IOTA
FOUNDATION

What do DLTs Enable

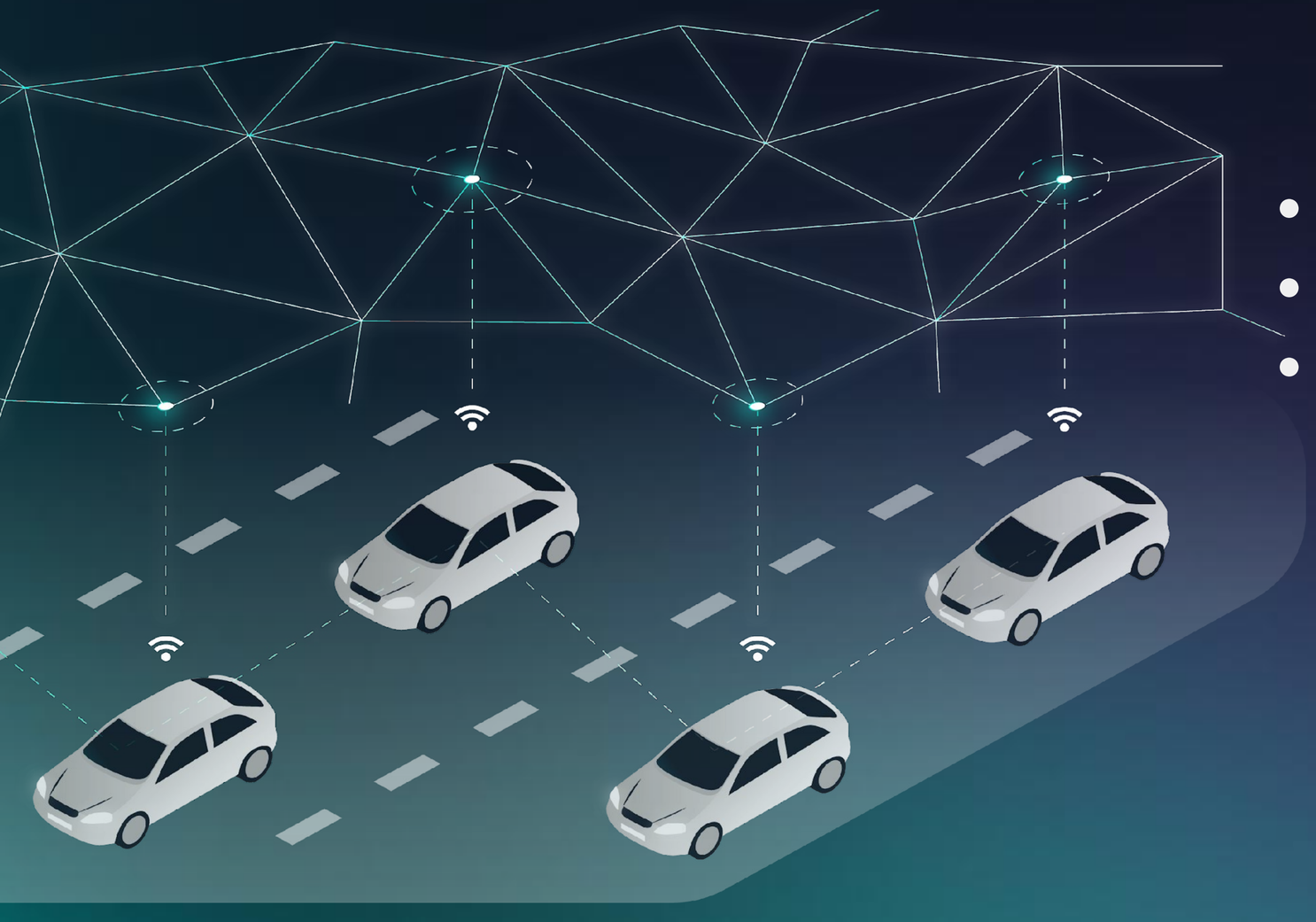
Trustless & Open Ecosystems

Permissionless Distributed Ledger Technologies (DLT) enable open innovation without the requirement of trust.

