2.0 licence, which is very commonly used for OSS, and is typically easy for development teams to understand and comply with. The Apache 2.0 licencing terms are permissive, meaning that there are limited requirements imposed on the use, modification, creation of derivative works or redistribution of the TradeTrust OSS software. The key requirements apply to where the user reproduces and distributes the TradeTrust software or any derivative works of it, and includes obligations to:

- (a) provide a copy of the Apache 2.0 licence;
- (b) include a notice of modification in any modified files;
- (c) retain any copyright or other notices in the original OSS; and
- (d) retain any attribution notices contained within any "NOTICE" text file (if any) in the original OSS.

8.7.4 If you use the TradeTrust OSS software in your own solution, including where you make modifications or derivative works, you may make your solution available on different license terms and conditions, provided your use, reproduction, and distribution of the TradeTrust OSS software otherwise complies with the conditions stated in Apache 2.0 licence.

8.7.5 Please see the [Apache 2.0](#) licence and [FAQs](#) for more details.

8.7.6 Parties should be aware that while TradeTrust is provided free of charge, transactions using TT eBLs involve the execution of actions on public blockchain networks, which means that 'gas fees' will be incurred each time such an action, like the issuance, endorsement or surrender of a TT eBL, takes place. For more information on the amount of gas fees, please see "[What is the cost of using crypto for eBL transactions in TradeTrust?](#)" in the [Product FAQs](#) section of the TradeTrust website.

# Schedule 1 Glossary of Terms

Please note that this Glossary of Terms is provided for reference purposes and readers are encouraged to consult the [Frequently Asked Questions](#) section of the TradeTrust website for further information on the technical features of the TradeTrust framework.

Term	Description
<b>Backend</b>	Software which users of a website or digital platform do not see, in contrast to the 'frontend' or user interface.
<b>Block</b>	Each entry of data on a blockchain network is recorded as a new block – the digital equivalent of a page in a paper ledger. A block is cryptographically linked to previous blocks and contains a record of the information included in the previous blocks back to the original or 'genesis' block. Once added a block cannot be deleted and it will be time-stamped at the point of creation.
<b>Blockchain</b>	A form of distributed ledger technology used for recording data which does not rely on a single centralised server. It uses a decentralised model in terms of both software and hardware – a copy of the ledger is stored on each distributed device or node (like computers) which makes up the blockchain network. Data stored on a blockchain network is immutable because once recorded in a block that block cannot be deleted or amended.
<b>Blockchain (private or permissioned)</b>	Private blockchain networks are only accessible by a select class of verified users, usually controlled by a central authority.  Permissioned blockchain networks allow access to any user provided that the administrator of the network grants such party access. Authorisation to perform specific activities on the network may also require permission.
<b>Blockchain (public)</b>	Blockchain networks are public if any party may access them without the approval of a central authority with power over the network at the governance level. The network will be permissionless if there is no authorisation required to gain access or effect transactions on the network.
<b>Centralisation / Centralised</b>	A centralised system is one in which the control and decision-making power in that system resides in a single entity.

Term	Description
<b>Consensus mechanism</b>	A procedure through which all the peers of the Blockchain network reach a common agreement about the present state of the distributed ledger. One example is 'Proof of Work' or 'POW' where users verify transactions by solving mathematical puzzles, a process also known as mining. Another example is 'Proof of Stake' or 'PoS' where randomly selected validators are chosen to write the new blocks on the network.
<b>Cryptographic hash function / Cryptographic hashing</b>	Algorithms which convert any input data into a unique and encrypted fixed-length code or hash which functions like a 'digital ID' of the input data. The hash rather than the input data can be recorded on the database, like a blockchain network. Input data which has been put through this process or 'hashed' is pseudonymous because the hash acts as a digital ID, and it can be used to verify the input data.
<b>Decentralisation / Decentralised</b>	<p>A decentralised system is one in which control and decision-making power in that system are distributed between multiple parties operating using a consensus mechanism, rather than being centralised and controlled by any single entity.</p> <p>Decentralisation is a sliding scale, and some blockchain networks are more decentralised than others. Private or permissioned blockchain networks may impose limitations on their centralised characteristics, such as operating using a more limited consensus mechanism in which only a certain number or class of users can validate transactions.</p>
<b>Distributed ledger &amp; Distributed ledger technology (DLT)</b>	<p>Distributed ledgers are databases or 'ledgers' where each device or node in the network has its own copy of the ledger, rather than there being a repository in which a single authoritative version of the ledger is stored. Each node's ledger is synchronised and updated through a consensus mechanism.</p> <p>DLT is the technology which enables the use of distributed ledgers. Blockchain is one form of technology derived from DLT.</p>
<b>Gas fees</b>	<p>'Gas' commonly refers to the amount of work required to validate a transaction using the relevant consensus mechanism before it can be recorded in a new block on a blockchain network.</p> <p>Users are incentivised to carry out validation through the payment of fees, such as in the form of the specific cryptocurrency of the blockchain network. Each time a party wishes to carry out a transaction on the network, a 'gas fee' must be paid to these validators.</p>

