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OPINION AND ANALYSIS

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The Box That Became Collateral Before It Was Opened

The Document That Did Not Convey Ownership

A bill of lading said a container held **126 bags of London Metal Exchange-registered nickel briquettes**. In trade, such a document can set expensive actions in motion: a buyer pays, a seller books a sale, a bank calculates financing, and insurance attaches to a shipment with a name, weight, and destination. When the dispute reached London's High Court, however, the problem extended beyond what was inside the bags. In two trades, competing shipping documents reached two parties for the same goods. Carrier **OOCL** concluded that the version received by **Trafigura** was not the genuine one it had issued and that another party held the correct originals. In a judgment dated January 30, 2026, the judge recorded that Trafigura had paid **$6,639,926.82** but had not acquired title to the relevant shipment. It possessed a document, but not the right the document appeared to confer.1

This was not a fable about printing two pieces of paper from an old machine. The judgment records the carrier's investigation, unauthorized distribution of duplicate sets of bills of lading in connected transactions, and liability, in these two trades, for those who arranged the presentation of the duplicates. It did not find every defendant involved in this particular part of the facts or pronounce on the security of every bill of lading in the world. Its crucial distinction is among three facts easily confused: **who paid, who holds the paper, and who owns the goods**. The first two may be true without the third.1

That was one corner of a much larger file. *Trafigura v Gupta and Others [2026] EWHC 159 (Comm)* describes nickel transactions in 2021 and 2022 in which sellers presented documents describing high-grade nickel while later inspection found lower-value metals or material of little commercial value. Trafigura paid about **$500 million** across 107 litigated transactions; 91 formed the core of its rescission claim, and the low-value material in them sold for just under **$10 million**, on the facts recorded by the court. The court found fraudulent misrepresentation and unlawful-means conspiracy within the claims it decided, while clearing two former Trafigura employees of the allegations against them. The **$577 million** provision announced by the company in February 2023 was then an accounting estimate of maximum loss exposure; it is not the damages figure or the value of the 91 contracts in the judgment.12

The case reveals a precise gap in economic knowledge. Deception did not require inventing a new metal. Structurally valid information could enter the system about an object that did not match its description, or documents could give two parties apparently legitimate routes to the same object. A computer records a date, container number, and vessel in organized fields and confirms that the message arrived intact. Those facts alone cannot establish that the container holds the promised nickel, that the sender has authority to dispose of it, or that no stronger prior claim attaches to the document.

Missing metal is not the only possibility. In *Quadra Commodities v XL Insurance*, decided by the English Court of Appeal on **April 21, 2023**, real grain existed in Ukrainian silos and inspectors could see it. But the operator had issued duplicate receipts over the same grain to different buyers, leaving too little for all who came to collect. The court distinguished two implications of a document: it may help prove **that grain exists** without proving **that its holder owns it**. Under the insurance contract and applicable law, it also accepted the possibility of an **insurable interest** without the proprietary title the insurers said was required. What one may insure against losing is not necessarily what one may pledge as owned property. A trader may have a valid insurance claim for loss without owning the stored inventory outright. “Right” does not always mean the same thing.10

How Inventory Becomes a Financial Asset

To understand how a container becomes a financial asset before it is opened, return to something older than applications. A manufacturer pays for raw materials, conversion, and storage before receiving payment from the customer. The period in which capital is trapped between purchase and collection is approximated by the **cash conversion cycle**: days inventory outstanding plus days sales outstanding minus days payable outstanding. In a hypothetical firm, those figures might be 60, 45, and 25 days, producing an **80-day** cycle. This is an arithmetic example, not a statistic about a particular company. A business paying wages weekly cannot ask time to shorten those eighty days for the sake of its budget.

Asset-based lending intervenes in that interval. If goods with verifiable value, location, possession, and enforceable rights can be established, a lender can advance liquidity against them before sale. If the firm sells on credit, finance may be based on receivables, provided that a genuine commercial obligation exists and its terms and governing rules permit creation or transfer of the right. The loan does not invent revenue; it changes when an existing or expected economic value can be used. It may let a factory buy the next production batch before the previous one is paid. At its best, it releases productive activity from a timing constraint, not from absent demand.

