

GS1 Australia

Discussion paper for industry and government

What Does Cargo Reporting Look Like When the System Is Data-Rich?

Reusing the commercial trade documents business already creates - through linked, discoverable and verifiable data

A contribution to the Australian Border Force Future Cargo Reporting Model (FCRM) and Cargo Reporting System Transformation (CRST) consultations

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About this paper. This paper is offered as thought leadership to inform the FCRM and CRST consultations. It is written to *ask the questions* that government and industry may find useful, rather than to prescribe answers.

GS1 Australia is a neutral, not-for-profit standards organisation; we do not seek to redesign customs or biosecurity, nor to advance a single-vendor or single-standard agenda. Our contribution is confined to areas where global supply chain standards expertise can add value: data quality; identification of products, parties and locations; source-generated commercial data; interoperability; verifiable evidence and credentials; trusted, discoverable data reuse; supply chain visibility; and international standards alignment.

Where questions are operational, customs brokers, freight forwarders, carriers, cargo terminal operators, express carriers, e-commerce platforms, importers and exporters are better placed to answer, and we say so.

Companion explainer document. This paper is accompanied by a plain-English explainer document written for operational readers - "*What Does a Data-Rich Border Look Like?*" (the main explainer), which incorporates its *Operational Annex* (as Attachment A) of "day in the life" case studies, an identifier reference and the technical detail. It translates the questions in this paper into the day-to-day terms of the people who run cargo reporting.

Consultation materials are also available online at <https://www.gs1au.org/partners/government/future-cargo-reporting>

Key points of this paper

1. The most useful reframing of this reform may be to ask not how to replace the ICS, but what cargo reporting looks like when the system is data-rich - when regulators can **draw on data that business already creates**, rather than data re-keyed into purpose-built reports.
2. The mind-shift worth testing is from reports to data: treating the commercial trade documents business already produces - the order, invoice, packing list, certificate and transport instruction - as the primary source, and **unlocking regulatory value by making that data linked**, discoverable and verifiable.
3. Value is unlocked when data is reliably linked (to the trade item, consignment, freight unit, trader, agent and legal entity it concerns), discoverable (findable from an identifier, **without a central database holding everything**) and verifiable (carrying cryptographic evidence of who issued it and that it has not been altered).
4. This aligns with the “Tell Us Once” principle, the Simplified Trade System, and the national productivity, data and digital agenda - **making cargo reform a productivity reform**, not only a systems project.
5. GS1’s contribution has limits, stated plainly. **Persistent identifiers and structured data are foundational**, but identifiers are an input to regulatory determinations (classification, valuation, origin, biosecurity treatment), never a substitute for them. Verifiable credentials and product passports are promising but still require resolution of governance, legal recognition, liability, privacy, revocation and adoption questions before reliance at the border.
6. Verifying who you are dealing with is foundational. A recurring operational problem - for brokers, forwarders, banks and any business onboarding another - is **confirming that a counterparty is genuinely who they claim to be**. A sovereign, verifiable business identity anchored to the authoritative national register (a verifiable ABN, or “vABN”, that only the ATO/ABR can issue) would let a party verify a counterparty in seconds and reuse that assurance many times. Its value reaches well beyond trade; cargo reporting is one high-friction proving ground among many.
7. Transparency could be rewarded, voluntarily, through cost. Most of the cost of border management is caused not by compliant traders but by the effort to detect and respond to a small number of opaque operators, and today that cost is largely socialised through flat charges. **A voluntary two-tier model** - a lower charge for consignments that provide verifiable product identifiers and a verified identity (and so cost less to process), alongside an unchanged standard lane that is always available - would let transparency lower a trader’s cost without compelling anyone to change. It aligns with existing risk-differentiated cost-recovery policy and the **“those who create risk should pay”** principle, and is offered as a direction to test, not a finished design.
8. A data-rich model is, if anything, more consequential for DAFF than for customs: so much of biosecurity control and **export market access turns on verifiable evidence** - certificates, conformity and traceability. Biosecurity is treated as a first-order design constraint throughout.
9. Trade modernisation depends on **shared national digital infrastructure** - common identifiers, authoritative registers and identity anchors, verification services, and shared semantics. Who provides and governs these “rails” is a legitimate question for government, not just a system-design choice.
10. The external context makes the question timely: surging low-value e-commerce, the global tightening of de minimis treatment, and the international standardisation of linked, **verifiable trade data all point the same way**.

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1. Executive summary

Australia's cargo reporting framework, delivered through the Integrated Cargo System (ICS), has served the country well for two decades and remains mission-critical to revenue, biosecurity, community protection and trade facilitation. The Australian Border Force's (ABF) own consultations recognise that the underlying reporting model - tightly sequenced, cascading, transaction-by-transaction reporting - reflects the supply chains and data availability of the early 2000s.

Rather than asking only "how should the ICS be replaced?", this paper invites government and industry to sit with a more generative question: **what does cargo reporting look like when the system is data-rich?** That is, when the regulator can draw on the structured, identified, verifiable data that businesses already create in their commercial trade documents - discoverable and linked to the goods, consignments, freight units, traders, their agents and legal entities - rather than relying on data re-keyed into purpose-built regulatory reports.

The mind-shift

The shift worth exploring is from reports to data. Today the regulatory report is the primary artefact, assembled and re-keyed step by step. A data-rich model would treat the commercial trade documents business already produces - the order, invoice, packing list, certificate, transport instruction - as the primary source, and unlock regulatory value by making the data in them linked, discoverable and verifiable. This aligns with the "Tell Us Once" principle, the whole-of-government Simplified Trade System (STS), and the national productivity, data and digital agenda.

It helps to see this as the next step in a long evolution, not a sudden break. Australia's cargo systems were built around the things that mattered most when they were designed: the shipment as the unit of control, and the classification of goods for revenue. That made sense when you could not reliably identify an item across organisations, link one company's data to another's, or check a document's authenticity electronically in seconds. Every stage since - paper to electronic messages, many systems consolidated into the ICS - kept that shape while changing the technology underneath. What is genuinely new is that those three capabilities now exist. The companion explainer document develops this history-and-mindshift framing for operational readers.