Term	Description
<b>Keys (private and public)</b>	<p>A wallet holder has a pair of linked keys: a private key and a public key.</p> <p>The private key acts like a private password, giving the wallet holder exclusive access to their wallet, acting as proof that they are the rightful wallet holder and owner of the assets in or related to the wallet. Each time a wallet holder executes a transaction on a blockchain network they do so using their private key – combining the relevant transaction data with the private key acts as the party's digital signature.</p> <p>The public key is cryptographically derived from the private key, and the wallet address is cryptographically derived from the public key. The public key can be shared with other parties to confirm the authenticity of a transaction without the risk that the counterparty will thereby gain access to the related private key.</p>
<b>Mining</b>	The term commonly used to refer to validating blockchain transactions, with validators often referred to as 'miners'.
<b>Node</b>	A blockchain network is made up of a series of nodes – each user's device which makes up the hardware component of a blockchain network has its own copy of the ledger, the software component of a blockchain network.
<b>Non-fungible tokens / NFTs</b>	Unique digital data files consisting of a cryptographic codes or hashes which are created and recorded on blockchains and managed through the use of smart contracts.
<b>Off-chain</b>	Data which is not stored on a blockchain network within blocks.
<b>On-chain</b>	Data which is stored on a blockchain network within blocks.
<b>Open source software / OSS</b>	Open source software (OSS) is software made available under a licence that grants the user the right to use and modify the OSS, and to access the OSS's source code. Subject to certain requirements, the user is also able to redistribute the OSS as component of other software and to create and distribute derivative works. A common definition for OSS is provided by the Open Source Initiative: Open Source Definition.
<b>Rulebook</b>	A generic term referring to any contractually binding set of rules or terms that users of a particular digital platform may be required to be bound by before being admitted as 'users' of that platform. Typically such rulebooks set out the rights and obligations of both the platform operator and the users, as well as often defining the digital assets which are traded or transferred using that platform, such as contract-based eBLs. Often also referred to using similar terms such as 'user terms and conditions' / 'terms of use' / 'platform agreement'.

Term	Description
<b>Smart Contract</b>	Self-executing computer programmes used to perform specific functions, which resides on blockchain networks. Smart contracts automatically trigger if the correct input data stipulated in the smart contract's code is provided.
<b>User interface (UI)</b>	The point at which a user interacts with a system, for example the portal or website page of an eBL Platform.
<b>Wallet</b>	A financial transaction application that stores a wallet address, public and private keys. Can be used to hold and transfer digital assets. The private and public keys provide the wallet holder with access to their wallet, and the wallet address provides the means for digital assets to be sent by counterparties to the wallet.
<b>Wallet address</b>	<p>Effectively, the address of a digital wallet used to send and receive transfers of data or cryptoassets to and from a wallet.</p> <p>The wallet address acts as a unique public identifier for the wallet holder – the code making up the wallet address is cryptographically derived from the wallet holder's public key. As a result a wallet address can be freely shared with counterparties as it will not give them access to the wallet holder's wallet but it is required for the counterparty to use in order to effect a transfer to the wallet holder.</p> <p>For example if Party A wishes to endorse a TT eBL in favour of Party B, the endorsement will be effected using the endorser using the wallet address of the endorsee to update the blockchain network and generate a new block recording the endorsee's wallet address against the NFT of the relevant TT eBL.</p> <p>Technically, the use of wallet addresses ensures that transactions are transparent because they are 'pseudonymous' in nature rather than being entirely anonymous – other users of the network have access to the transaction history of transacting parties' wallet addresses but will not know the identity of the wallet holder from the wallet address. The wallet address could be used to re-identify the wallet holder.</p>
<b>Validation</b>	The process by which data is added to a blockchain network in the form of new blocks through the completion of the relevant consensus mechanism.

## Schedule 2 Summary Table of Legal Analysis of TT eBLs

Subject	UNCITRAL	Singapore	England	US
<b>The Legal Instruments</b>				
<b>Enacting law(s)</b>	MLETR	ETA 2010	ETDA	U.C.C., as adopted by individual states
<b>In effect?</b>	Yes (Note: Effective as a model law, but not directly applicable in any jurisdiction until adopted in local legislation).	Yes, since 19 March 2021.	Yes, since 20 September 2023.	Yes
<b>Definitions</b>				
<b>Definition of qualifying paper documents</b>	Transferable document or instrument.	Transferable document or instrument – Same definition as MLETR, includes a non-exhaustive list of paper documents / instruments.	Paper trade document – Broadly aligned with MLETR but with non-exhaustive list of paper trade documents.	Controllable electronic records, under new U.C.C. Article 12 or transferable document or instrument.
<b>Definition of equivalent electronic documents</b>	Electronic transferable records.	Electronic transferable records – Same definition as MLETR.	Electronic trade document – Broadly aligned with MLETR.	Electronic document of title.
<b>Do all BLs qualify?</b>	Straight BLs excluded. Straight BLs excluded. Straight BLs included. Straight BLs excluded.			

