

Ecosystem of Trust

An overview of the Ecosystem of Trust Pilots and [Evaluation Report](#)

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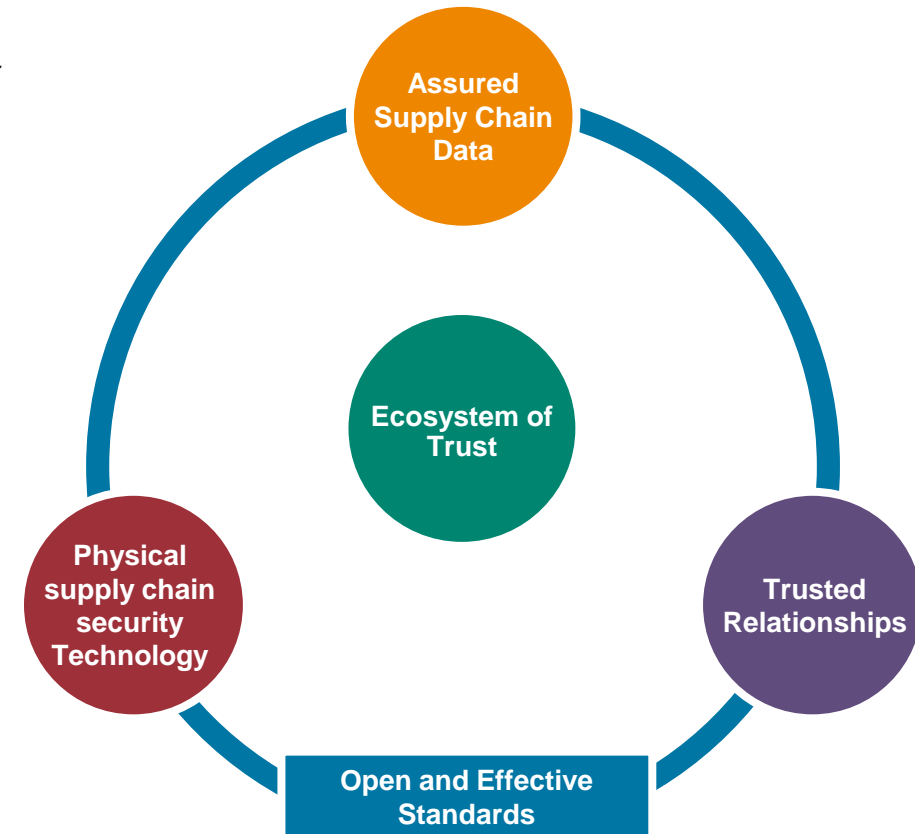


Ecosystem of Trust – technology, data insights & trusted relationships.