Why this question matters now

The external environment is changing faster than legacy reporting can absorb. Low-value, direct-to-consumer parcels are surging - the European Commission reports 4.6 billion low-value consignments entered the EU in 2024, roughly double 2023, with around 91% from China, and volumes reported near 5.9 billion in 2025. Major economies are responding by pulling low-value goods into formal processes and demanding richer, earlier, structured data: the United States removed its US\$800 de minimis exemption for all countries from 29 August 2025, and the EU is introducing an interim per-item duty from July 2026 ahead of a data-centric EU Customs Data Hub that becomes mandatory in 2034. In parallel, international standards bodies are defining how trade data can travel as linked, verifiable evidence - the UN Transparency Protocol (UNECE Recommendation No. 49) is one example, carrying product passports, conformity credentials and traceability events as verifiable credentials. Australia's market access, competitiveness and productivity depend on keeping pace.

A note on scale. Border and customs operations are the Commonwealth's second-largest source of revenue: in 2023–24 they generated \$15.4 billion, comprising \$13.8 billion in customs duty, \$1.1 billion in passenger movement charges and \$451 million in import processing charges. In the same year the system processed 4.4 million import and self-assessed clearance declarations and cleared roughly 69 million air

and sea cargo consignments, while the border carried a GST liability assessed of \$45.7 billion. These are not marginal numbers, and they explain why the underlying model is approached with care.

What this paper offers

This is a paper of questions and observations, not prescriptions. It:

- frames the central question - what a data-rich cargo and trade system could look like - and the mind-shift toward reusing commercial trade documents;
- explores how linked, discoverable, verifiable data about goods, consignments, freight units, traders, agents and legal entities could change what regulators need to ask for;
- connects this to DAFF's twin trade and biosecurity agenda, where verifiable evidence (certificates, conformity, traceability) is central to market access;
- asks who should provide the national digital infrastructure - the shared identifiers, registries, identity anchors and verification services - that trade modernisation depends on; and
- holds a clear evidentiary discipline, distinguishing proven practice from emerging direction, future-state concepts and matters needing testing (Box 1).

Where GS1 does hold standards standing, we are willing to be clear: persistent identification of products, parties and locations, shared semantics, and verifiable, discoverable data are foundational to any data-rich model. But identifiers are an input to regulatory determinations, not a substitute for them; and verifiable credentials, while promising, still require resolution of governance, legal recognition, liability, privacy, revocation and adoption questions before they can be relied upon at the border.

Box 1 - How to read the evidence in this paper

- **Proven practice:** established international obligations and widely-adopted approaches - used as firm evidence.
- **Emerging reform direction:** reforms now being implemented overseas - a direction of travel, not a ready-made Australian solution.
- **Plausible future-state:** concepts worth testing with explicit safeguards - not asserted as mature.
- **GS1-specific contribution:** where supply chain standards add value - offered as input, with limits stated.
- **Needs further testing:** questions better answered by industry or by ABF/DAFF - flagged, not assumed.

2. Purpose and scope

This paper responds to two ABF consultations - the FCRM Consultation Paper and the CRST Discussion Paper - and offers an integrated view across both. The two are complementary: FCRM asks what information should be reported, by whom, when and how it should be linked; CRST asks what system, data architecture, delivery model and transition pathway could support a modernised environment over an estimated 7–10 years. A recurring theme below is that the model question (FCRM) is logically prior to the system question (CRST): what a data-rich model needs should shape, not follow, the technology.

In scope

- The framing question: what a data-rich cargo and trade system could look like.
- The mind-shift toward reusing commercial trade documents as the primary data source.
- Linked, discoverable, verifiable data about goods, consignments, freight units, traders, agents and legal entities.
- Verifiable evidence and product passports, and their relevance to DAFF's trade and biosecurity agenda.
- Verifiable party identity - confirming who a counterparty is - and the national digital infrastructure that trade modernisation depends on, aligned with international standards.

Out of scope

- Detailed operational procedures, system specifications and procurement design - for later phases and for parties closer to operations.
- Legislative drafting, which the FCRM paper places out of scope at this stage.
- Biosecurity policy settings, which are properly led by DAFF; we treat biosecurity as a first-order design constraint, not a downstream integration issue.

3. The central question: a data-rich trade system

It is worth pausing on what “data-rich” would actually mean for cargo reporting, because the answer reframes much of the FCRM and CRST agenda. Three observations may help government and industry test the idea.

3.1 Business already creates the data - in commercial documents

Most of the information regulators need is created early, by business, in the ordinary course of trade: product and supplier details in the purchase order and invoice; quantities and packing in the packing list; conformity and origin in certificates; movement and custody in transport instructions and status messages. Under the current model, this commercial information is frequently re-keyed into separate regulatory reports, late and sequentially. A data-rich model would ask a different question: rather than recreate this data, could the regulator **draw on the commercial documents that already exist**? This is the heart of “Tell Us Once” - information already generated by business should not need to be repeatedly recreated and revalidated where trust, governance and legal authority permit reuse.

The honest version of the idea is narrower than the slogan. Logistics and conformity information - movement, custody, treatment, test results, certificates - is genuinely rich, source-generated and reusable. The information government most wants for revenue and risk - true value, beneficial ownership, accurate classification, substantiated origin - is precisely the information that is least reliable

in commercial systems, because parties may have incentives to misstate it. Proving who said something, and that it was not altered, is not the same as proving it is true.

3.2 Value is unlocked when data is linked, discoverable and verifiable

Commercial data only becomes regulatory data when it can be trusted and connected. Three properties matter:

- **Linked.** Each piece of data is associated, through persistent identifiers, with the trade item, consignment and freight unit it concerns, and with the traders, their agents and the legal entities responsible - so a complete, consistent picture can be assembled from many contributions rather than one sequential cascade.
- **Discoverable.** Given an identifier (for a product, party or location), authorised parties can find the related data - without a central database holding everything - using resolver and linked-data techniques now embedded in international standards.
- **Verifiable.** Data carries cryptographic evidence of who issued it and that it has not been altered, so a claim (an origin statement, a conformity certificate, an authorisation) can be checked rather than taken on trust.

This linked-and-verifiable pattern is no longer hypothetical. The UN Transparency Protocol (UNECE Recommendation No. 49) defines exactly such an architecture for trade - digital product passports, conformity credentials and traceability events, issued as W3C verifiable credentials, with linked-data entities for product, location, facility and party, and a digital identity anchor issued by authoritative registers. It is an emerging direction, not a finished platform, and it builds on existing identifiers and resolvers rather than replacing them.

