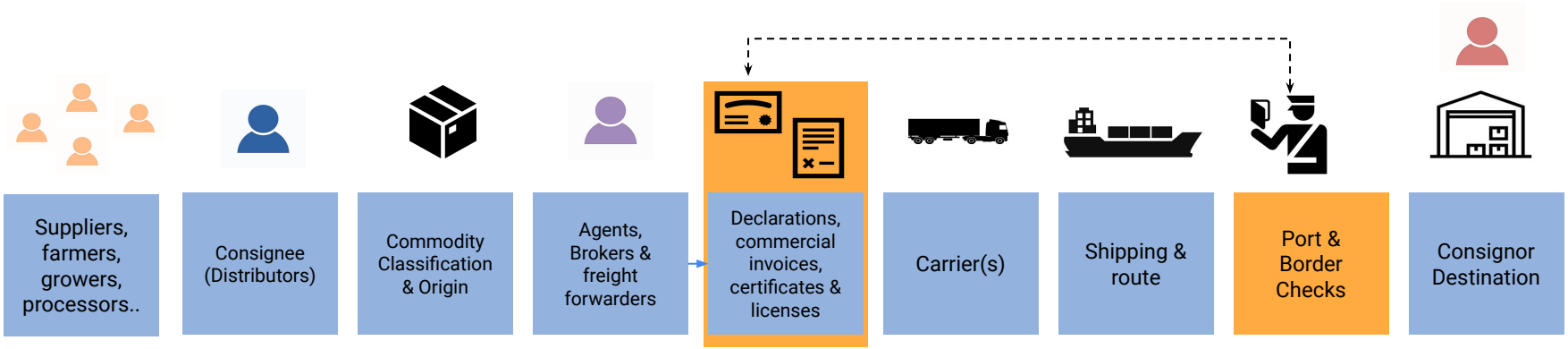
facilitating international trade

Trade Logistics Information Pipeline

November 15th 2022

www.tlip.io

Today’s trade is limited by paper and poor data



Border agencies typically have little insight into the supply chain other than the information provided by paper-based border declarations

A common set of design principles

Decentralization

No single actor should have the power of owning all data and governing infrastructures. Data shall be decentralized and each actor shall have sovereignty over the data owned, deciding to whom data is shared, when and why.

Interoperability

Actors need to exchange identities, trusted data or documents (credentials) and expose services, “that speak the same language”, seamlessly across sectors and geographies.

Interoperability is key for businesses aiming at flexibility, and resilience to changes in the market. For instance, when it comes to onboarding new suppliers to react against supply shortages. The same applies to governments upgrading border processes for global trade.

Data scalability and availability

Modern supply chains shall keep individual item data at every granularity level as required by each industry, business or regulation

Data Verification

There shall be a trust layer enabling actors to share trusted, immutable and non repudiable (so that they are liable) data that can be audited and traced back to its source. To this aim, actors' and devices’ (scanners, readers, printers) identity is a cornerstone.

Transformation potential of DLT/Blockchain

DATA INFRASTRUCTURE

Trust in data & decentralized data management

- Data immutability
- Data lineage
- Data accountability
- Data on the edge
- Decentralized data management

VALUE INFRASTRUCTURE

Value transfer & digitalization of assets

- Feeless transfer
- Micropayment
- Tokenization of assets

AUTOMATION

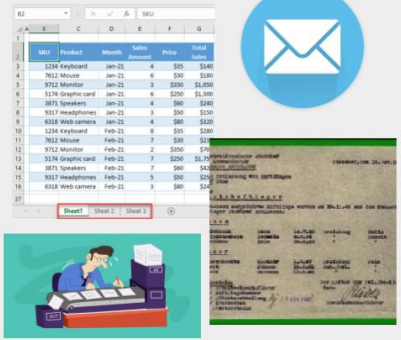
Smart contracts

- Automatic code execution
- If-then logics

Maturity levels in supply chains

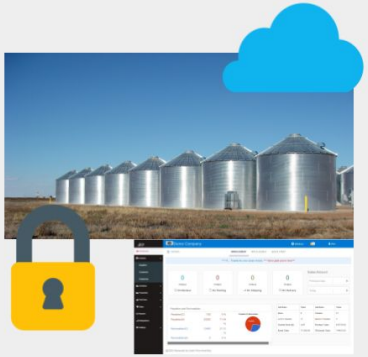
Towards a Supply Chain 3.0.