Subject	UNCITRAL	Singapore	England	US
<b>Criteria for functionally and legally equivalent electronic documents</b>				
<b>Criterion 1 – Same information</b>  <b>TT eBLs will comply with this Criterion if users ensure that they contain the same information as would be in a paper BL.</b>	The electronic document contains the same information as required in the equivalent paper document.	Same definition as MLETR <sup>143</sup> .	Same definition as MLETR <sup>143</sup> .	Same definition as MLETR <sup>143</sup> .
<b>Criterion 2 – Singularity</b>  <b>TT eBLs comply with this Criterion under each legal regime through the use of NFTs</b>	Ability to identify the electronic document as the original and not a copy.	Substantially the same definition as the MLETR.	Substantially the same definition as the MLETR.	Substantially the same definition as the MLETR.
<b>Criterion 3 – Control</b>  <b>TT eBLs comply with this Criterion under each legal regime through the use of smart contracts</b>	Electronic document is capable of exclusive control and identity of party exercising control can be established.	Same as the MLETR.  Unlike the MLETR, the ETB Bill specified that the exercise of control entails the ability to use, transfer or dispose of a document.	Broadly aligned with MLETR.  Control, as it relates to an electronic document of title, is the conceptual equivalent to possession and endorsement of a physical document of title.	Broadly aligned with MLETR.

Subject	UNCITRAL	Singapore	England	US
<b>Criterion 4 – Integrity</b>	Ability of electronic document to retain its integrity and prevent unauthorised alterations.	Same as the MLETR.	Same as the MLETR.	Same as the MLETR.
<b>TT eBLs comply with this Criterion under each legal regime through the cryptographic hash function and use of blockchain technology to create immutable records</b>				
<b>Criterion 5 – Reliable method/system</b>				
<b>TT eBLs comply with this Criterion under each legal regime through utilising the features of blockchain technology.</b>	Criteria 2 to 4 achieved using a reliable method, established either using non-exhaustive list of factors or proven in fact to be reliable.	Same as the MLETR, provides an additional presumption that where an accredited transferable records management system is used, that the methods used are reliable (see Sections 16(2) and 16(3)).	Broadly aligned with MLETR on the non-exhaustive reliability factors but no second limb on a system being proven to be reliable.	Broadly aligned with MLETR but overlapping with the previous Criteria rather than relying on a series of non-exhaustive reliability criteria.
<b>Others</b>				
<b>Extension of legal concept of Possession?</b>	No – control used as the functional equivalent to possession.	No – Same position as under MLETR.	Yes – explicit extension of possession to electronic trade documents.	Yes – control, as it relates to an electronic document of title, is the conceptual equivalent to possession and endorsement of a physical document of title.
<b>Ability to convert medium of BL?</b>	Yes	Yes	Yes	Yes

Subject	UNCITRAL	Singapore	England	US
<b>Ability to take security over qualifying electronic documents?</b>	Not specifically addressed, but the accompanying Explanatory Note states that the MLETR does not prevent use of transferable records for security rights purposes. Concept of control intended to operate as the functional equivalent to possession – relevant for possessory security interests where possession perfects the security interest, like a pledge.	Not specifically addressed, but the Minister's speech at the Second Reading suggests that this is within the legislative intent – <a href="#">"One commercial advantage in using an electronic bill of lading enabled by clause 6 is that a trade financing bank can obtain collateral security over the electronic bill of lading which is legally equivalent to a paper bill of lading. This may allow the bank to obtain regulatory capital relief in respect of its trade finance exposure, and to pass some of the benefits to its clients in the form of lower fees."</a>	Not specifically addressed apart from provision on moveable property under Scottish law pledges. The ETDA does not prevent security interests over electronic trade documents, such as non-possessory security interests like charges, and it provides certainty that possessory security interests like pledges are effective due to extension of concept of possession.	Yes – Under U.C.C. Article 9, a security interest in electronic documents may be perfected by control.
<b>Technology neutral?</b>	Yes	Yes	Yes	Yes
<b>Accreditation framework established?</b>	No	No, although procedural guidelines have been promulgated under the <a href="#">Electronic Transactions (Certification Authority) Regulations 2010 - Singapore Statutes Online (agc.gov.sg)</a> .	No	No