3.3 The ICS as one trusted node in a connected ecosystem

Seen through this lens, the ICS is best understood not as a single system to be replaced, but as one trusted node in a wider, connected ecosystem of trade data - alongside other government systems, industry platforms and, increasingly, the trade windows of other countries. International work such as the ICC Digital Standards Initiative frames this as “verify once, use many times”, and the WTO and WCO paperless-trade agenda points the same way. The question is less “what replaces the ICS?” than “how does the ICS connect to, and draw trusted data from, the ecosystem around it?”

3.4 A different question for the regulator

If data were linked, discoverable and verifiable, the regulator’s question shifts from “who must submit which report, in what sequence?” toward “what is the minimum we need to verify, and can we obtain it from data that already exists?” The essential regulatory need - knowing who is bringing what goods, in which freight unit, on which craft, to which place, for whom, and under whose authority - is fundamentally a question of identification, linkage and verification. That is the lens this paper applies to the FCRM and CRST themes that follow.

Questions ABF and DAFF could consider

- Which data that regulators need is already created in commercial documents, and where is it re-keyed today rather than reused?
- What would it take - in identifiers, linkage and verification - to draw on that data with confidence, rather than recreate it?

- What is the minimum a regulator must verify (versus collect) for release, for clearance, and for biosecurity?

4. A voluntary two-tier model: letting transparency lower the cost

There is one idea this paper wants to put early and plainly, because it offers a way into reform for those most wary of it. A data-rich model is often heard as a demand that everyone change how they work. It need not be. The same capabilities - verifiable product identifiers and verified party identity - can be offered as a **voluntary** choice, rewarded through the one lever traders feel directly: the cost of clearing the border.

4.1 The problem the current charge hides

Border management is not free, and most of its cost is not caused by the businesses that follow the rules. Targeting, surveillance, profiling, inspection and response exist overwhelmingly to detect and deal with a small number of operators who misstate what they are bringing in - including organised crime. Today that cost is largely socialised: it is spread across all traders through flat charges that bear little relationship to the risk, or the cost, that any individual consignment actually creates.

The result is a quiet cross-subsidy. The compliant majority - who declare accurately and could prove it - help pay for the scrutiny made necessary by the opaque minority. A trader who provides verifiable identifiers and a verified identity, whose consignment a system could validate almost automatically, pays much the same as one who provides thin, free-text data that must be assessed by hand. The charge does not yet reward the transparency that makes a consignment cheap to clear.

4.2 The idea: two tiers, by transparency - not by size or status

Imagine two lanes, both always open, with no one forced into either:

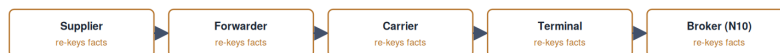
- **A verifiable lane.** The trader (or their upstream supplier, manufacturer or platform) provides recognised, verifiable product identifiers and a verified party identity - a vABN - so the regulator can confirm who is dealing in what, and validate much of the consignment automatically. Lower residual risk, lower cost to process, and so a **lower charge**.
- **A standard lane.** Where verifiable data is not provided - including goods from offshore manufacturers who make no contribution at all - the consignment must be assessed and risk-managed as it is today. Higher cost to process, and so a charge that **carries that true cost** rather than passing it to others.

The standard lane is simply today's process, unchanged and always available. Nothing is taken away, no one is compelled to adopt new systems, and there is no cut-off date. The only thing added is a cheaper, voluntary alternative for those who choose to make their data verifiable. A trader who wants to change nothing changes nothing - and still clears the border exactly as before.

WHAT CHANGES - RE-KEYING

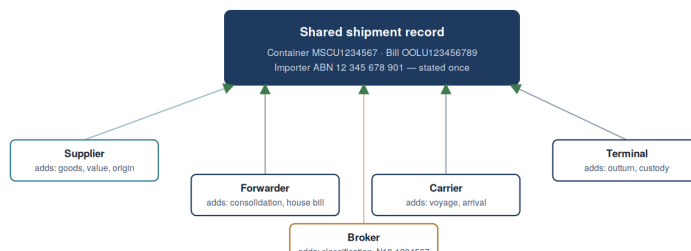
The same facts, entered many times — or once

TODAY — entered and validated repeatedly



Same container, bill and ABN typed in up to 5 times — each an opportunity for error, delay and mismatch.
Container MSCU1234567 - Master bill OOLU123456789 - Importer ABN 12 345 678 901

A DATA-RICH MODEL — stated once, reused by reference



Each party contributes only what it creates; shared facts are reused by reference, not retyped. The broker still classifies and still lodges the declaration.
Identifiers shown are illustrative examples of formats already used in cargo reporting (container, ocean bill, ABN, N10 declaration). Source-based and shared-shipment-record approaches are described in the ABF Future Cargo Reporting Model (FCRM) project, abf.gov.au (alternatives to cascade reporting).

Figure 1. Why verifiable data costs less to clear. When the same facts arrive identified and verifiable (lower path), much of the consignment can be validated automatically, so the regulator effort - and therefore the cost - falls. The standard path is unchanged. The same diagram appears in the companion explainer, where the mechanics are developed in full.

4.3 Why this is a restoration of fairness, not a discount for the few

Two cautions keep the idea honest. First, a lower charge must reflect a genuinely lower cost to serve, not a lighter regulatory touch: the verifiable lane buys cheaper processing because the data validates itself, not weaker scrutiny, reduced powers or relaxed biosecurity. The regulator's ability to question, inspect, hold and penalise is unchanged in both lanes. Second, the model should be revenue-neutral by design - the same total cost recovered, but distributed to track the cost each consignment actually creates, rather than averaged flat across all. The verifiable lane's lower charge is funded by the standard lane carrying its own true cost, not by a subsidy.

The fairness case, in one line. Today every compliant trader helps pay to police those who are not transparent. A voluntary verifiable lane changes that: make your goods and identity checkable, and your charge reflects the lower cost you create; stay with the standard process, and you carry the true cost of the assessment it requires. No one is forced to change - the cost is simply placed where it belongs.

4.4 How it aligns with existing government policy

This is less of a departure than it first sounds. It recombines three things government already does:

- **Risk-differentiated cost recovery is already permitted.** The Australian Government Cost Recovery Policy expressly allows differentiated charge rates that reflect the resources used by different groups “based on their risk, size or other criteria”, and warns that a flat rate which does not track the cost driver increases cross-subsidisation. A transparency-tiered charge tracks the real cost driver - risk and processing effort - more closely than today's flat charge, not less.
- **“Those who create risk should pay” is already the stated basis.** The biosecurity self-assessed clearance charge is already justified as a “shared responsibility between taxpayers, those who create risk and those who receive significant benefits”, recovering the cost of “risk profiling, surveillance, monitoring compliance and administration”. The principle that border cost should fall

on those who create the risk is conceded; this model simply lets transparency demonstrate lower risk.