Level 1



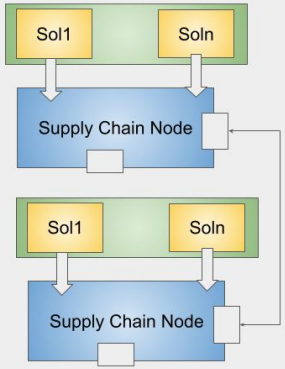
Simple ofimatic applications
Scanned documents
Email communication
Manual intervention

Level 2



Improved internal applications
Cloud
Closed Systems & Data Silos
Coarse granularity item level tracking

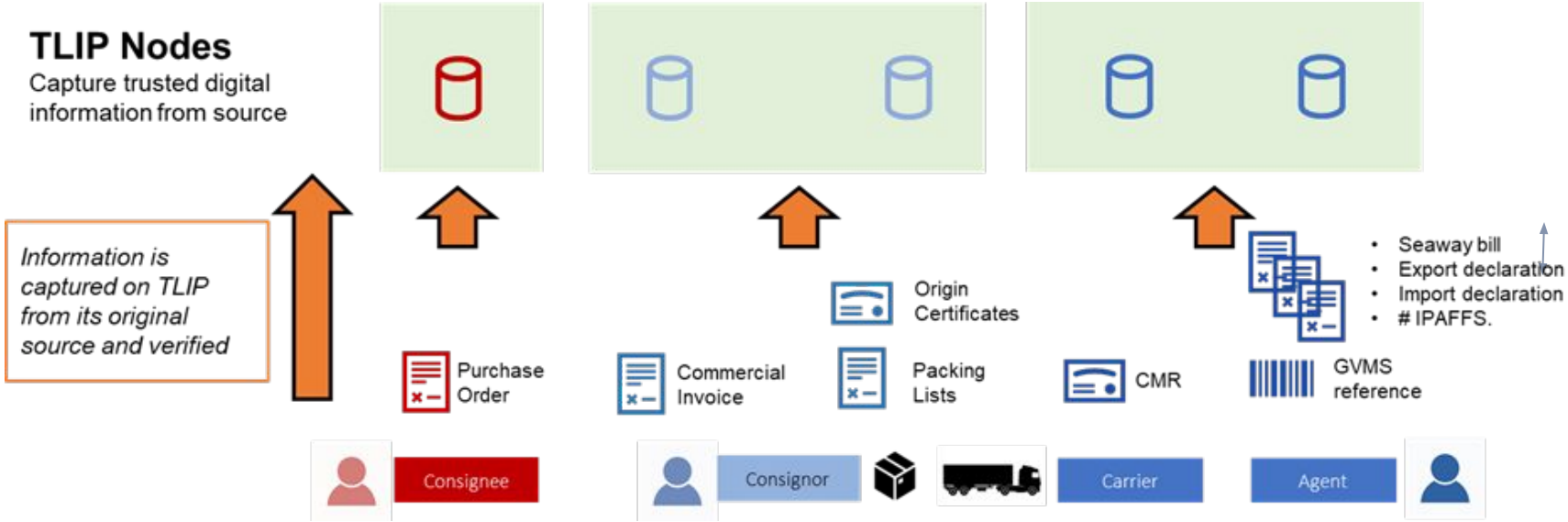
Level 3



Trusted and Decentralized
Interoperable
Fine granularity item level tracking
Historical data at will

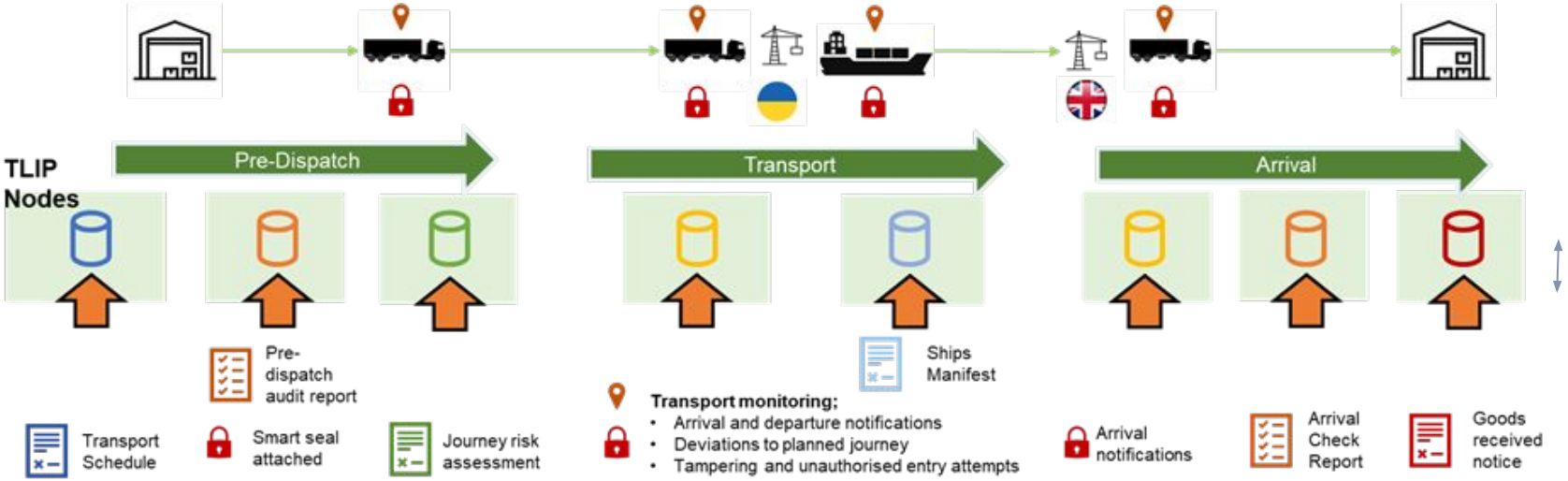
Establishing an “Ecosystem of Trust”

TLIP is a collaborative infrastructure, where all actors can share data and documents. Used by both border agencies and commercial actors, each party has full control of its own data, and all data is available directly from the source..