# References

- <sup>1</sup> Also commonly referred to as “[indorsement](#)”.
- <sup>2</sup> As noted in paragraph 1.3, while this article focuses upon TT eBLs, TradeTrust’s framework could be extended to other classes of electronic documents which could qualify under the MLETR as electronic transferable records.
- <sup>3</sup> See Paragraph 4.29.5 for further details.
- <sup>4</sup> Please refer to the TradeTrust website’s guidance to developers and users regarding blockchain, available [here](#).
- <sup>5</sup> Please note that a TT eBL can only be verified, transferred, endorsed and/or transferred on the same public blockchain network on which it was first issued.
- <sup>6</sup> A code hosting platform for version control and collaboration.
- <sup>7</sup> A multi-stakeholder initiative supporting the development of open-source technologies endorsed by the UN.
- <sup>8</sup> For more information about OpenAttestation’s registration as a digital public good, please see [here](#).
- <sup>9</sup> For example, McKinsey has estimated that paper BLs account for between 10% to 30% of total trade documentation costs. See McKinsey & Company, [The multi-billion-dollar paper jam: Unlocking trade by digitalizing documentation, October 2022](#).
- <sup>10</sup> See BIMCO article [here](#).
- <sup>11</sup> Referring primarily to the eBL Platforms that have been approved by the member clubs of the International Group of P&I Clubs.
- <sup>12</sup> For example, of the nine eBL Platforms approved by the International Group of P&I Clubs, six were approved on or after 2019.
- <sup>13</sup> See also the Stephenson Harwood LLP article [“Electronic bills of lading – is their time now?”](#) dated September 2021, available [here](#).
- <sup>14</sup> As explored below, some jurisdictions have extended the legal concept of possession to digital assets.
- <sup>15</sup> The MLETR Article 2 definition of “[transferable document or instrument](#)” is “*a document or instrument issued on paper that entitles the holder to claim the performance of the obligation indicated in the document or instrument and to transfer the right to performance of the obligation indicated in the document or instrument through the transfer of that document or instrument.*”
- <sup>16</sup> As required under Article 18 of the MLETR.
- <sup>17</sup> Given its status as a Model Law, the MLETR is not legally binding in and of itself, instead providing a legal framework for jurisdictions to adopt by way of national legislation.
- <sup>18</sup> Article 2 of the MLETR.
- <sup>19</sup> An “[electronic record](#)” is simply information stored in electronic form, which could be any form of an electronic version of a paper document. The MLETR is concerned with the special class of ‘transferable’ instruments. For an electronic record to qualify as an “[electronic transferable record](#)” it must satisfy the criteria set out in Article 10 of the MLETR as set out below – Article 2 of the MLETR.
- <sup>20</sup> UNCITRAL maintains a list of jurisdictions which have enacted MLETR-compliant national legislation (available [here](#)), which as at the date of this article has not been updated to include the United Kingdom (although as explored further in this article, while the ETDA is generally aligned with the MLETR, it does deviate in certain regards, including over the use of the legal concept of possession).
- <sup>21</sup> While this includes eBLs, note that the MLETR explicitly excludes straight BLs from qualifying as electronic transferable records on the basis that they are not truly transferable. See Paragraph 88 of the ‘Explanatory Note to the UNCITRAL Model Law on Electronic Transferable Records’ (July 2018).
- <sup>22</sup> Which is effected by having laws which extend the legal effect, validity and enforceability of a paper trade document to its electronic equivalent.
- <sup>23</sup> Article 10(1) of the MLETR.
- <sup>24</sup> Article 10(1)(a) of the MLETR.
- <sup>25</sup> Article 10(1)(b) of the MLETR.
- <sup>26</sup> Article 10(1)(a) of the MLETR.
- <sup>27</sup> The definition of electronic transferable records in the MLETR acknowledges that these electronic records can be made up of various components, rather than there being a single self-contained ‘thing’ like a piece of paper. In particular, Article 2 of the MLETR defines electronic transferable records as “*information generated, communicated, received or stored by electronic means, including, where appropriate, all information logically associated with or otherwise linked together so as to become part of the record, whether generated contemporaneously or not...*” [emphasis added].
- <sup>28</sup> Article 8 of the MLETR. Article 9 of the MLETR also recognises the equivalence of written signatures with electronic or ‘e-signatures’ if a “[reliable method](#)” is used to identify the signor and indicate their intention.
- <sup>29</sup> While anonymised data is the most secure way to ensure confidentiality, it is not capable of verification, whereas pseudonymised data is both confidential and verifiable.
- <sup>30</sup> Article 15 of the MLETR.
- <sup>31</sup> Article 10(1)(b)(i) of the MLETR.
- <sup>32</sup> Paragraph 95 of the ‘Explanatory Note to the UNCITRAL Model Law on Electronic Transferable Records’ (July 2018).
- <sup>33</sup> Paragraph 84 of the ‘Explanatory Note to the UNCITRAL Model Law on Electronic Transferable Records’ (July 2018).
- <sup>34</sup> Article 10(1)(b)(ii) of the MLETR.
- <sup>35</sup> Article 11(1) of the MLETR.
- <sup>36</sup> Paragraph 83 of the ‘Explanatory Note to the UNCITRAL Model Law on Electronic Transferable Records’ (July 2018).
- <sup>37</sup> A ‘multi-sig’ or multi-signature wallet is a blockchain wallet in which at least two different private keys are needed in order to initiate a transaction originating from that wallet address, rather than just one private key.
- <sup>38</sup> Paragraph 117 of the ‘Explanatory Note to the UNCITRAL Model Law on Electronic Transferable Records’ (July 2018) which accompanies the MLETR acknowledges that the requirement to identify the party with control is satisfied by digital solutions using distributed ledgers which identify the controlling party by using pseudonyms (including any means of linking the pseudonym to the controlling party’s real name).
- <sup>39</sup> Article 10(1)(b)(iii) of the MLETR.
- <sup>40</sup> Article 10(2) of the MLETR.
- <sup>41</sup> Paragraph 103 of the ‘Explanatory Note to the UNCITRAL Model Law on Electronic Transferable Records’ (July 2018).
- <sup>42</sup> Article 10(1)(b) of the MLETR.