- **Differentiated treatment of low-risk trade already exists.** Australian Trusted Trader was built to “create a low-risk trade flow to shift the focus of enforcement resources to higher-risk entities”, and already gives accredited businesses faster clearance, fewer holds and consolidated charging. The two-tier idea extends the same logic, but gates on the verifiable data attached to a consignment rather than on an entity-level accreditation many smaller traders cannot reach - making the benefit more equitable, and available shipment by shipment.

4.5 Open questions, stated honestly

Like every emerging element in this paper, the two-tier model is a direction to test, not a finished design [FUTURE-STATE / NEEDS OBPR VALIDATION]. Several questions must be worked through with Finance, the ABF and DAFF before any charge could change:

- **Revenue and characterisation.** Both lanes must stay tethered to demonstrated efficient cost, so the model remains cost recovery rather than drifting into a tax (if the standard lane over-recovers) or a subsidy (if the verifiable lane under-recovers). The numbers require independent (OBPR-grade) validation.
- **Equity and the smaller trader.** The Charging Framework protects against charges that disadvantage the vulnerable. A genuinely accessible, broker-assisted, low-technology path into the verifiable lane is essential, so the higher standard charge does not fall hardest on small or unsophisticated importers.
- **Biosecurity stays separate.** Transparency about identity and product is not the same as low biosecurity risk: a fully transparent trader can still import a high-biosecurity-risk commodity. Any transparency tier must modulate customs and processing cost only; biosecurity charging and hold/release remain DAFF-led and must not be discounted by transparency alone.
- **Start small.** The natural first step is a bounded, voluntary pilot on a single stream (for example low-value e-commerce, or a defined commodity class), with a published lower charge for verifiable-data consignments, run in parallel and measured against the actual cost to serve - exactly the evidence the cost-recovery process (a Charging Risk Assessment and Cost Recovery Implementation Statement) is designed to generate.

Questions for government - a voluntary two-tier model

- Could a voluntary, transparency-based tier - lower charges for verifiable-identifier, verified-identity consignments - recover border costs more fairly than today's flat charges, without compelling anyone to change?
- How should the two lanes be priced so both reflect genuine cost to serve, keeping the model revenue-neutral and within the cost-recovery framework?
- What assisted pathway would keep the verifiable lane genuinely open to small and intermittent importers?
- Which single stream would make the safest, most informative pilot?

5. Current-state challenges

The ABF's discovery work identifies a consistent set of structural characteristics in the current model. Viewed through the data-rich lens, most are symptoms of the same root cause: regulatory data is recreated rather than reused, and is not reliably linked or verifiable. The table summarises the challenges and the questions each raises.

Challenge	Nature of the problem	Question it raises
Late, sequential data	Cascade reporting often delays a complete view until late in the journey.	Could data contributed at source, when events occur, give earlier visibility?
Duplication and re-keying	The same data is reported by multiple parties, or by parties that did not create it.	Could commercial documents be reused rather than recreated ("Tell Us Once")?
Linkage and identity	Goods, parties, authorisations and custody are not always linked with confidence; identity misuse ("piggybacking") is a known risk.	Would persistent identifiers and verifiable identity strengthen linkage and trust?
Legacy system dependency	ICS is the sole authorised channel, deeply integrated with ABF, DAFF and others.	How can new capability be tested without disrupting a mission-critical system?
Biosecurity dependency	DAFF relies on ICS data, status and hold/release signalling.	How can data-rich approaches serve biosecurity and market access, not just customs?
Release–revenue coupling	Release and revenue clearance are generally coupled.	Could verified data support more flexible release while protecting revenue?
E-commerce volume	High-volume low-value cargo strains thresholds and risk controls.	Could structured data sourced from platforms/carriers support risk at parcel scale?

A note on causation. System replacement alone may not address these root causes. The deeper issues - duplication, fragmented identity assurance, variable data quality, unclear data ownership and delayed access - are data and model problems first. This is why the model question (FCRM) and the data architecture (CRST) reward attention before any system is procured.

6. Stakeholder perspectives

A data-rich model only works if it works for the people in the chain. The following personas (illustrative constructs, not claims about any organisation) make the key messages concrete. They share one theme: the party best placed to provide accurate, source data is often not the party currently responsible for reporting it - which is precisely why reusing source data, and identifying who created it, matters.

Mei - SME importer

Intermittent importer; relies on a broker; limited customs expertise

"I just want it to be simple, and I don't want my ABN used by someone I've never met."

Best placed to provide Commercial invoice, supplier emails, packing lists, product descriptions (often unstructured).

What they need Low-cost, simple obligations; broker support; protection from identity misuse; no unexpected delays.

What this means for reform A data-rich model must offer assisted, low-tech pathways and verifiable identity - not enterprise data-integration obligations smaller traders cannot meet.

David - Licensed customs broker

Lodges declarations; manages classification, valuation, origin and permits

"Linked data would save me re-keying - but I still sign the declaration, so I need to trust the source, and to know the client is who they say they are."

Best placed to provide Declaration data, client authorisations, classifications, valuation adjustments, origin documents.

What they need Trusted, reusable source data; a reliable way to verify a client's identity before acting; stable interfaces; explainable suggestions; no shift of liability.

What this means for reform Reusing verifiable source data - and verifiable counterparty identity - can reduce the broker's re-keying, error risk and exposure to acting for a bad actor, while professional judgement and accountability remain firmly with the broker.

Priya - Express carrier / e-commerce platform

High-volume, direct-to-consumer parcels; holds order and item data earliest

"We can share structured data by API - but not a full declaration per parcel, and offshore seller data is patchy."

Best placed to provide Seller, buyer, marketplace order, item description, price, transport and tax status.

What they need Batch/API data sharing; predictable risk rules; reduced manual intervention.

What this means for reform Low-value e-commerce is where source-data reuse matters most: structured, identified data shared once, by API, with risk targeting - not declarations on billions of parcels.

Sarah - DAFF biosecurity & market-access officer

Co-equal border regulator; manages biosecurity, imported food and export market access

"Verifiable certificates and traceability help me on both sides - protecting biosecurity and keeping export markets open."

Best placed to provide Biosecurity directions, permits, commodity pathways, inspection outcomes, export certificates.