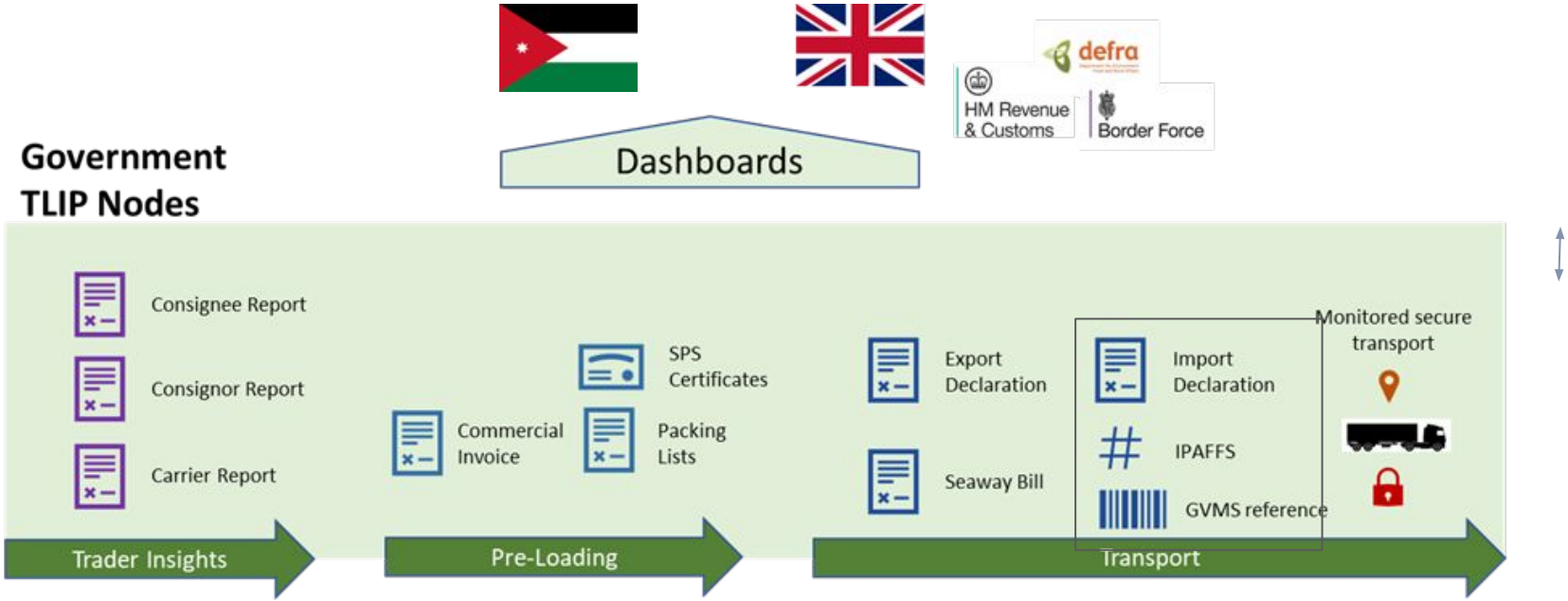
Advanced ‘trusted trader’ scheme

Option to add container audit reports, digital seals etc. to increase trust level and facilitate easier border handling