<sup>43</sup> Article 12(a) of the MLETR. Article 12(b) of the MLETR also provides that, as an alternative to assessing the factors in Art 12(a), a method will meet its reliability standard if that method is “proven in fact to have fulfilled the function by itself or together with further evidence”. This “safety clause” is designed to prevent “frivolous litigation” over whether methods are reliable, provided that the method in question has already been shown to fulfil the function in the specific case in dispute, as noted in Paragraph 136 of the ‘Explanatory Note to the UNCITRAL Model Law on Electronic Transferable Records. For example this may be established if a particular jurisdiction has a formal accreditation framework which could be used to certify that an accredited method is reliable for a particular purpose.

<sup>44</sup> For example, while the consensus mechanism of a ‘Proof of Work’ (PoW) network requires a certain amount of mining in the form of solving cryptographic puzzle before a new block is added to the network, the consensus mechanism of a ‘Proof of Stake’ (PoS) network randomly selected validators in the relevant public blockchain will be able to write the new block, containing the cryptographically hashed data.

<sup>45</sup> Available from the UNECE website under the Guidance Material section, available [here](#).

<sup>46</sup> Available from the ICC website [here](#). At Table 6.1, TradeTrust is summarised as a framework which “[r]emoves the need for expensive data exchange infrastructure to be built between different digital ecosystems, enables the creation of verifiable documents, transferable documents, and performance of a title transfer.”

<sup>47</sup> UNIDROIT, ‘Digital Assets and Private Law Public Consultation: Draft UNIDROIT Principles On Digital Assets And Private Law’ (January 2023). The UNIDROIT Principles are intended to help guide legislators in adopting legislation consistent with the UNIDROIT Principles, as well as providing guidance to both transacting parties and courts dealing with transactions involving digital assets.

<sup>48</sup> Principle 6 of the UNIDROIT Principles requires exclusive control in line with the MLETR meaning of this term and the means of identifying the party with this control. “**Illustration 2: Change of control via PKI**” at Principle 6, Commentary (13) & (14), UNIDROIT, ‘Digital Assets and Private Law Public Consultation: Draft UNIDROIT Principles On Digital Assets And Private Law’ (January 2023) gives the example of a Principle 6-compliant electronic record platform whose features align with those of TradeTrust: the creation of NFTs and their linkage to the wallet addresses of parties, so that only the relevant private key holder may alter the record of which wallet address is associated with an NFT.

<sup>49</sup> Prior to the 2021 amendments, the ETA 2010 did not apply to negotiable instruments, documents of title, bills of exchange, promissory notes, consignment notes, BLs, 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.

<sup>50</sup> Explanatory Statement to the Electronic Transactions (Amendment) Bill; Opening Speech by Mr S Iswaran, Minister for Communications and Information, at the Second Reading of the Electronic Transactions (Amendment) Bill on 1 February 2021.

<sup>51</sup> See Section 16E of the ETA 2010.

<sup>52</sup> See Explanatory Statement to the Electronic Transactions (Amendment) Bill.

<sup>53</sup> Paragraph 38 of the ‘Explanatory Note to the UNCITRAL Model Law on Electronic Transferable Records’ (July 2018).

<sup>54</sup> APL Co Pte Ltd v Voss Peer [2002] 2 SLR(R) 1119.

<sup>55</sup> Section 16A(1) read with Section 16H of the ETA 2010.

<sup>56</sup> See definitions of “electronic record” and “electronic transferable record” under Section 16A(1) of the ETA 2010.

<sup>57</sup> Section 16H(1)(b)(i) of the ETA 2010.

<sup>58</sup> See Paragraph 97 of the ‘Explanatory Note to the UNCITRAL Model Law on Electronic Transferable Records’ (July 2018).

<sup>59</sup> Section 16H(1)(b)(ii) of the ETA 2010.

<sup>60</sup> Section 16H(1)(b)(iii) of the ETA 2010.

<sup>61</sup> Section 16H of the ETA 2010.

<sup>62</sup> In particular, the Carriage of Goods by Sea Act 1971 (**COGSA 1971**), the Sale of Goods Act 1979, and the Carriage of Goods by Sea Act 1992 (**COGSA 1992**).

<sup>63</sup> It received royal assent on 20 July 2023 with the effect that it is now an Act of Parliament. Pursuant to Section 8(2), the ETDA comes into force at the end of the period of two months beginning with the day on which it is passed.

<sup>64</sup> Clause 8(1) of the ETDA states that the ETDA applies to England and Wales, Scotland and Northern Island, apart from Clause 3(4), which only applies to Scotland.

<sup>65</sup> Sections 1(5) & 1(6) of COGSA 1992 provided for the possibility that additional secondary legislation could be enacted to extend COGSA 1992’s scope to include electronic trade documents like eBLs but these provisions were never acted upon, and they have been repealed by the ETDA from 20 September 2023.