What they need Earlier risk visibility; reliable hold/release signalling; verifiable conformity and traceability evidence.

What this means for reform Verifiable evidence serves DAFF's twin agenda - biosecurity control and market access - provided any change to release/clearance preserves hold/release integrity, with DAFF designed in as a co-equal user.

7. International reform context and case studies

Overseas experience offers evidence - but it is not directly portable; Australia must account for DAFF integration, customs revenue, the Trusted Trader context, ICS dependencies and industry readiness. The cases below are grouped by what they actually demonstrate, and each prompts a question for the Australian context rather than a recommendation.

7.1 Proven practice

New Zealand - Trade Single Window. NZ's Trade Single Window consolidates reporting and lets information submitted once be reused across border agencies, with responsibilities clearly defined and integration occurring within government. It demonstrates submit-once-reuse-many within a government-centred model.

WTO and WCO baselines. Pre-arrival processing, risk management, post-clearance audit and authorised-operator treatment are established obligations and tools. The WCO Data Model provides the shared semantic foundation for cross-border regulatory data.

7.2 Emerging reform direction

Singapore - Networked Trade Platform. Singapore's NTP reflects a network-based approach focused on interoperability and reuse of information already generated through commercial and logistics processes. It illustrates reuse of commercial data across many parties - close to the "data-rich" pattern this paper explores.

European Union - Customs Data Hub and "Trust & Check". The EU is shifting from message-based, sequential reporting toward a data-centric, multi-submission model in which parties submit data elements independently and information is progressively assembled into a complete regulatory dataset. The Data Hub opens for e-commerce in 2028 and becomes mandatory by 2034; a "Trust & Check" trader category will allow the most transparent businesses streamlined treatment. The EU is phasing this over more than a decade - a useful signal that data-rich reform is achievable but not instant.

Linked, verifiable trade data - the UN Transparency Protocol. UNTP (UNECE Recommendation No. 49) defines a linked-data architecture in which product passports, conformity credentials and traceability events travel as verifiable credentials, discoverable from identifiers and anchored to authoritative registers. Customs authorities in several countries are reportedly exploring verifiable credentials for invoices, waybills and product passports - a shift from self-declared toward data-driven compliance.

7.3 The low-value pressure is global and converging

The clearest cross-jurisdiction signal is the rapid, coordinated tightening of low-value treatment and the demand for richer data: the US removed de minimis for all countries in 2025; the EU is abolishing its €150 duty exemption with an interim per-item duty from July 2026; and both now require higher-quality, structured data (precise descriptions, classification, origin, party identifiers). Australia's comparatively high A\$1,000 threshold and SAC-based model could be considered against this trajectory.

Implementation realism (evidence). Australia's audit history of major cargo system re-engineering, and the CRST paper's own 7–10 year estimate, point to high complexity and the need for staged change with coexistence and fallback. The consistent international lesson is that data-rich reform succeeds through transition architecture and pilots, not a single monolithic replacement.

8. Building blocks of a data-rich model

If the system is to be data-rich, four building blocks recur. GS1 has standards standing here, so this section is more definite than others - while still stating limits plainly.

8.1 Identification of products, parties and locations

Persistent, globally-unique identifiers for products, parties and locations are the precondition for linking multi-party data and reusing commercial data in a regulatory context. They let a contribution about a product, a consignment, a freight unit, a trader or a legal entity be matched unambiguously to every other contribution about the same thing.

A limit worth stating. Product identifiers support data quality, risk assessment and decision support. They do not automatically determine tariff classification, customs value, origin or biosecurity treatment - these remain legal determinations made by accountable parties. Identifiers are an input to those determinations, not a substitute for them.

8.2 Source-generated commercial data and interoperability

Reusing the data businesses already create depends on interoperability: shared semantics (the WCO Data Model is the natural anchor for regulatory data), clear allocation of responsibility by data element, and agreed rules for correcting errors. Where global standards exist, bespoke semantics are best avoided. Linked-data techniques - resolving an identifier to the data associated with it - make commercial data discoverable without a central repository holding everything.

8.3 Verifiable evidence, credentials and product passports

The property that turns shared data into trusted data is verifiability. Verifiable credentials - cryptographically signed, machine-checkable claims, standardised by the W3C - let a regulator or counterparty confirm that a claim is genuine, current and issued by an authorised party. Applied to trade, this is the basis of digital product passports and conformity credentials: verifiable carriers of product, origin, conformity and traceability information, linked to the goods they describe. The same pattern can verify the identity of traders, their authorised agents and the legal entities behind a transaction - directly relevant to the identity-misuse ("piggybacking") risk ABF has identified, and discussed further at Section 10 and Annex B.

A limit worth stating. Verifiable credentials and product passports may support identity assurance, trusted reuse and conformity evidence, but governance, legal recognition, liability, privacy, revocation and adoption all require testing before reliance at the border. UNTP, the ICC Digital Standards Initiative and related work are important enabling reforms - not finished platforms, and not replacements for national cargo systems.

8.4 On automation and AI

System support can assist classification, valuation and origin - through rules-based checks, data-based suggestions or risk-focused anomaly detection. Used well, automation and AI can improve consistency, surface anomalies and support triage. In particular, where each line of an invoice carries a product identity, identifier-to-classifier models can suggest a tariff code from the product identity, which the broker confirms or corrects - decision support, not a replacement for judgement. But automation that is fast and fluent can also be confidently wrong; it should support, not replace, legal accountability and

regulatory judgement. The reporting party remains responsible for the final declaration, and explainability and clear liability are essential - a point on which customs brokers are best placed to advise.

Box 2 - A simple experiment in data reuse, and why human accountability remains

In a short, informal industry experiment, a single structured commercial invoice - with product identifiers (GTINs) on each line - was used to generate a draft suite of downstream export and import documents (packing list, certificate of origin, and the data for an export declaration), and to suggest tariff classifications for each product. The exercise used synthetic data and a general-purpose AI tool, and took only minutes.

- **The reuse opportunity is real.** Data captured once, at source, in a structured and identified form flowed into many regulatory artefacts without re-keying - “Tell Us Once” made tangible.
- **Identifiers are an input, not a determination.** The tool confidently produced classification codes - but these were unverified, and at least one was contestable (the classification of bamboo articles, where bamboo is botanically a grass rather than a wood, is a known grey area a professional would question). A GTIN tells you reliably what a product is; it does not, by itself, determine tariff classification, value, origin or biosecurity treatment.