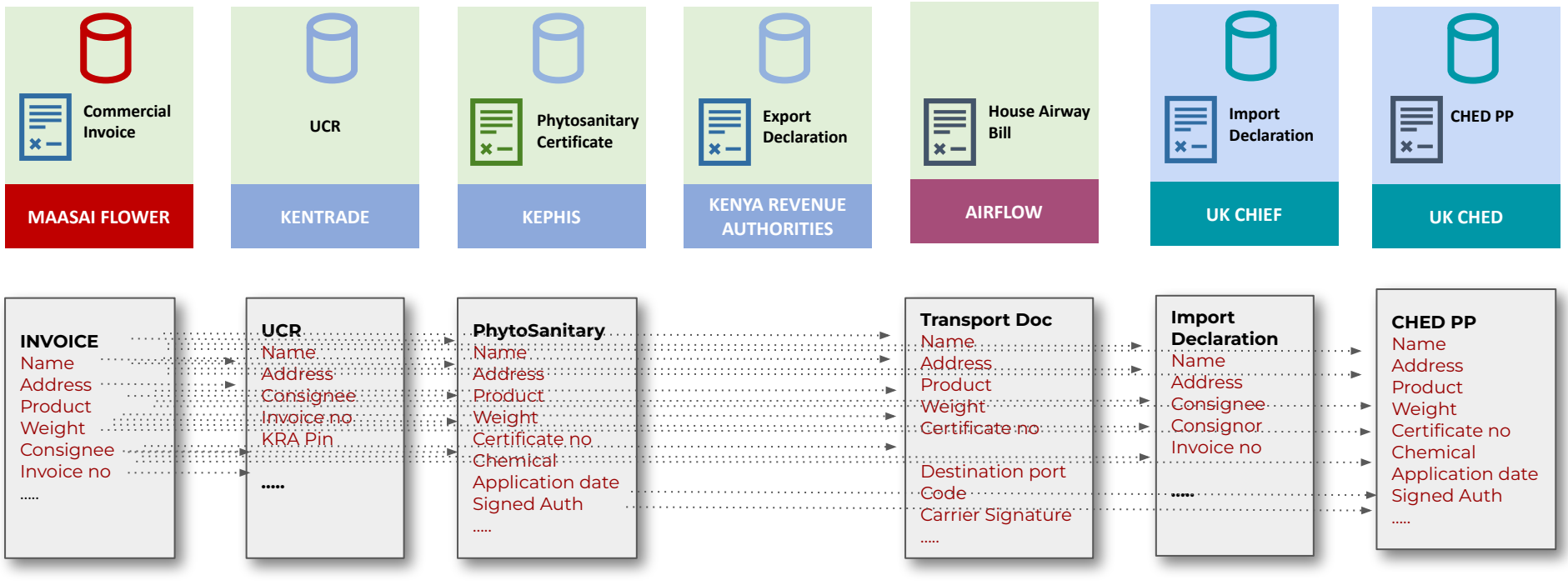


Government dashboards

Government can view consignment supply chain information in detail, with access to original goods documentation and journey details in additional to traditional customs and licence declarations. Access to this rich dataset via dashboards enables border agencies to develop sophisticated risking tools and perform detailed analysis to more accurately identify areas of concern.

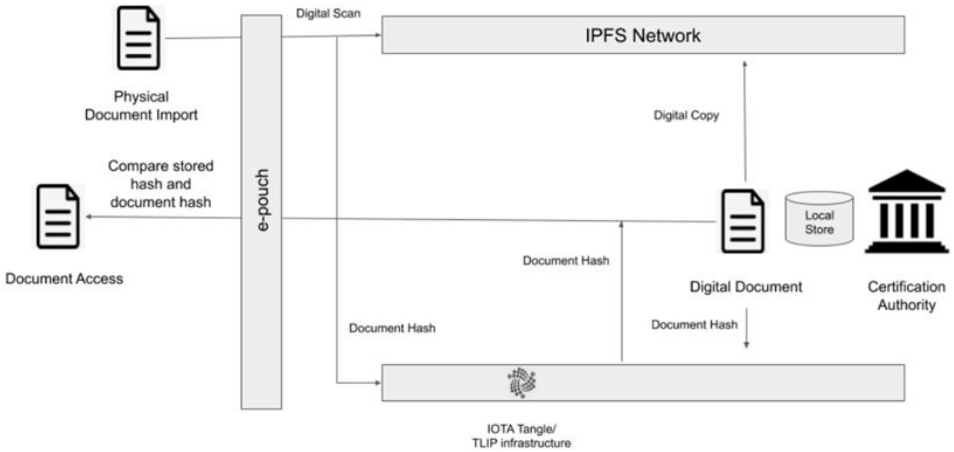


Enabling data from source - shared with all



Example

How to ensure data immutability



Pushing a new document to TLIP

- The hash of the document is generated
- and stored into the IOTA Tangle
- The document is encrypted with a purposely defined symmetric key
- The key is encrypted with the public key(s) of the user(s) allowed to access the document
- The encrypted document is stored into the IPFS network and its address returned
- The document address, hash and encrypted encryption keys are stored on the IOTA Tangle (see next section for details)

Pulling a new document from TLIP

- The user searches for the document metadata in the IOTA Tangle (see next section for details)
- The user uses its private key for decrypting the encryption key used to encrypt the document
- The document is retrieved from the IPFS network, decrypted with the generated key
- The document hash is compared to the hash stored in the IOTA Tangle and returned to the user requesting it
- An alarm is raised if the stored document and hash do not correspond IPFS Network and data protection

Tested in multiple markets

UNITED KINGDOM

KENYA

UGANDA

- Based on Blockchain (DLT)
- Tested in multiple markets involving government agencies
- Open source technology - no vendor lock-in
- Add-on to existing systems
- Not a Single Window system - communication layer only and for international collaboration along trade corridors
- No IP - enables an ecosystem of services