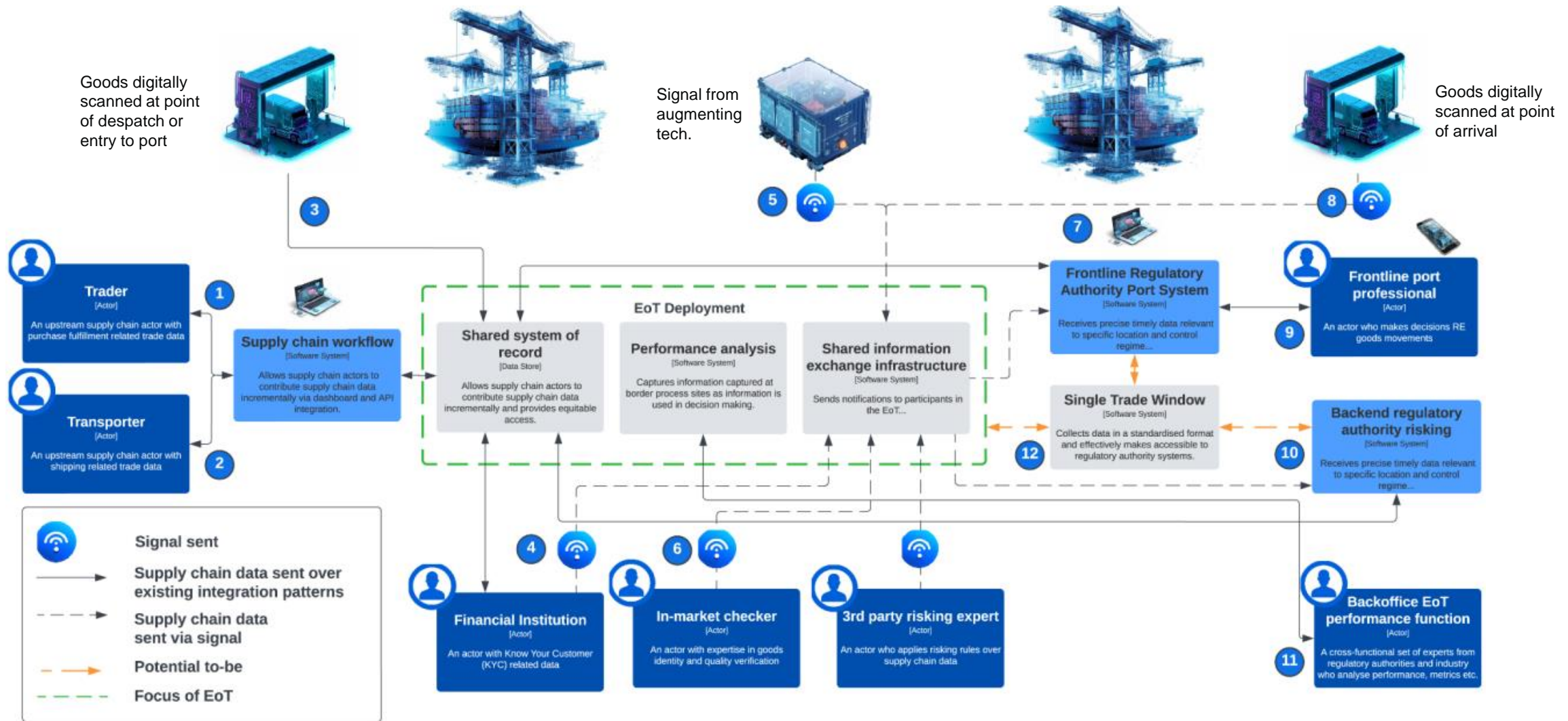
- **HMG’s 2025 Border Strategy set out the goal of:**

“creating an ecosystem of trust based on enhanced data around the border. We will deliver this by working with industry to share information and data effectively so that government understands the nature of goods or people moving across the frontier well in advance of arrival. Not only will this provide enforcement agencies with more information, but it will provide more opportunity to perform processes away from the border, minimising delays at ports and making the border more resilient.”

- **The Ecosystem of Trust (EoT) pilots set out to test this** – how across all border regimes new technology and data insights - along with trusted relationships can work to improve the border.
- The UK government ran six pilots with self-organised and self-funded private sector consortia selected by government following a competitive process.
- The consortia were led by Fujitsu, IBM & Maersk, Palantir, the IoE, Azarc & Chainvine.
- The pilots – which are ‘dual running’ with existing border requirements – were temporary evidence gathering exercises to create a robust evidence base for future policy development, potentially beyond the EoT.
- The pilots ran from last quarter of 2022 to the first quarter of 2023. UK Government’s evaluation and recommendations stemming from this issued in late August 2023.
- The evaluation focused on testing the **feasibility, scalability** and **effectiveness** of proposals for both industry and government.