Source: informal industry experiment shared with GS1 Australia (synthetic data; illustrative only). The classification outputs were not verified and should not be relied upon.

9. Connecting data-rich trade to DAFF's trade and biosecurity agenda

Cargo reform cannot be designed as a customs-only exercise. DAFF is a co-equal regulator whose decisions depend on cargo data, status and hold/release signalling, and whose remit spans both biosecurity protection and export market access. A data-rich model is, if anything, more consequential for DAFF than for customs, because so much of biosecurity and market access turns on verifiable evidence - certificates, permits, conformity and traceability.

9.1 Verifiable evidence serves both sides of DAFF's mandate

- **Biosecurity (imports).** Structured, verifiable commodity, origin and treatment data - linked to the consignment and its freight units - could support earlier, more targeted biosecurity risk assessment than free-text descriptions, especially at e-commerce parcel scale. DAFF is best placed to specify the biosecurity-relevant data elements.
- **Market access (exports).** Australia's export markets depend on trusted sanitary, phytosanitary and conformity evidence. Verifiable export certificates and product passports - building on DAFF's eCert progress under the STS - could make this evidence faster to issue, harder to forge and easier for receiving countries to verify.

The UN Transparency Protocol's conformity credential and traceability event model is explicitly designed for exactly this kind of verifiable, linked evidence, and Australia's agricultural traceability and export-modernisation work under the STS provides a natural domestic anchor.

9.2 A caution on release and clearance

The FCRM paper explores separating release from clearance. Whatever the customs merits, any such change must preserve the integrity of DAFF's biosecurity hold/release signalling - a data-rich model should make that signalling more reliable, not less. This is a matter for DAFF to lead, and a clear example of why biosecurity must be a first-order design constraint rather than a downstream integration.

Questions DAFF and ABF could consider together

- Could verifiable conformity and traceability evidence reduce duplication across biosecurity, customs and market-access processes ("Tell Us Once" across regulators)?
- What biosecurity-relevant data, linked to consignments and freight units, would most improve early targeting at parcel scale?
- How can hold/release integrity be guaranteed if release and clearance are separated?

10. The national digital infrastructure question

A data-rich trade system depends on shared capabilities that no single trader, broker or system can provide alone. These are, in effect, national digital infrastructure for trade - the “rails” on which reusable, verifiable data travels. The question of who provides them is as important as any system-design choice, and it is a legitimate matter for government.

The building blocks of such infrastructure are increasingly well understood internationally and include:

- **Identification.** Shared, persistent identifiers for products, parties, locations and freight units, so data can be linked across parties and systems.
- **Authoritative registers and identity anchors.** Trusted sources that bind an identifier to a verified, authoritative identity (for example, a business register) - the basis for verifiable party identity and for tackling identity misuse.
- **Verification and resolution services.** The ability to check a credential’s authenticity and revocation status, and to discover the data linked to an identifier, without a central repository holding everything.
- **Shared semantics and governance.** Common data meaning (the WCO Data Model for regulatory data) and governance of change, responsibility and liability.

10.1 A sovereign trust anchor: the verifiable ABN (vABN)

One element of this infrastructure deserves to be drawn out, because it addresses a problem every trading business and every intermediary recognises: confirming that the party you are dealing with is genuinely who they claim to be. Today a broker, forwarder, bank or supplier verifying a counterparty relies largely on manual register look-ups and trust - an ABN search confirms a number exists and is registered, but not that the person presenting it is authorised to use it. That gap, between “the number is valid” and “this is the right party”, is where identity misuse (“piggybacking”) slips through, and it shifts an unfair verification burden and liability onto the intermediary.

A verifiable business identity would close that gap. Critically, such an identity must come from a government authority bound to the authoritative national register. In Australia that means a verifiable ABN - a “vABN” the ATO/ABR would issue as a cryptographically signed credential - that a counterparty can check in seconds, confirming it is genuine, current, not revoked, and controlled by the party presenting it. No broker, platform or private scheme can provide this sovereign anchor alone; international entity identifiers such as the LEI/vLEI are complementary, not substitutes for a register-bound national identity.

The value extends well beyond trade. The same “verify who you are dealing with” problem recurs across the economy - in banking and AML/KYC onboarding, supplier and procurement onboarding, financial services and government services - wherever one party must satisfy itself that another is legitimate. A reusable, sovereign business credential lets a business prove itself once and be verified many times, which is why its economy-wide impact is materially greater than the cargo-reporting slice alone. Cargo reporting is simply one high-friction, high-value proving ground. Annex B develops this case, including the human cost when verification fails today.

This is a future-state direction to test, not a finished solution [FUTURE-STATE / NEEDS TESTING]. An industry-led sandbox supported by IFCBAA, ACITI and ECA is already testing verifiable business and location identity for exactly this purpose. The open questions any such approach must resolve before reliance - the commitment of an authoritative issuer, legal recognition, liability and privacy, revocation, and adoption including SME usability - are best answered empirically through such pilots.

International standards are converging on this shape - UNTP's digital identity anchor, verifiable credentials profile and decentralised, discoverable architecture being one expression, building on existing GS1 identifiers and resolvers and W3C verifiable-credential standards. Australia already holds important pieces: authoritative registers, the Simplified Trade System's whole-of-government coordination, and emerging digital-trade and trusted-identity initiatives. The open question is how these are connected into coherent, governed national infrastructure that ABF, DAFF and the wider economy can rely on.

Questions for government

- What shared national digital infrastructure does trade modernisation require, and which elements should be provided as public goods rather than rebuilt in each system?
- Should a verifiable, register-bound business identity (a vABN) be treated as core national trust infrastructure, given its value across the whole economy and not trade alone?
- Who should govern identifiers, registers, identity anchors, verification services and semantics so they are trusted, interoperable and internationally aligned?
- How can this infrastructure be sequenced alongside the Simplified Trade System to avoid duplication and lock-in?

11. Ways to sequence the transition

If a data-rich model is the destination, the path matters as much as the design. Australia's audit history, the CRST paper's own 7–10 year estimate, and the EU's decade-plus phasing all point away from a big-bang replacement and toward staged change with coexistence and fallback. Rather than prescribe a model, the following sets out one way the work could be sequenced, offered for ABF and DAFF to test and adapt.