IOTA
FOUNDATION

Automotive

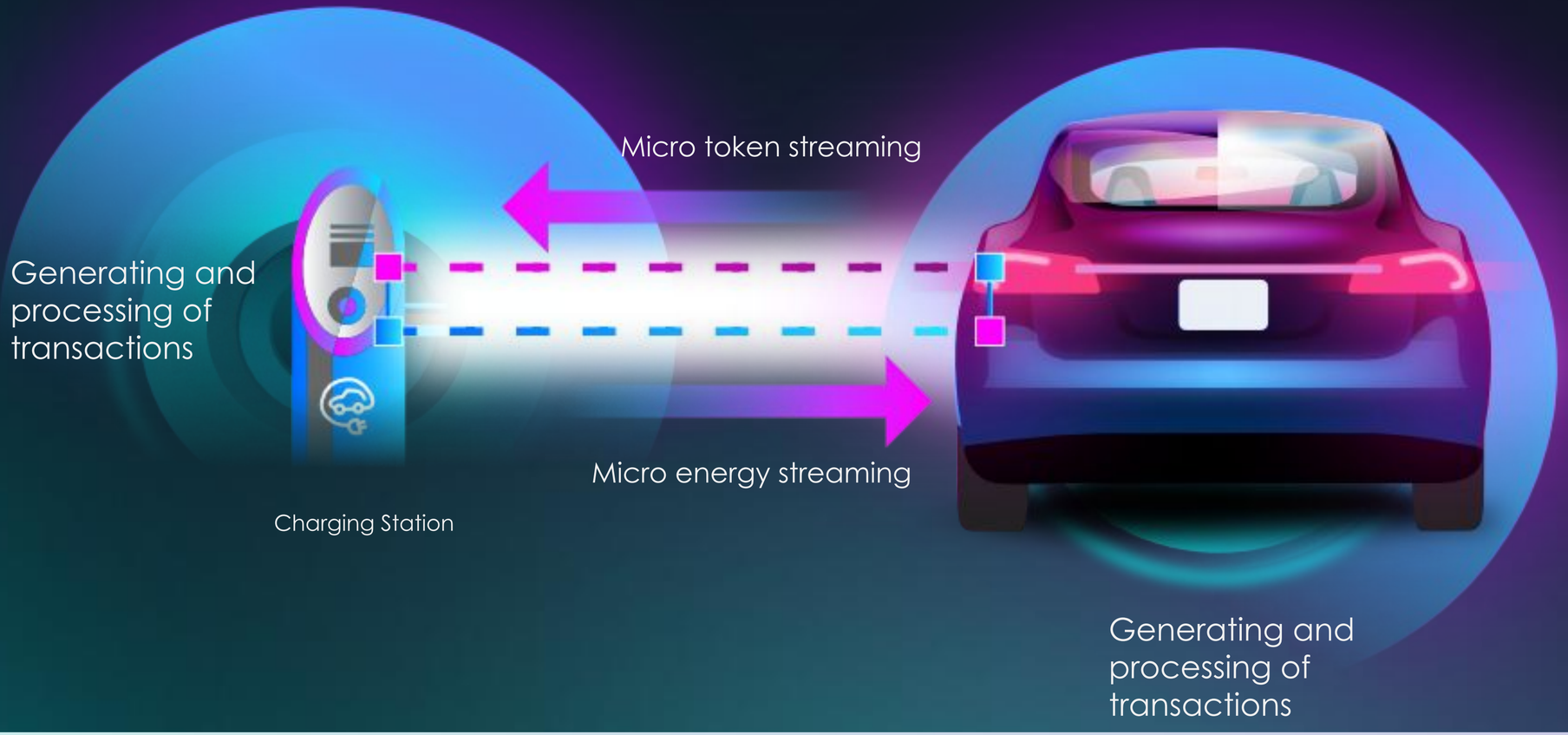
Trust In The Data
Over the Air (OTA) Secure Software update



- Authenticity and Security of OTA Updates
- Secure audit trail of the software history
- Fleet management security

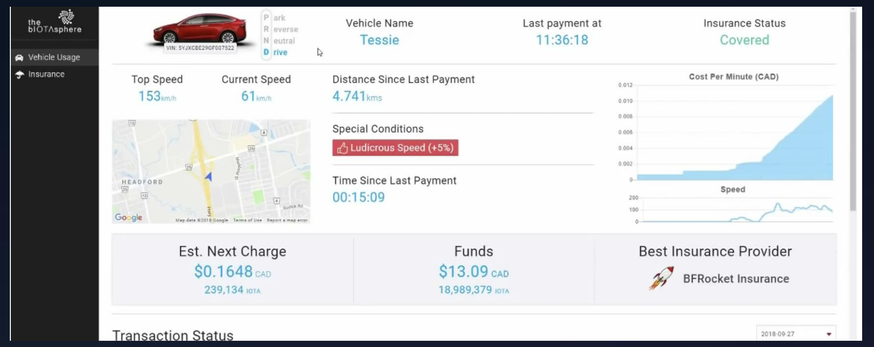
Smart Charging
by ElaadNL, Consortium Dutch Grid Operators

Real Time Token Streaming between exchange modules



- unlimited scaling ability
- instantaneous validation of nano-payments at high volume
- no need smart contracts
- exponential decay of transaction costs

UBI - Usage Based Insurance



While driving the car transmits usage data to insurance companies without necessarily disclosing personal information: **Location, speed, time of day**

Based on the transmitted data, Insurance companies offer their insurance packages in real-time

Car automatically picks/negotiates insurance package based on predefined budget, preference, risk profile, etc.