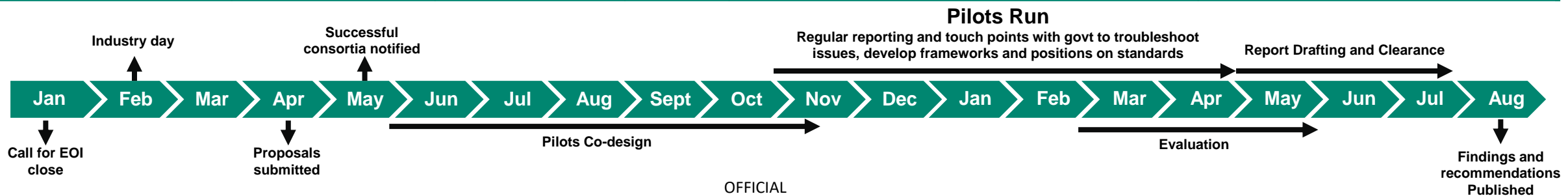


An illustrative Ecosystem of Trust



EoT Timelines and Individual Pilot Details

Consortium	Trade Routes	Ports	Mode	Commodities	Consortia Capabilities
Azarc	EU-UK RoW-UK	1. Harwich 2. London Gateway	RoRo LoLo	(1) Fresh fruit and vegetables; and (2) Charcoal & wood.	(1) Data visibility; (2) Digital twinning, Smart seals and geo-tracking
Chainvine	Row-UK (Americas) UK-EU	1. Dover 2. Liverpool 3. Felixstowe	Break bulk, LoLo	(1) Melons; (2) Wine; and (3) Cut Flowers.	(1) Data visibility; (2) Smart GPS seals, smart labels and environmental sensors
Digital Business Marketplace / African Trade Corridor	EU-UK RoW-UK (Kenya)	1. Immingham 2. Felixstowe 3. Stansted airport	RoRo, LoLo,	(1) Frozen fish; (2) Coffee; (3) Tea; (4) Animal feed; and (5) Cut flowers.	(1) Data visibility; (2) Smart seals (3) In-market checks/audits
IBM & Maersk	RoW - UK (China, Thailand, Latin America)	1. Felixstowe 2. Southampton	LoLo	(1) Bananas (2) Electric scooters and parts (3) Poultry products	(1) Data visibility; (2) Smart Containers
Fujitsu	EU-UK	1. Eurotunnel 2. Dover	RoRo	(1). Pet food; (2). Computer, computer components & office equipment; (3) Paper for recycling; (4) Car parts & accessories (5) Books	(1) Data Visibility; (2) Smart GPS seals, (3) In-market checks/audits
Connected Borders (Palantir)	EU-UK	1. Dover 2. Felixstowe	RoRo, Maritime	(1) Meat & Meat Products; (3) Fish; (4) Egg Products; (5) Shelf stable food products	(1) Data Visibility



Findings: Supply Chain Data

- During the pilots the **Availability, Timeliness; Accessibility; and Accuracy & Reliability** of the supply chain data was assessed.
- Consortia and HMG systems were not integrated due to time and resource constraints. Instead HMRC received unstructured data from each consortia via a dashboard where officials could 'eyeball' data, and structured data via a file upload. Concluding the data sharing agreements needed for data acquisition was challenging and resource intensive for both government and industry.
- **Availability** – a large share of the data required for risking and to fulfil international obligations was available through some systems, alongside additional relevant data not typically collected by HMG. Data required specifically for international trade compliance and not wider commercial purposes was most likely to be missing.
- **Timeliness** – Data received through the pilots was largely timelier than data received from current processes.
- **Accessibility** – Data mostly provided via dashboards in unstructured formats unsuitable for bulk processing. Some platforms support fully digitalised, structured trade documents. Few current users of these features however. Some use cases were for 'dashboard' type data, e.g. more efficient checks of unstructured documents. However, the highest value potential use cases require structured, machine readable, interoperable data.
- **Accuracy & Reliability** – this could not be robustly tested across all regimes but via investigation of the data generation process the evaluation showed in principle improvements could be expected. Most platforms use cryptographic data security techniques (e.g. but not exclusively DLT) to ensure an audit trail of when/who placed data on the platform.
- Over the course of the pilots consortia were able to respond to government feedback and improve data quality, indicating further improvements may be possible over time.

Key Gaps

- Industry would likely need to widely adopt digital, interoperable, machine-readable commercial documents to enable a scalable model.
- Current legislation and regulation requirements create practical barriers to data acquisition.

Key opportunities

- Trade digitisation is expected to increase significantly supported by new legislation (Electronic Trade Documents Act) and trade organisation promotion. Trade bodies like ICC have committed to ambitious targets for medium term trade digitisation.
- HMG has consulted on the potential legislative changes needed to deliver the UK STW including processing of supply chain data for the management of official border requirements
- As set out in the TOM, the STW will aim to support data provision from commercial supply chain systems.
- In-principle valuable use cases identified for machine readable data for enhanced risking, more efficient / automated checks, and more automatable declaration processes

Findings: Augmenting technology

- Various augmenting technology currently deployed by industry for commercial use were tested during the pilots. Anecdotally, augmenting technology cover a small percentage of trade but is becoming more common.