Sequencing emphasis	Illustrative focus	Questions to test
Stabilise and expose (near term)	Keep ICS as system of record; improve data quality and identity; expose standards-based data and verification services; run identity / anti-piggybacking sandboxes.	Could a data and verification layer around ICS let new approaches be proven without disrupting it? Where is re-keying most costly today?
Reuse and verify (medium term)	Pilot reuse of commercial documents and source-based, event-based contributions for bounded streams; test verifiable credentials and product passports; risk-tiered treatment for mature entities.	Which streams (trusted-importer release, low-value e-commerce data, export-certificate reuse) are the best test-beds? What governance and liability rules are needed?
Data-centric (longer term)	Progressively assemble regulatory datasets from linked, verifiable source data; migrate functions only where benefit and risk are demonstrated.	What must be proven before migrating a core function? What national infrastructure must be in place first?

A practical near-term observation. A standards-based data and verification layer around a stabilised ICS would let new, data-rich approaches run in parallel with current cascade reporting for selected streams, with clear fallback. This manages inertia while enabling reform, and protects trade continuity - but the specific sequencing, scope and pace are for ABF and DAFF to determine with delivery partners and industry.

12. Risks, limits and open questions

Risk / tension	Why it matters	Question it raises
Big-bang delivery failure	Major border reforms combine legislation, continuity, integration and security - high-risk together.	Can staged, parallel delivery with fallback be designed in from the start?
Early data ≠ reliable data	Early information aids risk awareness but may be incomplete or not legally final.	Can early risk screening be separated from final release, clearance and revenue?
More data, more noise	Additional data without quality and governance can reduce targeting confidence.	What data lineage and governance turn more data into better signal?
Biosecurity control integrity	Decoupling release from clearance could weaken DAFF hold/release signalling.	How is hold/release integrity guaranteed, with DAFF as co-equal designer?
Liability in multi-party data	If many parties contribute, responsibility for errors can blur.	How is responsibility allocated by data element, with clear correction rules?
SME and equity impacts	Enterprise-grade obligations can harm smaller traders and brokers.	How are assisted, low-tech pathways guaranteed?
Standards / vendor lock-in	Reform could entrench a single platform or bespoke semantics.	How is open, internationally-aligned, modular design ensured?
Maturity of new methods	Verifiable credentials, product passports and AI are immature for border reliance.	What governance, legal-recognition, liability and privacy questions must be resolved before reliance?

13. Questions for further government–industry exploration

Drawing the threads together, these are the questions this paper most wants to put on the table. Several are best answered by operational stakeholders rather than by GS1.

The data-rich question

- What would cargo reporting look like if regulators drew on the commercial documents business already creates, rather than purpose-built reports?
- What is the minimum a regulator must verify (versus collect) for release, clearance and biosecurity?

Linked, discoverable, verifiable data

- What level of identification and verification of products, parties, agents and legal entities would materially improve linkage, trust and risk targeting - and reduce identity misuse?
- Under what governance, legal and liability conditions could verifiable credentials, product passports and a verifiable business identity (vABN) be relied upon at the border and across the economy?

DAFF, biosecurity and market access

- Could verifiable conformity and traceability evidence serve biosecurity and export market access at once, reducing duplication across regulators?

National infrastructure and transition

- What shared national digital infrastructure should be provided as a public good, and who should govern it?
- Which bounded streams are the best parallel pilots, and what fallback protects trade continuity?

14. Conclusion

The most useful reframing of this reform may be to ask not how to replace the ICS, but what cargo reporting looks like when the system is data-rich - when regulators can draw on the linked, discoverable, verifiable data that business already creates in its commercial trade documents, tied to the goods, consignments, freight units, traders, agents and legal entities involved. Seen this way, the ICS is one trusted node in a connected ecosystem, not a monolith to be torn out. That mind-shift, from recreating reports to reusing source data, aligns the FCRM and CRST agendas with “Tell Us Once”, the Simplified Trade System and the national productivity and data agenda.

The external pressures - surging low-value parcels, the global tightening of de minimis, and the international standardisation of linked, verifiable trade data - make the question timely. It is also a question with real dependencies: verifiable evidence and product passports must be governed and tested before reliance; a sovereign verifiable business identity must be anchored to the authoritative register and proven in use; biosecurity integrity must be preserved; and the national digital infrastructure that makes data reusable must be provided and governed. GS1 Australia offers this paper, and its standards expertise, to help government and industry explore these questions - and would welcome the opportunity to support standards-aligned sandboxes and pilots that generate the evidence a confident answer will require.

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Annex A - The companion explainer document

This paper is written as thought leadership for government and industry. To make the same ideas concrete for the people who run cargo reporting every day, it is accompanied by a plain-English explainer document, which incorporates its Operational Annex as Attachment A. Readers who want to see the day-to-day process changes, the identifiers involved, and how the technical building blocks map to cargo reporting should read it alongside this paper.

A.1 The main explainer

“What Does a Data-Rich Border Look Like?” translates the central question of this paper into operational terms. It explains, in plain English and without technical jargon, what a data-rich model is actually proposing and - just as importantly - what does not change: the ICS remains the system of record, declarations are still lodged, brokers still classify and sign, carriers and forwarders keep their roles, and biosecurity and regulatory powers are unchanged. It develops the history-and-mindshift framing (why the system looks the way it does, and what is genuinely new), sets out the eight drivers government is exploring, gives a by-role guide for existing ICS users, and works through three concrete examples - a sea container import, a biosecurity vehicle import, and e-commerce at parcel scale. A candid “what if this doesn’t work?” chapter sets out the ways the idea could fail.

A.2 The operational annex

The **Operational Annex** is incorporated into the main explainer as Attachment A. It contains four “day in the life” case studies - a customs broker, a freight forwarder, an ABF risk officer and a DAFF officer - each showing the same working day before and after, with the role’s accountability and powers unchanged and only the re-keying and timing altered. It also provides an operational identifier reference (container, bill of lading, voyage, air waybill, ABN, N10, VIN, PIC and the e-commerce identifier set) showing that the model relies on identifiers already in everyday use, and a plain-English technical section explaining identifiers and linked data, verifiable credentials, the “trust graph” and UNTP - and, in each case, what the building block does and does not prove.

A.3 Alternatives to cascade reporting

Both this paper and the explainer note that the FCRM paper sets out several alternatives to today’s cascade model. Each reduces reliance on tightly sequenced reporting; each depends on reliable identification and clear responsibility allocation - the building blocks of a data-rich model. They are summarised here for reference, and illustrated in the explainer’s worked examples and in its Attachment A.