<sup>66</sup> Paragraph 2.112 of Law Commission ‘Electronic Trade Documents: Report and Bill’ (15 March 2022), and Paragraph 5.132 of the Law Commission’s, Digital Assets: Electronic Trade Documents: A Consultation Paper (30 April 2021) which acknowledges that “We consider that, while not identical, the form and substance of the central provisions in the MLETR and of our draft Bill are very similar.”

<sup>67</sup> Paragraph 2.59 of Law Commission ‘Electronic Trade Documents: Report and Bill’ (15 March 2022).

<sup>68</sup> Paragraph 107 of the ‘Explanatory Note to the UNCITRAL Model Law on Electronic Transferable Records’ (July 2018).

<sup>69</sup> Article 11(1)(a) of the MLETR.

<sup>70</sup> Section 3(1) of the ETDA.

<sup>71</sup> Paragraph 7.43 of Law Commission ‘Electronic Trade Documents: Report and Bill’ (15 March 2022). A person with factual possession of an asset may also have the right to possess that asset (known as legal’ or ‘constructive’ possession), or alternatively, this right to possession may be held by another party. This is a rights-based, not facts-based, concept. The party with constructive possession has the right to take immediate possession of that asset, meaning that they, not the party with factual actual possession, is entitled to decide what happens to the asset. For example, under a possessory security arrangement, like a pledge, the pledgor may retain factual possession of the pledged goods but the pledgee has constructive possession for the duration of the relevant security period.

<sup>72</sup> Paragraph 2.90 of the Law Commission ‘Electronic Trade Documents: Report and Bill’ (15 March 2022).

<sup>73</sup> Paragraph 2.71 of the Law Commission 'Electronic Trade Documents: Report and Bill' (15 March 2022). If something can be possessed, it can become the subject of various legal rights such as "bailment" (where the bailee takes voluntary possession of the bailor's goods, notwithstanding that ownership of those goods remains vested in the bailor), possessory security interests (like pledges, which are a form of bailment, and liens) and the tort of conversion or wrongful interference.

<sup>74</sup> Paragraph 7.4, Law Commission 'Electronic Trade Documents: Report and Bill' (15 March 2022).

<sup>75</sup> The Manchester Ship Canal Co Ltd v Vauxhall Motors Ltd [2019] UKSC 46 at [42] held, in relation to possession over land, that the two elements are "(1) a sufficient degree of physical custody and control ('factual possession'); (2) an intention to exercise such custody and control on one's own behalf and for one's own benefit ('intention to possess')... The existence of an intention to possess is to be objectively ascertained and will usually be deduced from the acts carried out by the putative possessor." Generally, establishing intention is a question of fact, and can be inferred from a person's actions, including the facts which demonstrate that this party has control over the asset – "Intention may be, and frequently is, deduced from the physical acts themselves" from J A Pye (Oxford) Ltd v Graham [2002] UKHL 30, [2003] 1 AC 419 at [40] by Lord Browne-Wilkinson.

<sup>76</sup> Section 1(1) of the ETDA.

<sup>77</sup> Whereas the MLETR definition focuses more on the transferability of these documents and their associated right to claim performance, the ETDA definition focuses on the importance of a party having "possession" of such documents in order to exercise the right of claiming performance.

<sup>78</sup> An indicative list is included in Paragraph 38 of the 'Explanatory Note to the UNCITRAL Model Law on Electronic Transferable Records' (July 2018).

<sup>79</sup> Section 1(2) of the ETDA. As noted in Paragraph 22 of the 'Electronic Trade Documents Bill [HL]: Explanatory Notes' (23 March 2023) "A particular document on the list will only be caught by the Bill if it nevertheless satisfies the remaining requirements in clause 1(1)".

<sup>80</sup> Paragraph 4.38, Law Commission 'Electronic Trade Documents: Report and Bill' (15 March 2022) and paragraph 23 of the 'Electronic Trade Documents Bill [HL]: Explanatory Notes' (23 March 2023).

<sup>81</sup> Section 2 of the ETDA.

<sup>82</sup> Section 2(1) of the ETDA.

<sup>83</sup> Section 2(2) of the ETDA. See also Paragraph 30 of the 'Electronic Trade Documents Bill [HL]: Explanatory Notes' (23 March 2023) which explains that this is intended to mean any other information which is electronically connected, linked or cross-referenced to that information.

<sup>84</sup> Paragraphs 28 and 29 of the 'Electronic Trade Documents Bill [HL]: Explanatory Notes' (23 March 2023). See also Paragraphs 6.17 and 6.18, Law Commission 'Electronic Trade Documents: Report and Bill' (15 March 2022).

<sup>85</sup> Section 2(2)(a) of the ETDA.

<sup>86</sup> Section 2(2)(c) of the ETDA.

<sup>87</sup> Section 2(2)(d) of the ETDA.

<sup>88</sup> Section 2(2)(e) of the ETDA.

<sup>89</sup> Paragraphs 6.1 to 6.13, Law Commission 'Electronic Trade Documents: Report and Bill' (15 March 2022).

<sup>90</sup> Section 2(3)(a) of the ETDA.

