Trade and Logistics Information Pipeline
Transforming Supply Chain Data with IOTA
Improving Global Trade With Blockchain

The Trade Logistics Information Pipeline (TLIP) leverages IOTA’s Distributed Ledger Technology (DLT) to enhance the security and efficiency of trade logistics. This open-source system replaces traditional paper-based trade processes (susceptible to fraud and inefficiency) with a digital infrastructure that ensures data immutability and secure information exchange across borders.

TLIP delivers data sovereignty by making all data accessible directly from its origin. It ensures that digital data is secure and trustworthy while in transit, with each participant being held accountable through digital signatures and encryption.

To do this, TLIP uses IOTA’s public, permissionless DLT to establish a framework for secure data sharing and to guarantee data immutability and auditability.

IOTA’s decentralized architecture allows each participant to maintain control over their data and decide permissions for its sharing. There are no central authorities managing access or use of TLIP, setting it apart from traditional platforms that may grant certain participants a degree of control or monopoly.
Problems with Traditional Trade

Paper-based trade systems are prone to inefficiencies, fraud, and delays due to:

- **Fragmented Data Storage**: Supply chain information remains confined within the IT systems of individual organizations, preventing a cohesive view across the trade journey and actors involved in the process.

- **Opaque Product Journeys**: Detailed access to information about a product's origin, its journey to consumers, and its 'end of life' management continues to be elusive.

- **Compromised Data Integrity**: Approximately 80% of the data exchanged between parties in the supply chain experiences integrity issues, undermining trust and efficiency.*

- **Visibility Deficits**: Around 70% of firms report significant gaps in their visibility into supply chain operations, hindering effective management and responsiveness.*

- **Regulatory Challenges at Borders**: National border agencies face substantial challenges in achieving sufficient visibility into supply chains to effectively assess compliance, manage risks, and ensure homeland security as well as the health and safety of citizens.

Why **Digitize Trade Documentation?**

TLIP can be used to digitize and secure trade documents like Certificates of Origin and Commercial Invoices or Electronic Transferable Records like Bills of Lading, using IOTA technology. Not only does this prevent loss and forgery – according to the ICC United Kingdom and The Commonwealth*, digitizing trade transactions will have profound implications for global commerce:

**Drastically Reduce Costs**
Implementing digital solutions could slash trade transaction costs by up to 80%, making international trade more accessible and efficient for businesses of all sizes.

**Narrow the Trade Finance Gap**
By streamlining processes and improving transparency, digitization could halve the trade finance gap (the shortfall between the demand for and supply of trade finance) that hinders businesses from securing funding for international trade due to factors like credit risk, regulatory constraints, lack of information, and economic conditions. This potentially unlocks new economic opportunities for emerging markets.

**Accelerate Cross-Border Transactions**
Transitioning from traditional methods to digital processes would dramatically decrease cross-border processing times, in some cases cutting them from 25 days to just a single day, thereby enhancing speed and reducing operational drag.

**Boost SME Productivity**
Small and medium-sized enterprises (SMEs) stand to gain significantly, with efficiencies predicted to increase by 35% through, for example, improved coordination with logistics and customs agents, cheaper import and export processes, and improved access and cost of trade finance.

Source: ICC UK [https://iccwbo.uk/seizing-the-moment-report](https://iccwbo.uk/seizing-the-moment-report)
What TLIP Does

01 Provides an interface for international trade stakeholders (e.g., sellers, buyers, freight forwarders, government authorities) to access trustworthy information through a secure, thin layer of technical features.

02 Employs IOTA technology like digital identities and the IOTA distributed ledger to connect users and data systems in a trusted manner.

03 Complements existing systems by offering a layer of APIs that simplify complex business logic and DLT technology for exchange of data with external partners and governments.

04 Creates a secure transaction layer where actors can share relevant data and trade certificates, ensuring data integrity and trust.

05 Digitally connects border agencies with ports, transporters, and traders for enhanced trade facilitation, and establish digital trade corridors between countries for improved and secure trade processes.

06 Increases visibility across the trade journey and ensures that digital trade certificates are authenticated, reducing the need for manual document storage and checks, and supporting validation and attestation.

07 Tokenizes trade documents on the IOTA mainnet, turning them into Electronic Transferable Records, with each token representing metadata and requiring a verified digital identity for full document access. This ensures document sovereignty and restricted access, compliant with MLETR legislation.

08 Acts as Risk Engine to assess the risk profile of each actor in a trade transaction: It uses IOTA’s Identity solution for quick access to digital credentials and Know Your Business (KYC) information, and provides insights into previous trade performance of supply chain actors.

09 Supports the adoption of common data standards, moving away from paper and scanned documents, following the data standard harmonization efforts driven by ICC’s Data Standards Initiative.

10 Operates alongside manual processes to facilitate a gradual transition for users accustomed to traditional methods.
How Do I Benefit?

If you are a trader
You could see a 30% reduction in the time and cost of cross-border processes, making you more competitive internationally. Automation could cut your customs data collection costs by 40%. The use of electronic Bills of Lading could notably enhance your access to trade finance.

If you are a forwarder or transporter
Expect enhanced planning and coordination for exports and imports, improving how you engage with customers and border agents. Access to better data will also enable improved analytics, helping optimize your operations and customer satisfaction.