EASY TO PILOT

Source: https://www.youtube.com/watch?v=bnAfclXTael

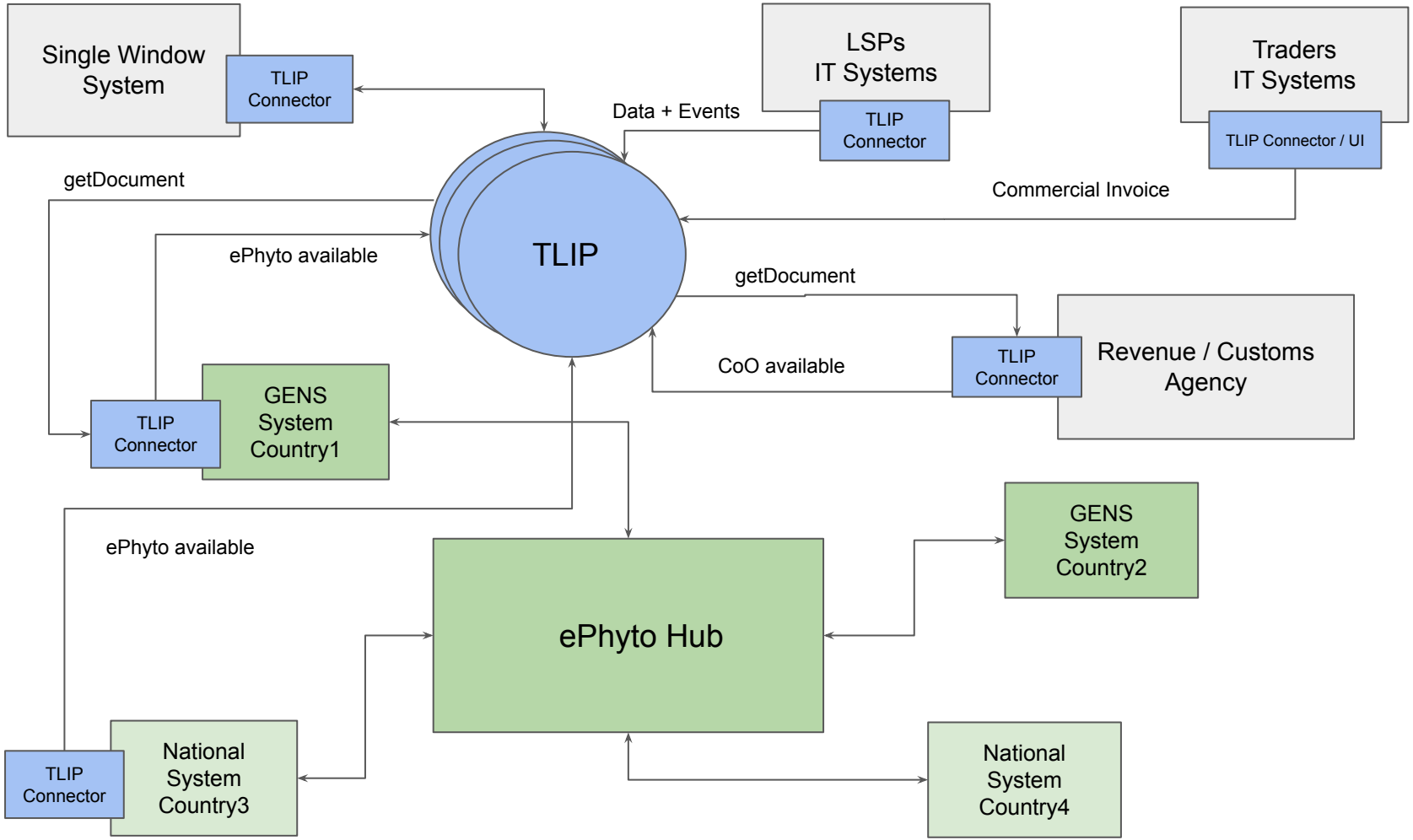
How?

TLIP + ePhyto Hub + GENS

www.tlip.io

TLIP & (ePhyto Hub + Gens)

- ePhyto Hub
  - → *Transport and delivery* of ePhyto to the right system in the right country
  - GENS : Generic “Fallback” system, connected to the Hub, that generates and receives ePhytos through the Hub. Countries can use it in the cloud
- TLIP
  - → *Broker* of multiple data and documents (including, but not limited to ePhyto) of a Trade Consignment
  - Permissioned exposure of (*verifiable*) documents/data provided by both *Public and Private Actors*, for instance Logistic Service Providers or Traders
  - *Verifiable Audit Trail* of a Consignment, who did what and when. Recorded on a DLT. DID
  - TLIP can integrate with multiple systems through *TLIP Connector* including GENS, Single Window, Customs, Traders IT, etc.
  - Documents can reside *at the source* and only shared when needed by the rightful actor