“Collateral” conceals a world of precise acts. If a trader has one thousand tonnes of grain in a warehouse, do they own all of it? Did title pass under a valid contract? Is it segregated or commingled in a silo where rights are specified by grade and quantity? Does the warehouse have unpaid charges or a lien? Did the trader pledge it to one funder and then sell another document to a second? Can a creditor take it upon default, by what process, and for how much after transport, storage, sale, and enforcement delay? Accurate box-counting answers none of these legal questions by itself.

In January 2025, the World Bank described the constructive side of this system: **warehouse receipts in Ghana**. A development-supported program allowed crops deposited in regulated facilities to generate documents usable in finance for farmers and traders. The account says **2,113 farmers and small or medium enterprises** received a total of **$584,837** from participating institutions, with **zero recorded defaults** within the described program, and that the Ghana Commodity Exchange's electronic system helped onboard 32 rural and community banks. This was not a randomized experiment proving all warehouse lending safe, and its zero cannot be generalized to an unknown market. It is still an important event: crops once sold hastily after harvest could be stored under documented conditions and their rights used for liquidity, with better storage and market access.3

Ghana and the nickel litigation sit at opposite ends of the same knowledge problem. In one, an inspectable, storable crop becomes an asset that supports finance. In the other, a false description moves ahead of material verification or two documents compete for one right. Neither should become a slogan for or against technology. The question is **which chain of proof makes goods fit to bear a financial claim**, and how that fitness fails when one link breaks even if every other link looks elegant on screen.

A Digital Event Is Not a Right

Imagine a warehouse producing a digital event for every operation: container received, weighed, sampled, stored, moved, and released. This is no longer an exotic research device. **GS1 EPCIS 2.0**, a technical reference for traceability-data exchange, represents what happened,

when, where, in what business context, and how events may connect with sensor information. Its purpose is visibility into the movement of objects across companies and locations, not issuance of title merely because a tracking message exists.4

The crucial computing principle is that **an event is not a right**. A correctly signed event may say a scanner read a code on a box at a warehouse gate. At best—after the device and procedure are assessed—it proves that an authorized device or party reported that reading at that time and place. It does not alone prove that the box contains what the sale document describes, that its sender owns it, or that a pledge binds third parties. A digital signature can associate a message with a key and protect its post-signature integrity. It cannot swear on behalf of the metal. Trust here depends on the source of the physical assertion, not mathematics alone.

Nor should a distributed ledger be celebrated merely because ten servers hold copies. Identical copies may be ten attestations of the same error. Real change requires a mechanism identifying the **legally unique transferable instrument**, independent proof of quantity and quality, connection to the authority that creates or publicizes a security right, controls preventing release of inventory still subject to another's right, and procedures for correction, damage, loss, and division. Decentralization does not cure missing ownership; sometimes it distributes the absence beautifully.

This resembles **double spending** in systems engineering, but only within limits. For a digital asset, one consensus mechanism can prevent the registered unit from moving twice inside the same ledger. Warehouses contain objects that can move outside software, parallel paper documents, different laws, and physical release by people. Preventing duplication of an electronic instrument on one platform does not automatically prevent an independent instrument elsewhere or substitution inside a container. Exclusive control must be tied institutionally to the carrier or warehouse, recognized legally, and supported by procedures preventing delivery to a party without a right to receive.

From a Transferable Record to Enforceable Law

International commercial-law development can be read as a careful attempt to cross from objects to documents. In **2017**, the UN Commission on International Trade Law issued its **Model Law on Electronic Transferable Records**. It requires more than a paper document scanned into PDF: the electronic record must be identifiable and intact and subject to reliable control that can pass from one party to another. A model law does not bind a country until adopted or implemented through appropriate domestic provisions. The distinction between issuing a model and local legal effect is the difference between an engineering possibility and a right enforceable in a dispute.5

The UK's **Electronic Trade Documents Act 2023** supplies concrete requirements: a reliable system must distinguish the document from copies, protect it against unauthorized alteration, prevent more than one person from controlling it at once, and ensure that transfer deprives the former holder of independent control. Warehouse receipts are among the potential documents, subject to the Act's conditions. The explanatory notes add a crucial point: **under English common law, a warehouse receipt is not a document of title merely because of its name**. Its rights depend on applicable law and the commercial relationship. Giving an electronic document an effect equivalent to paper does not retroactively give the paper a right it never had.6