<sup>91</sup> Paragraph 48 of the 'Electronic Trade Documents Bill [HL]: Explanatory Notes' (23 March 2023).

<sup>92</sup> Paragraphs 51 to 53 of the 'Electronic Trade Documents Bill [HL]: Explanatory Notes' (23 March 2023); Section 2(4) of the ETDA.

<sup>93</sup> Paragraph 49 of the 'Electronic Trade Documents Bill [HL]: Explanatory Notes' (23 March 2023)

<sup>94</sup> Paragraph 50 of the 'Electronic Trade Documents Bill [HL]: Explanatory Notes' (23 March 2023) gives the presenting and surrendering of documents as further examples of "use" rather than disposal, which it does not specifically define.

<sup>95</sup> Section 2(2)(b) of the ETDA.

<sup>96</sup> The initial proposal for the ETDA did not include integrity as a criterion, however, industry feedback during the formal consultation process highlighted the importance of integrity for generating trust in the use of electronic trade documents, and for combating cybercrime and fraud. See Paragraph 6.60, Law Commission 'Electronic Trade Documents: Report and Bill' (15 March 2022).

<sup>97</sup> Paragraph 35 of the 'Electronic Trade Documents Bill [HL]: Explanatory Notes' (23 March 2023).

<sup>98</sup> As set out in Article 10(2) of the MLETR.

<sup>99</sup> Section 2(2) of the ETDA. The distinction between the MLETR referring to a reliable method and the ETDA referring to a reliable system is not material. This is because the MLETR's reference to a "reliable method" covers by extension the reliability of the "system" through which that method is implemented. See also Paragraph 99 of the 'Explanatory Note to the UNCITRAL Model Law on Electronic Transferable Records' (July 2018).

<sup>100</sup> While the initial draft of the ETDA did not include a reliability standard, this was later added following industry feedback, which highlighted the importance of users being able to trust the systems used, especially in relation to cybercrime risks. For example, the International Group of P&I Clubs highlighted the importance of "practical issues" alongside purely legal considerations, and argued that there is a "market need for confidence and trust amongst users and safeguards from cyber-crime", as quoted at Paragraph 6.38, Law Commission 'Electronic Trade Documents: Report and Bill' (15 March 2022).

<sup>101</sup> Paragraph 31 of the 'Electronic Trade Documents Bill [HL]: Explanatory Notes' (23 March 2023).

<sup>102</sup> Section 2(5) of the ETDA. Paragraph 6.47, Law Commission 'Electronic Trade Documents: Report and Bill' (15 March 2022) notes that the ETDA has **not** provided an equivalent to the MLETR's "safety clause" (that a method/system is proven to have fulfilled its function, such as through an accreditation scheme) as this would in their view likely impose an onerous burden on system operators, and standard-setting is best left to the industry.

<sup>103</sup> Paragraph 6.46, Law Commission 'Electronic Trade Documents: Report and Bill' (15 March 2022).

<sup>104</sup> The U.C.C. has been adopted, with modifications, in all fifty states.

<sup>105</sup> N.Y. U.C.C. § 1-201(16); 6 Del. C. § 1-201(16).

<sup>106</sup> N.Y. U.C.C. § 1-201(15); 6 Del. C. § 1-201(15).

<sup>107</sup> The U.C.C. currently recognizes only electronic documents of title and electronic chattel paper as digital assets. Other non-U.C.C. law, such as ESIGN, UETA and ESRA, also recognize electronic notes (and, in the case of ESRA, electronic instruments) as digital assets. The 2022 amendments to the U.C.C. include a new U.C.C. Article 12. U.C.C. Article 12 governs the transfer of property rights in certain digital assets called controllable electronic records ("CERs"), which is defined as a record stored in an electronic medium that can be subjected to "control." Some states have adopted the new amendments to their state's UCC. On May 19, 2023, New York State Senator Hoylman-Sigal, chair of the Judiciary Committee, introduced New York State Senate Bill S.7244 to adopt a new Article 12-Controllable Electronic Records as part of New York's UCC. [NY State Senate Bill S7244 \(nysenate.gov\)](#). Similarly, on June 1, 2023, Delaware Senator Kyle Evans Gay, introduced Delaware State Senate Bill 157 to adopt the 2022 Amendments to the U.C.C., including Article 12. The Delaware Senate passed the bill on June 30, 2023, and it is ready for the Governor to review [here](#).

<sup>108</sup> Straight bills / waybills are not bills of lading or documents of title under the U.C.C.

<sup>109</sup> The Federal Bills of Lading Act (the **Pomerene Act**), 49 U.S.C. § 80101, et seq., provides that a BL is negotiable if the bill of lading "states that the goods are to be delivered to the order of a consignee; and does not contain on its face an agreement with the shipper that the bill is not negotiable." Though the Pomerene Act is limited in scope as noted in paragraph 7.8, the definitions provided therein are nonetheless useful in the absence of other statutes. The U.S. Carriage of Goods by Sea Act (**COGSA**) applies as a matter of law to shipments to and from foreign ports to the United States but does not define the term "bill of lading" (negotiable or otherwise). Further, under the U.C.C., a document of title is negotiable if "by its terms, the goods are to be delivered to the bearer or to the order of a named person." See N.Y. U.C.C. § 7-104(a); 6 Del. C. § 7-104(a).