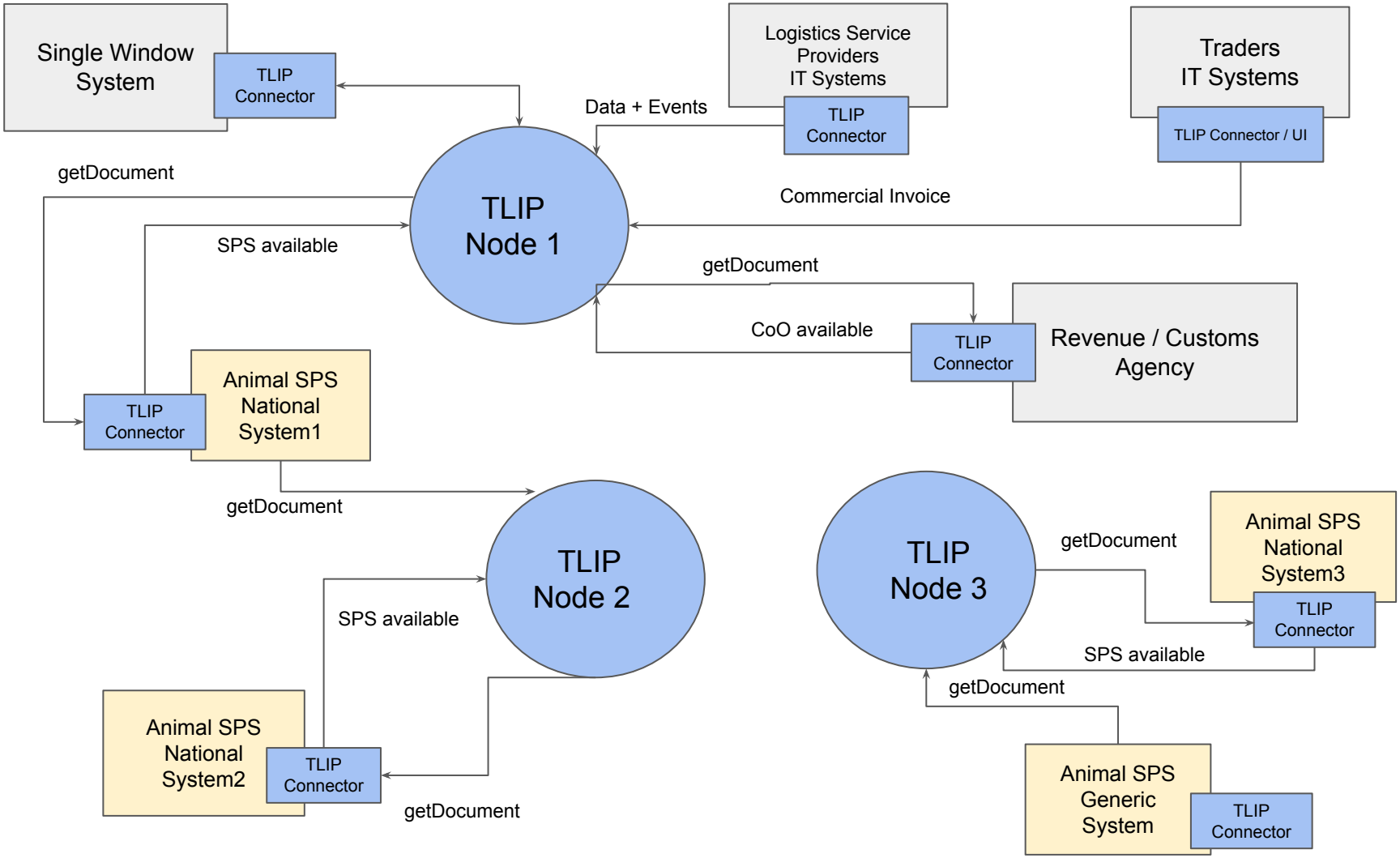

Single Window System
TLIP Connector
LSPs IT Systems
TLIP Connector
Traders IT Systems
TLIP Connector / UI
Data + Events
getDocument
Commercial Invoice
ePhyto available
TLIP
getDocument
TLIP Connector
Revenue / Customs Agency
CoO available
TLIP Connector
GENS System Country1
ePhyto available
GENS System Country2
ePhyto Hub
TLIP Connector
National System Country3
National System Country4

SPS for Animals using TLIP as infrastructure

a standard for *sharing* certificates - not a standard format for certificates

- Main difference with ePhyto Hub
  - Data / documents remain at the source and TLIP is a broker
  - National or Generic systems notify TLIP when a new SPS is ready
  - Interested parties can be notified by TLIP of the availability of a new SPS and retrieve it
  - SPS specific systems can get SPS through TLIP and verify them in a decentralized manner
  - Specific systems in each country can additionally check and verify the audit trail of any associated consignment

- Technical Details
  - TLIP Nodes are brokers that hide the complexity of communicating with the systems behind
  - TLIP Connector enables bidirectional connection (TLIP → Local Systems. LocalSystems → TLIP)
    - Animal Control Systems notify TLIP through a Webhook interface
    - Animal Control Systems can get subscribed to a TLIP Node to be notified of “Consignment Activities” through a Webhook interface
    - TLIP Connector expose a document retrieval interface so that documents can be retrieved by TLIP or from TLIP
  -


Single Window System
TLIP Connector
Logistics Service Providers IT Systems
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TLIP Connector / UI
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Commercial Invoice
SPS available
getDocument
CoO available
TLIP Connector
Revenue / Customs Agency
TLIP Connector
Animal SPS National System1
getDocument
TLIP Node 2
SPS available
Animal SPS National System2
TLIP Connector
getDocument
TLIP Node 3
getDocument
Animal SPS National System3
TLIP Connector
SPS available
getDocument
Animal SPS Generic System
TLIP Connector

Thank you!