If you work for a government border agency
Granular supply-chain data from UK pilot studies could meet up to 80% of minimum requirements for customs risk. Enhanced data accuracy is expected to reduce misdeclarations and false positives, increasing the efficiency of tax collections and overall customs operations, and potentially cutting decision times by 17%.
Implementation Context

TLIP is first being implemented in Kenya in partnership with government and border agencies. Exports (such as tea or flowers) from Kenya to the UK involve numerous steps that currently blend manual and digital processes.

**Access Control:**
Only authorized organizations and individuals can access documents and data for a specific consignment, with a granular permissions system that protects proprietary information, such as commodity prices.

**Digital Integration:**
TLIP integrates with Kenya Revenue Authorities, Ketrade, and KEPHIS, allowing traders to use their KRA Pin for authentication and automatic data/document access (e.g., Phytosanitary Certificate and Certificate of Origin).

**Enhanced Data Sharing:**
Collaboration with various actors adds layers of data like the Bill of Lading and port release status, using standard APIs compatible with UN/CEFACT and GS1 EPCIS 2.0 standards.

**Security Measures:**
All shared information is encrypted and digitally signed, ensuring that partner country officials such as UK Customs (HMRC) can access and verify data efficiently, reducing risks of fraud and errors in re-keyed information.

**Pilot Results with the UK Government:**
Pilots have demonstrated the potential for using original data for automated import declarations, streamlining the process, and ensuring accuracy by utilizing data directly from the source.
Each organization will have their own database system storing documents and data locally or in their own cloud. Access is available through TLIP APIs, with encryption for security.

Data will stay within the organization’s database for full data sovereignty. However, it can be granularly consumed by permissioned trusted partners.

Data is not stored in a central system but in a fully decentralised network.

TLIP nodes are built on the IOTA mainnet, where hashes of electronic copies of documents are kept for integrity reasons. TLIP also employs IOTA’s Identity Framework for identity management, regulating access, and verifying document sources.

Permission policies and encryption ensure that access to data and documents are fully under the control of the owners.

TLIP nodes can be easily set up in the cloud or on premise in the organization’s own hardware.

The infrastructure is decentralized, requiring each participant to operate a TLIP node, which includes local APIs and an IOTA node instance. These nodes are interconnected and, given permission, can undertake search discovery and communications.

Third parties not directly integrated with a TLIP Node can connect through a TLIP Community Node and a web-based application, making the network accessible for smaller actors as well.
IOTA's technology allows trade actors using TLIP to independently manage their data and permissions, enhancing data privacy and control, while building a shared data repository for each shipment and product.

**Shared Data Space**

- Commercial Invoice
- Health Certificate
- Export Declaration
- eBill of Lading
- Arrival & Exit location + timing

**Unique**: based on involved actors and relevant data

**Shared TLIP Infrastructure**

- Producer
- Freight Forwarder
- Carrier
- Import Broker
- Exporter
- Import Health & Border Agents

**A shared infrastructure**
Optimal Features of Global Trade Platforms Illustrated by TLIP & IOTA

**Neutrality**
Commercial organizations require neutral platforms, unrelated to competitors. TLIP exemplifies this by ensuring it is free from ownership conflicts, enhancing trust and broad adoption.

**Interoperability**
Effective platforms must adopt international standards for seamless data exchange across diverse sectors and regions. IOTA supports seamless interaction across different technologies and jurisdictions. Its compatibility with various international standards enables TLIP to integrate disparate systems, enhancing global communication and transaction efficiency.

**Open Source**
By building on IOTA's open-source protocol and licensing TLIP as open-source, the solution taps into a worldwide network of developers who contribute to the continuous enhancement of the platform. This collaborative environment helps TLIP adapt to stakeholder needs and integrate cutting-edge technologies as they emerge.

**Scalability**
Platforms should be user-friendly for all organizational sizes. IOTAs' scalable architecture allows TLIP to handle transactions efficiently, regardless of volume, without compromising speed or security. This scalability ensures that TLIP is accessible and practical for small and large corporations, as well as governments.

**Paper & Digital Simultaneous Processing**
In some cases, supporting both digital and traditional transaction methods is essential, as this flexibility bridges traditional practices with digital innovations, facilitating a smoother transition for all users.
The neutrality of TLIP is secured by a governance board of international organisations guided by formalised goals and objectives for public good.

By pooling together the trade expertise and non-profit resources of its member organisations, we will build out the relevant governance framework and supporting organisation to make TLIP impactful on a global level.

The structure will help foster collaboration among both government and industry stakeholders to drive policy change and establish an impartial ecosystem for global trade.
What’s Next?

**TLIP** continues to innovate and expand its offerings, with future developments focused on revolutionize trade with initiatives like the integration of digital trade corridors at UK freeports.

By embracing **IOTA technology** TLIP remains at the forefront of revolutionizing data exchange in **global supply chains**.

Find out more about TLIP at:

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About Us

Founded in 2015, IOTA is a public goods infrastructure to bring trust in our digital world. Through IOTA, governments, organizations and people are able to interact with each other in a secure, trusted and verifiable way.

IOTA is one of the most established blockchain projects in the world and is primarily driven by a global ecosystem of non-profit organizations.

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