Smart seals monitor security, tampering and/or integrity.



GPS trackers monitor location and route



Sensors can monitor the environmental conditions and integrity of a load.



Smart containers monitor security, tampering, integrity environmental conditions



Digital inspection tech (scans) permit content checking without intervention

- Augmenting technology can provide an additional layer of assurance which can be combine with other capabilities to form an ecosystem of trust which collectively gives the government more confidence.
- Defining precise use cases and operationalising augmenting technology pilots was challenging.
- We found that all the devices tested could be circumvented by determined and resourceful criminals – they cannot be a 100% guaranteed method of ensuring the integrity of goods
- It is necessary to be fully aware of the limitations – as well as the benefits – of augmenting technology when considering it as one layer of assurance as all the devices tested during the pilots could be circumvented by determined and resourceful criminals.

Key gaps

- **Further work is needed regarding industry standards** to enable the level of assurance and security needed to satisfy government and border agency use cases.
- **Relatively limited physical testing** of augmenting technology during the pilots due to the complexity of generating and operationalising tests of tightly defined use cases.
- **Further evidence on market penetration** of different device types is needed to assess scope for testing potential voluntary use cases at greater scale.

Key opportunities

- In principle, **physical checks at businesses premises** could be undertaken where augmenting technology adequately demonstrates the integrity of a load.
- **Growing industry adoption rate and government incentives/ requirements.** The global smart shipping container fleet is growing. Defra's Accredited Trusted Trader Scheme pilot includes a module utilising devices monitoring e.g. environmental conditions or route to demonstrate assurance. Exercises like the WCO SAFE Framework of Standard review provide potential opportunities to advance international consensus on customs use cases and standards.

Findings: interoperability and standards within an Ecosystem of Trust type model

- The evaluation report assesses that UK government cannot currently take full advantage of new data because industry has yet been able to develop the appropriate technical infrastructure to make it available in the right (machine readable) format at scale, and government has not yet determined the most effective ways to use or collect it.
- It is important to ensure standards and models adopted can be aligned with wider international standards and models being developed to support digital trade. This is key for any domestic EoT to provide significant benefits, and be sustainable.
- The EoT model involves different data provision approaches for different use cases. For many event types facilitating interoperability via communication in highly reduced form, e.g. communication by exception, or signals may be sufficient for reasonable use cases. E.g. in principle we don't need to be continuously told that a seal on a lorry remains intact, but rather when it has been opened unexpectedly.
- Where it is desired that more 'fine grained' or complete data – e.g. international trade documents – is to be shared and accessible in machine readable formats, promotion and government adoption of particular semantic standards may be merited.

Key Gaps

- Limited systems to system integration during the pilots due to time, resource and data interoperability constraints.
- UK government and industry must work together and invest in building capabilities to enable the potential benefits of richer data to be realised.

Key opportunities

- Focus on interoperability and identifying where standards development, adoption or promotion by government is merited.
- CO will continue to facilitate an interoperability working group with system providers, and external experts. EoT evaluation proposed developing an 'interoperability roadmap' with support from industry.
- A range of international institutions (e.g. WCO, UN/CEFACT, W3C), and international partners are developing modernised goods border operating models which will rely on secure, interoperable supply chain data transfers between different commercial systems, and between business and government, and have developed or are developing potential solutions to the challenges inherent in this.

Recommendations for addressing challenges to EoT adoption

- The EoT pilot evaluation report found that data and technology capabilities are available with the *potential* to meet government's assurance needs and provide value to all border users, as part of an EoT-type model. But getting to a point where these capabilities are deployable at scale remains a challenge. Areas that would need to be addressed include:
 - Enable data interoperability between government and industry systems
 - Catalysing more effective legal and governance arrangements between parties
 - Further clarify and test how the EoT model can progressively release value to government *and* trade.
- In addressing these challenges, strong collaboration between government and the private sector is key. Collaboration between industry and border agencies is, and should remain at the heart of driving improvements that work for both sides and which are informed by actual trader experience.
- The findings of the EoT pilots will help inform the design of some of the planned strategic releases of UK Single Trade Window. The STW will become the single digital gateway at the UK border for traders to complete their import, export and transit obligations: it is a fundamental enabler for a range of ambitious government border transformations.