Please contact us if you have any questions

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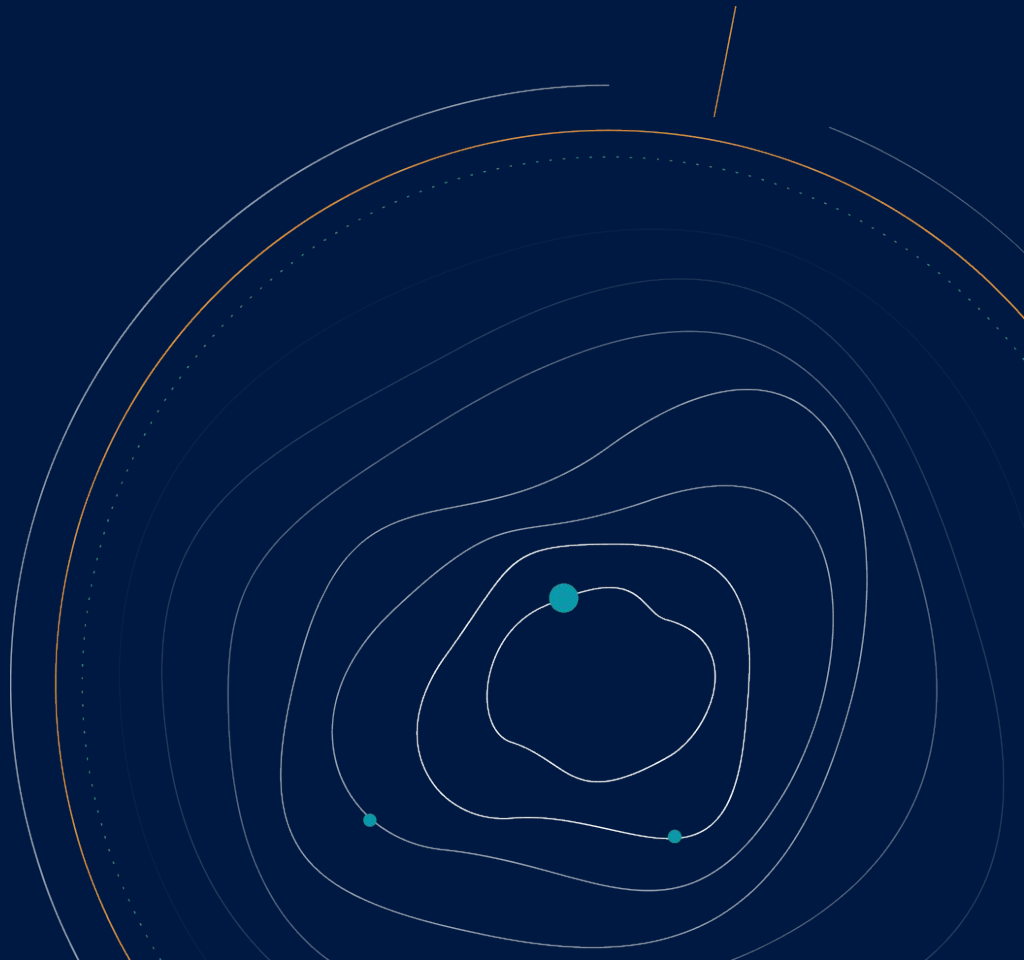
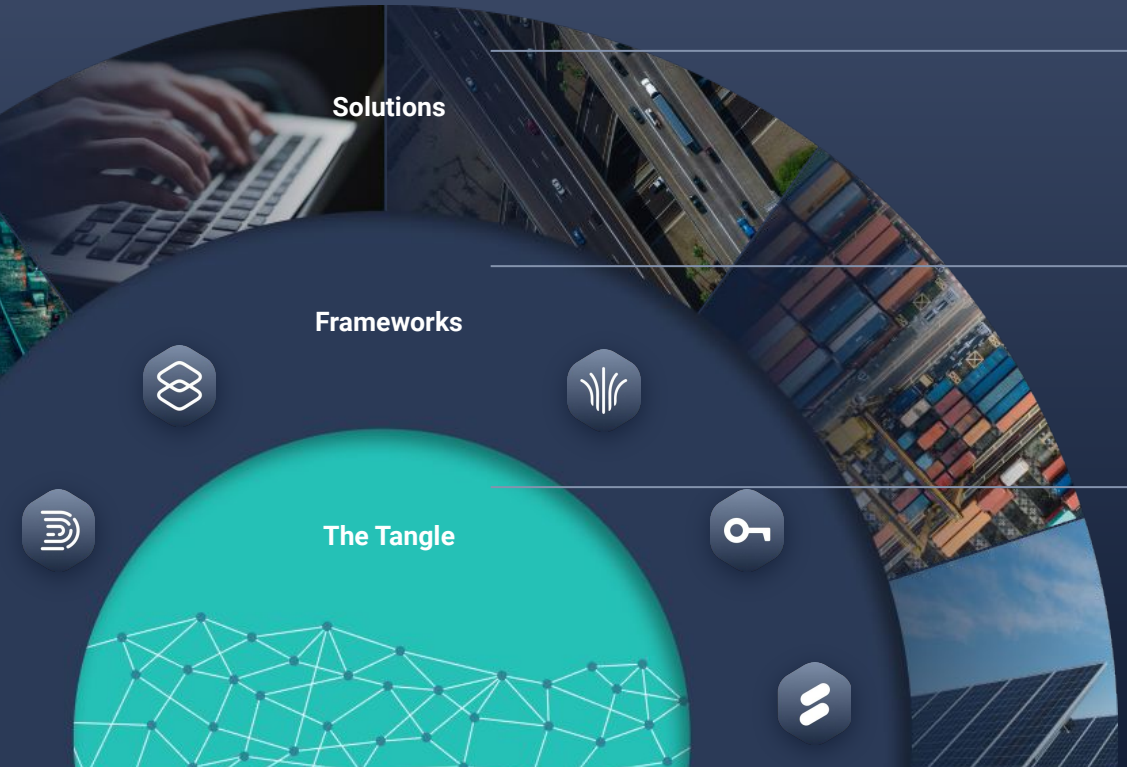
IOTA FOUNDATION