Approach	How it works	Question it raises
Source-based contributions	Each party provides the data it originates or controls, not necessarily sequentially.	How is responsibility for each element made clear, and a complete view assembled in time?
Shared shipment record	A record is established early; parties add information as it becomes available.	Who governs the record, and how are corrections handled?
Event-based contributions	Data is contributed at logistics events (packing, booking, loading, departure).	How are events defined, and gaps avoided?

Approach	How it works	Question it raises
Consignment-level boundary	Each consignment is linked to its craft without fully reporting intermediate consolidations.	Is consignment-to-craft linkage sufficient for risk assessment?

Annex B - The verifiable ABN (vABN): critical digital infrastructure to underwrite trust in the economy

Of all the building blocks discussed in this paper, one stands out as foundational not only to trade but to the wider economy: a verifiable, sovereign business identity. Section 10 introduced the verifiable ABN (vABN). This annex sets out why it deserves to be treated as **critical national digital infrastructure** - a trust anchor that underwrites confidence in who businesses are dealing with, across the economy and not trade alone.

B.1 A tale of two traders: why verifying identity matters

Consider Alex, who runs a small importing business and relies on a licensed broker to move goods through the ICS. Onboarding is simple: Alex provides an ABN, a copy of the registration certificate, and delivery details, and the broker becomes the declarant. The problem is that anyone can provide the same details. A malicious actor can pull a legitimate ABN from the public register, forge a PDF certificate, present it to an agent as their own, and redirect a consignment to an unfamiliar address. The fraudster piggybacks on a legitimate importer's identity, and the legitimate business is unaware until the goods are gone.

For the broker or agent this is an impossible bind. Every declaration requires them to attest that they have "verified the business". In practice their tools are little more than a manual ABN look-up, which confirms the number exists and is registered - not that the person using it is authorised. Yet they bear the liability, penalties and even potential loss of licence if the identity turns out to be false. As the vABN business case puts it, the gap between "the number is valid" and "this is the right party" is where fraud slips through - and where, when a consignment turns out to conceal something serious, an innocent trader and a diligent agent can both find their livelihoods destroyed.

The quiet identity problem. Under current rules the burden of "Know Your Customer" falls on service providers - brokers, freight forwarders, banks, suppliers - who must repeatedly check their clients, while the clients themselves have no robust way to prove who they are. The same data can be supplied by anyone, and verification is manual, duplicated and fragile.

B.2 What a vABN changes

A vABN is a digital credential issued by the ATO/ABR - cryptographically signed, bound to a key the business controls, and stored in a digital business wallet. When Alex engages a broker, instead of quoting a number or emailing a PDF, Alex presents the vABN. The broker's system verifies it against the register in seconds, confirming it is genuine, current, not revoked, and that it belongs to Alex - and can retain it, knowing it cannot be forged or altered. This flips the burden: rather than the broker trying to prove the client is real, the client proves they are legitimate, backed by the sovereign authority that maintains the register. The same logic applies to any business-to-business transaction.

B.3 Why this is economy-wide infrastructure, not a trade feature

It would understate the case to treat the vABN as a cargo-reporting tool. The "verify who you are dealing with" problem is universal. It recurs every time a bank onboards a business customer under AML/KYC obligations, every time a company takes on a new supplier, every time a financial-services or government-services provider must satisfy itself that a counterparty is legitimate. Each of those checks is, today, manual, duplicated across institutions, and fragmented across different regulatory regimes (ABF,

AUSTRAC, ATO and others) - the same business identity verified again and again, by different parties, none able to reuse another's assurance.

A reusable, sovereign credential breaks that cycle. A business proves itself once and is verified many times - "Tell Us Once" applied to identity itself. Because the credential is anchored to the authoritative register and controlled by the holder, the assurance travels with the transaction and persists as evidence, across sectors and across borders. The productivity and integrity benefits therefore accrue across the whole economy; cargo reporting is one early, high-friction, high-value proving ground, not the boundary of the opportunity.

Why the vABN is critical national trust infrastructure

- **Sovereign anchor.** Only a government authority bound to the authoritative national register - the ATO/ABR - can issue it. No broker, platform or private scheme can provide this alone; international identifiers such as the LEI/vLEI are complementary, not substitutes.
- **Reusable and portable.** Issued once, presented and verified many times, and retained by counterparties across the supply chain and the wider economy.
- **Economy-wide, not trade-only.** It addresses KYC and counterparty verification across banking, procurement, financial services and government - a far broader impact than the cargo-reporting use case.
- **Integrity by design.** It closes the piggybacking gap by proving control of the credential, not merely the existence of a number - protecting both the legitimate business and the intermediary who would otherwise carry the liability.

B.4 Discipline on the economics, and on maturity

A cost-benefit analysis prepared for the vABN business case models the trade-related compliance burden and finds a positive return even on conservative assumptions. Those figures are GS1-related working analysis, are confined to the trade and cargo slice, and would require independent (OBPR-grade) validation before use in policy. **They almost certainly understate the whole-of-economy case**, precisely because the KYC and counterparty-verification burden they do not attempt to quantify - across banking, procurement, financial services and government - is far larger than the trade component. The prudent path is to measure value empirically through bounded pilots before placing reliance on any single figure.

Like every emerging method in this paper, the vABN is offered as a plausible future-state to test, not a finished solution [FUTURE-STATE / NEEDS TESTING]. The open questions are well understood: the commitment of an authoritative issuer; legal recognition; liability, privacy and selective disclosure; revocation and key management (custodial for smaller firms, self-sovereign for the digitally mature); and adoption, including SME usability. An industry-led sandbox supported by IFCBAA, ACITI and ECA is testing exactly these questions, and the ATO/ABR could introduce a credential issuance service through staged, low-risk upgrades rather than a wholesale rebuild - starting, pragmatically, with a subset of GST-registered businesses in high-friction processes such as ICS trade declarations and banking KYC.

The fuller treatment of this case - the "Tale of Two Traders" narrative, the issuer-holder-verifier mechanics, international alignment with the UN/CEFACT Global Trust Registry and the ICC Digital Standards Initiative, and the supporting analysis - is set out in the companion paper, *Discussion Paper - Business Case for vABNs* (Peter Carter, 2026):

Discussion Paper - Business Case for vABNs (available on request from GS1 Australia).

In short. A verifiable ABN is not merely a trade convenience. It is the missing “verify who you are dealing with” rail for the Australian economy - a sovereign trust anchor that reduces fraud, cuts duplicated compliance effort, and underwrites confidence in digital transactions wherever they occur. Cargo reporting is the natural place to prove it; the prize is far larger.