<sup>110</sup> See N.Y. U.C.C. §1-201 (b)(16); 6 Del. C. §1-201 (b)(16).

<sup>111</sup> See 6 Del. C. § 2-101, et seq.

<sup>112</sup> 15 U.S.C. §§ 7001 et seq.

<sup>113</sup> See 6 Del. C. §§ 12A-101-117.

<sup>114</sup> COGSA and the Pomerena Act are federal laws that pre-empt state law. However, because neither COGSA nor the Pomerene Act specifically address the legality of electronic bills of lading, a court would look to state law, which in this case would be the state codification of the U.C.C.

<sup>115</sup> N.Y. U.C.C. § 7-501(b); 6 Del. C. § 7-501(b).

<sup>116</sup> N.Y. U.C.C. § 7-106, cmt. 2; 6 Del. C. § 7-106.

<sup>117</sup> The use of the term "control" is broadly aligned with its use in the MLETR. While neither regime explicitly defines control, both require the use of a reliable system to establish which is the single identifiable authoritative version of a document and to identify the person who controls that version of the document.

<sup>118</sup> N.Y. U.C.C. § 7-106(a); 6 Del. C. § 7-106(a).

<sup>119</sup> N.Y. U.C.C. § 7-106(b); 6 Del. C. § 7-106(b).

<sup>120</sup> See Criterion 2 above for further analysis on N.Y. U.C.C. § 7-106(b) and 6 Del. C. § 7-106(b).

<sup>121</sup> N.Y. U.C.C. § 7-106, Official Comment 3.

<sup>122</sup> N.Y. U.C.C. § 7-106(b); 6 Del. C. § 7-106(b).

<sup>123</sup> Hague-Visby Rules Art.III r.1.

<sup>124</sup> Hague-Visby Rules Art.III r.2.

<sup>125</sup> Since the Hague-Visby Rules apply to "contracts of carriage covered by a bill of lading or any similar document of title...", thus requiring that the TT eBL be accorded the status of bill of lading / a document of title under the laws of the jurisdiction chosen before applying.

<sup>126</sup> Deep Sea Maritime Limited v Monjasa A/S (The "Alhani") [2018] EWHC 1495 (Comm), see also FIMBank p.l.c. v KCH Shipping Co. Ltd (The "Giant Ace") [2023] EWCA Civ 569, a case on applicability of the HVR time bar.

<sup>127</sup> CONGENBILL 1994.

<sup>128</sup> See also paragraph 3.38, Law Commission 'Electronic Trade Documents: Report and Bill' (15 March 2022).

<sup>129</sup> See UCP 600, art 20(a)(iv).

<sup>130</sup> If parties were to adopt multi-sig wallets, requiring two or more private keys to initiate transactions, the wallet address of the holder of the TT eBL would require the use of the private keys of all relevant party to that multi-sig wallet.

<sup>131</sup> Professor Michael Bridge QC, as quoted in Law Com No 405 Electronic Trade Documents: Report and Bill HC1188 paragraph 2.55 and paragraph 10.24.

<sup>132</sup> The duties of developers of decentralised systems to the system's users, if any, is subject to on-going legal debate, for example in the English case of Tulip Trading v van der Laan [2023] EWCA Civ 83.

<sup>133</sup> See BIMCO article [here](#).

<sup>134</sup> See for example Gard's relevant website page [here](#).

<sup>135</sup> See for example Gard Rules 2023, Rule 34.1(iii)

<sup>136</sup> It is our understanding that cover is discretionary where the eBL system is not pre-approved. See FAQ 2(b) [here](#).

<sup>137</sup> Available [here](#).

<sup>138</sup> Articles 17 and 18 of the MLETR.

<sup>139</sup> UCP 600: Supplement on Electronic Presentation (eUCP), v 2.0 (2019). Per Article e2(a), if parties expressly incorporate the eUCP into a letter of credit, the UCP shall automatically be incorporated too, whereas if parties only expressly incorporate UCP, the eUCP shall not automatically be incorporated.

<sup>140</sup> ICC, Uniform Rules for Digital Trade Transactions, v 1.0 (October 2021), Introduction.

<sup>141</sup> ICC, Users Guide to the eUCP (January 2021), Section 3 (Preparation for Usage of the eUCP) states "As far as is known, no conflict exists between the eUCP and eCommerce laws. This is most certainly the case with UNCITRAL (United Nations Commission on International Trade Law) Model Laws including, most importantly, the Model Law on Electronic Transferable Records and the Model Law on Electronic Signatures." And ICC, Uniform Rules for Digital Trade Transactions, v 1.0 (October 2021), Preliminary Considerations.

<sup>142</sup> ICC, Uniform Rules for Digital Trade Transactions, v 1.0 (October 2021), Article 7(f).

<sup>143</sup> Albeit instead of using "the law" as in the MLETR, ETA 2010 says "a rule of law". There is unlikely to be any difference in meaning.



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