IOTA enables you to build solutions through its open-source tech stack



Products and solutions

Solve specific industry problems and offer a broad range of functionalities to users

Frameworks

Extend the core protocol using freely available building blocks that you can tailor to your needs

Core protocol

The Tangle provides the basic functionality and security of the IOTA protocol and defines its key characteristics

We don’t build alone

Become an active part of our growing ecosystem

The IOTA Foundation was founded and incorporated in Germany in 2017 to research, develop, and grow the IOTA protocol. By now, the foundation counts over 150 employees distributed across more than 25 nations.

Thriving Community

350+ corporate patents

550+ peer reviewed research papers

180,000+ community members

Mature Network

1,000+ TPS on a feeless DAG protocol

390,000+ active addresses with value*

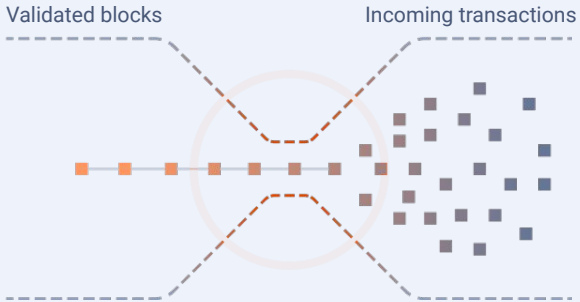
$173bn value transacted*

**as of April 2020*

The IOTA Tangle is a blockchain without blocks, chains, miners or fees

Blockchains

***Bottleneck** by design*

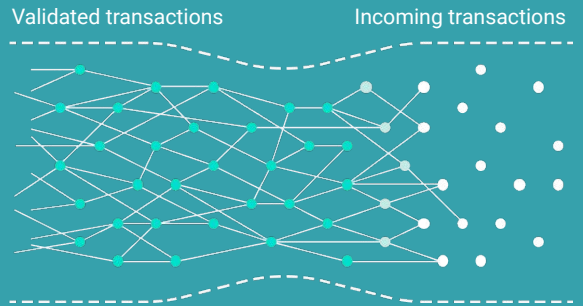


A chain of blocks containing a **limited number of transactions** each

Miners validate new transactions & package them into new blocks, extracting fees

IOTA

***Scalability** by design*



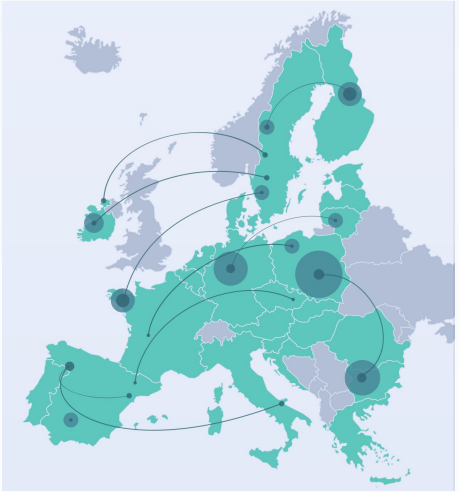
A directed acyclic graph (DAG) of **individual interlinked transactions**

Incoming transactions validate and attach to previous ones, **without transaction fees**

Future-Proof

IOTA

Next public Blockchain Service Infrastructure for the EU



The IOTA Foundation has been selected as **one of the four** finalists from 30+ applications, to participate in the **second phase** of the EU blockchain PCP process. This aims to design new DLT solutions to improve the **scalability, energy efficiency and security of EBSI**, *a network of blockchain nodes across Europe.*