In June **2024**, UNCITRAL and **UNIDROIT** adopted a model law for paper and electronic warehouse receipts. It addresses not simply moving a file from a drawer to a phone but issuance, transfer, holder rights, and the warehouse operator's duties to preserve, segregate, and deliver goods. An optional chapter provides a **dual warehouse receipt system**: one receipt concerns rights to the goods and a separate pledge bond grants its holder a security right, leaving the receipt holder's rights subject to the pledge. These provisions do not apply worldwide on their own; they are a legislative design countries may consider adopting.7

Saudi Arabia's Separation of Receipt and Pledge

Saudi law contains a distinction more important than many commercial presentations about "asset tokenization." The **Saudi Law of Deposit in Public Warehouses**, issued on **June 6, 2006**, provides for a depositor to receive a **warehouse receipt accompanied by a pledge instrument**, with either or both capable of endorsement under its procedures. Article 13 gives each a different effect. Separate endorsement of the pledge instrument creates a pledge over the goods for the endorsee, while endorsement of the warehouse receipt transfers ownership. If the receipt goes to one party while a pledge instrument has been endorsed to another, ownership passes burdened by that right. This relation between owner and secured-right holder predates today's digital-token language. The provision must be read with later laws and transaction-specific rules; one article is not a legal opinion on an actual deal.8

The Saudi **Law on Securing Rights with Movable Property** adds another dimension. Within its scope, Article 19 orders competing security rights according to effectiveness against third parties, publicity and its timing, possession, and other prescribed circumstances. It permits more than one security right over the same collateral. The task is not to assume competing claims cannot arise but to determine which takes priority. Goods in public warehouses and their special provisions must be considered with the wider rights framework. Entering a container number on a financing dashboard does not make it free of third-party rights.9

The Four-Seal Collateral Test

These layers suggest what I call the **Four-Seal Collateral Test**. It is an original analytical design for this article, not a banking accreditation standard or operative judicial procedure. The first seal is **matter**: what physically exists, verified by which inspection, measurement, sample, and custody chain, and when might the inspection become stale? The second is **entitlement**: who owns the goods or has authority to create a right over them, subject to what contracts or rights of seller, warehouse, or carrier? The third is **effectiveness and priority**: was the security right validly created, does it bind third parties, and where does it rank among competing rights? The fourth is **conversion to cash**: if enforced today, is there a legal and practical route and a market able to buy the goods at the expected price after storage, transport, inspection, insurance, and sale costs?

The seals are distinct, not an average allowing strength in one to comfort weakness in another. One hundred real tonnes cannot cure an absent right of disposal. Priority over nonexistent goods does not produce metal. Clear ownership of spoiled grain does not produce the price on which a loan was based. Even genuine, owned, pledgeable goods may not sell quickly without a severe discount. Market value is not net realization value. A conservative collateral **haircut** requires commodity-specific price, cost, and liquidity data, not a universal percentage applied to every warehouse.

Each seal also runs on a different clock. Inspection may occur Monday morning, title pass that evening, the security right be publicized Tuesday, the price fall Wednesday, and part of the goods leave Thursday. A picture true at inspection may be insufficient at financing, at the first request to expand the credit line, or at sale. Collateral is not a static file but **a legal, physical, and economic state changed by events**. An institution may need an automatic disbursement stop when inspection expires, a prior right appears, or coverage falls, plus a defined human process that records why—without pretending software can resolve every legal dispute.

Technology has a boundary. A camera can see a container-door seal, a weight sensor report a mass change, and a laboratory assay a sample. Each describes a physical aspect within an error range. An unbroken seal does not prove correct contents were inserted before sealing; matching weight does not prove the type of metal; a biased sampling method may not represent the shipment. Inspection records therefore require scientific design: who drew the sample, selected its location, acted independently, preserved it, and when did the result arrive? “Digitizing the chain of custody” does not make it rigorous if its first link is drawn solely by the interested party.

Fungible goods are harder than packages with unique numbers. Grain of a specified grade may be commingled or substituted under storage-document terms, with a right to a quantity rather than identified bags. Saudi public-warehouse law permits, under its conditions, replacement of fungible goods with goods of the same nature, kind, and quality, and

documents for part of a larger bulk quantity. “The grain's serial number” cannot ground ownership. The system must control quantities, grades, rights, and deliveries under law and contract, proving that aggregate promises do not exceed deliverable inventory. Registered quantity may be inflated when an incoming shipment has not arrived or an outgoing one has not been deducted. The protected unit is the **enforceable right**, not a picture of a sack.8

Even when an invoice rather than goods is financed, “order accepted” does not equal an enforceable debt. Acceptance or inspection conditions, set-off, quality disputes, restrictions on assignment, advance payments, or a prior claimant may exist. Commercial-event streams can reduce the work of finding a claim's origin and due date, but they need a route into the actual contract that created it. A machine-readable trade flow should identify **when a right becomes eligible for finance**, not merely count appearances of a buyer's name. This is distinct from reconciling institutional ledgers: the question is whether a financeable asset arose and what right a creditor has, not whether two entries match.

Mathematics can forecast tomorrow's copper price within a probability range and set a haircut for volatility. Systems engineering can test that no more than one controlling holder exists for an electronic document in a recognized system. Neither can determine unaided that one possession authorization has legal priority over another. A court can resolve the dispute, but cannot stop an insolvent warehouse from being empty on enforcement day. No single tool rules this chain. Each knows something and is ignorant of something else; financing skill lies in making those forms of knowledge cooperate without disguising their limits.

From Law to a Financing Laboratory

A Saudi trade-finance laboratory should not begin by naming a blockchain or buying sensors. It should begin with a licensed warehouse and a defined class of goods; analyze the rights produced by receipts and pledge instruments, publicity and priority requirements, delivery rules, and fraud controls; and contract with an independent inspector and funders whose risks are explicit. It can then build a **collateral state machine**, moving an asset from “unverified arrival” to “inspected,” “available for collateral,” “allocated to an existing security,” and then “partly released,” “sold,” or “disputed.” No transition should be merely a warehouse operator's button when it creates a right over someone else's property. Permissions, signatures, evidence, and correction procedures should match each transition's risk.

Before the first riyal is advanced, adversarial tests can ask: what if half the inventory leaves and the platform fails to record it? What if connectivity fails while a negotiable document is issued? What if two funders rely on the same document through different systems? What if a sample contradicts the goods description after funding? What if the price falls below the balance on enforcement? What if a third party presents an older legal instrument despite our newer registration? These are not equivalent software failures; each concerns a different

truth. Useful measures include time to discover a collateral shortfall, exposure to price change, the share of instruments with conflicting rights, independent-inspection coverage, actual liquidation time, and net recovery—not receipts issued per minute.

The Objection From Experience and Technology's Limits

An experienced credit officer may object: “We have had contracts, pledges, and inspectors for decades. Metals fraud is a famous exception.” The first point is sound: law and physical supervision were not born with software, and technology merits deployment cost only if it reduces the cost or time of proof or expands responsible finance. The second needs care. A major crime should not become an assumption that every transaction is fraudulent, but one event can reveal a structural risk an electronic record does not remove. For a small warehouse, an approved ledger, independent inspection, and clear document-custody process may beat an expensive distributed network. The comparison is not modern versus old but observed error, cost, speed, and recoverability in dispute.

The people at the end of this engineering should not disappear. A farmer forced to sell just after harvest may accept a price they would not choose if able to wait. A factory unable to finance materials against a valid future customer payment loses a sound order. Neither needs a lecture on distributed ledgers; each needs a reliable ability to convert owned value or a verifiable right into timely cash on intelligible terms. The funder needs to recover rights in a dispute, not a dashboard saying the container was last seen at gate four.

The Trafigura judgment ends not with a beautiful paper defeating a forged one, but with a long conversation among documents, carriers, inspections, parties, rights, contracts, and dates. One paragraph contains duplicate bills; another shows that material called nickel was not nickel; another distinguishes participants in the fraud from a person against whom the allegation failed. A reader leaving with only a demand for “better documentation” has missed the lesson: **we need to know what the document documents, and what it cannot document however perfect the copy**.

A box does not become collateral because a screen adds a currency symbol or financing percentage to its name. It becomes collateral when, at the moment a party needs its right, it passes the chain of physical proof, legal entitlement, priority, and realization. Technology may do its finest work when it abandons the claim to have invented trust and becomes a modest machine exposing trust's true location. Nickel that never existed is not supported by a valid signature; nickel that exists but belongs to another is not purchased by network speed; and an unenforceable right merely travels faster from loss to loss in a modern document.

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