Since Nov 17, IOTA develops a Data Marketplace Proof of Concept, explores new business models and grows a global open innovation ecosystem

An OpenSource Proof of Concept

The Data Marketplace PoC

Connected devices and sensors can now get paid through zero fee micropayment for sharing securely their data streams

80+ large participants across industries

Smart city

Industry IoT
Supply chain

Energy

Universities

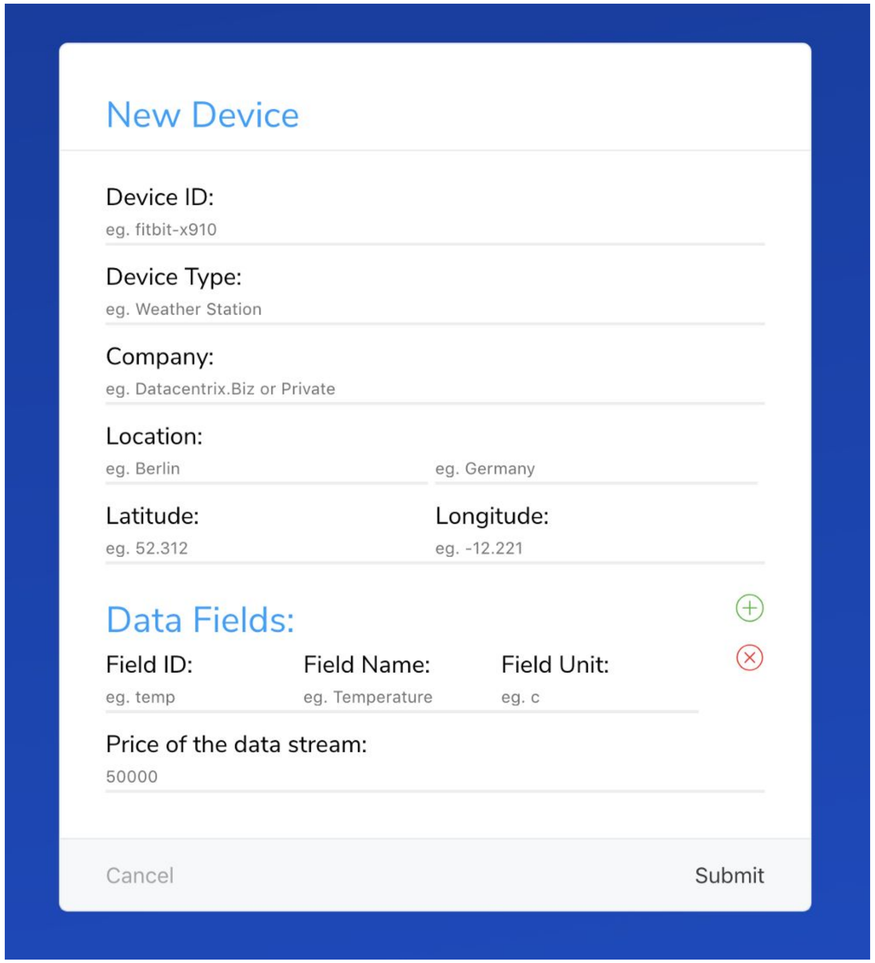
Telco

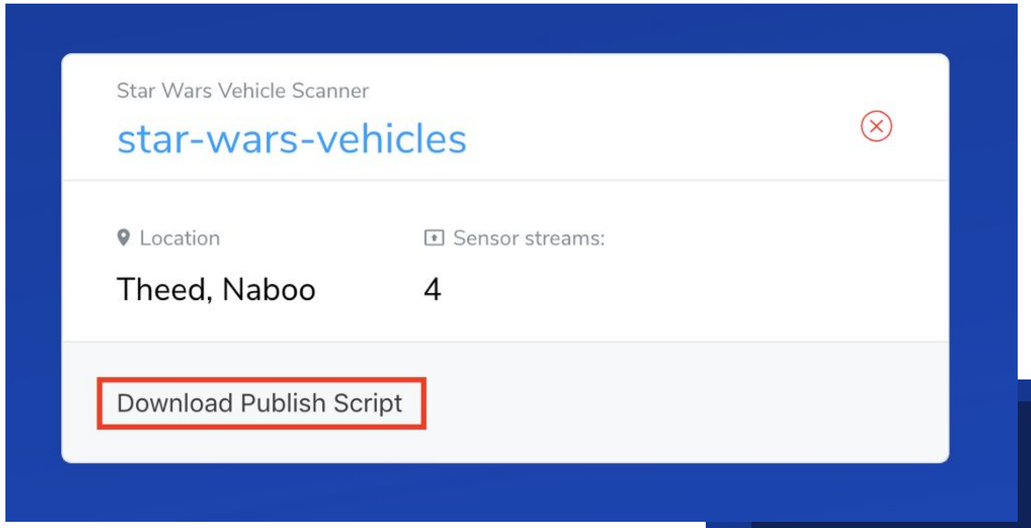
Consulting

Others

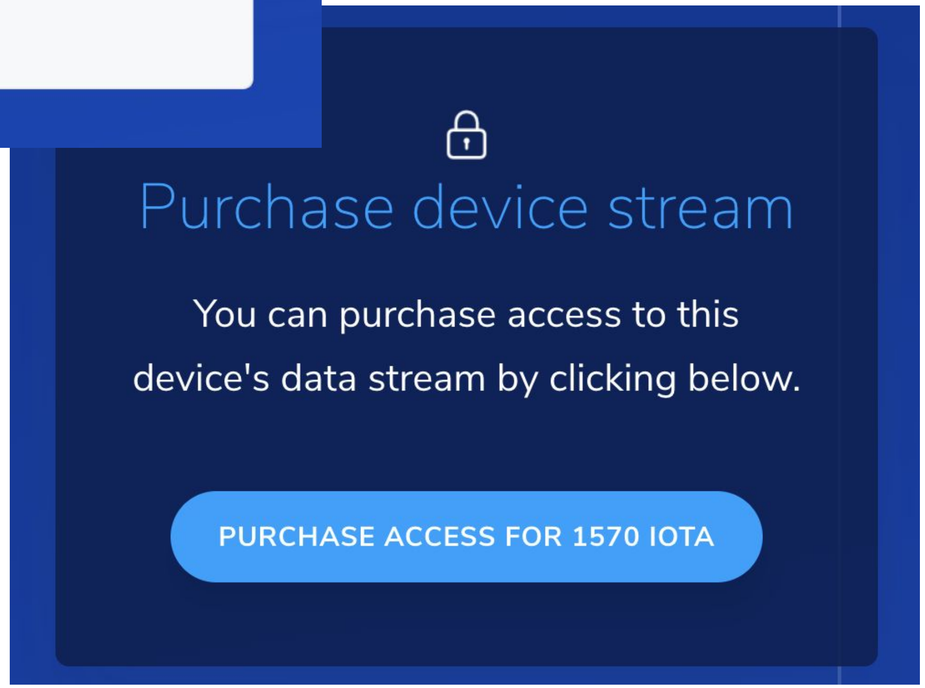
http://data.iota.org

DMP Workflow





<< Share MAM root and encryption keys >>

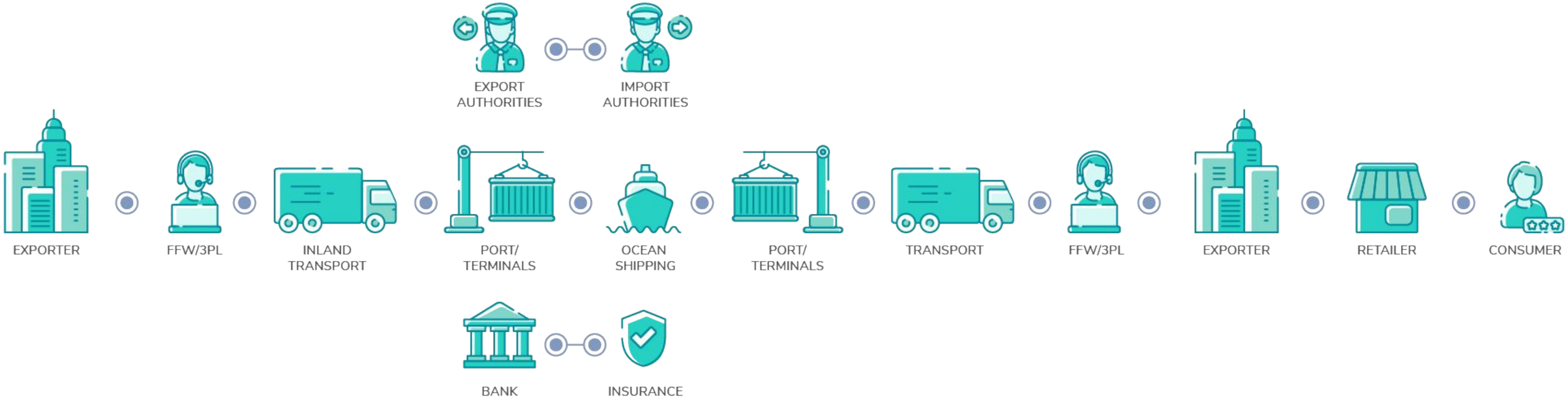


IOTA

IOTA
FOUNDATION

Supply Chains

Global supply chains are complex....

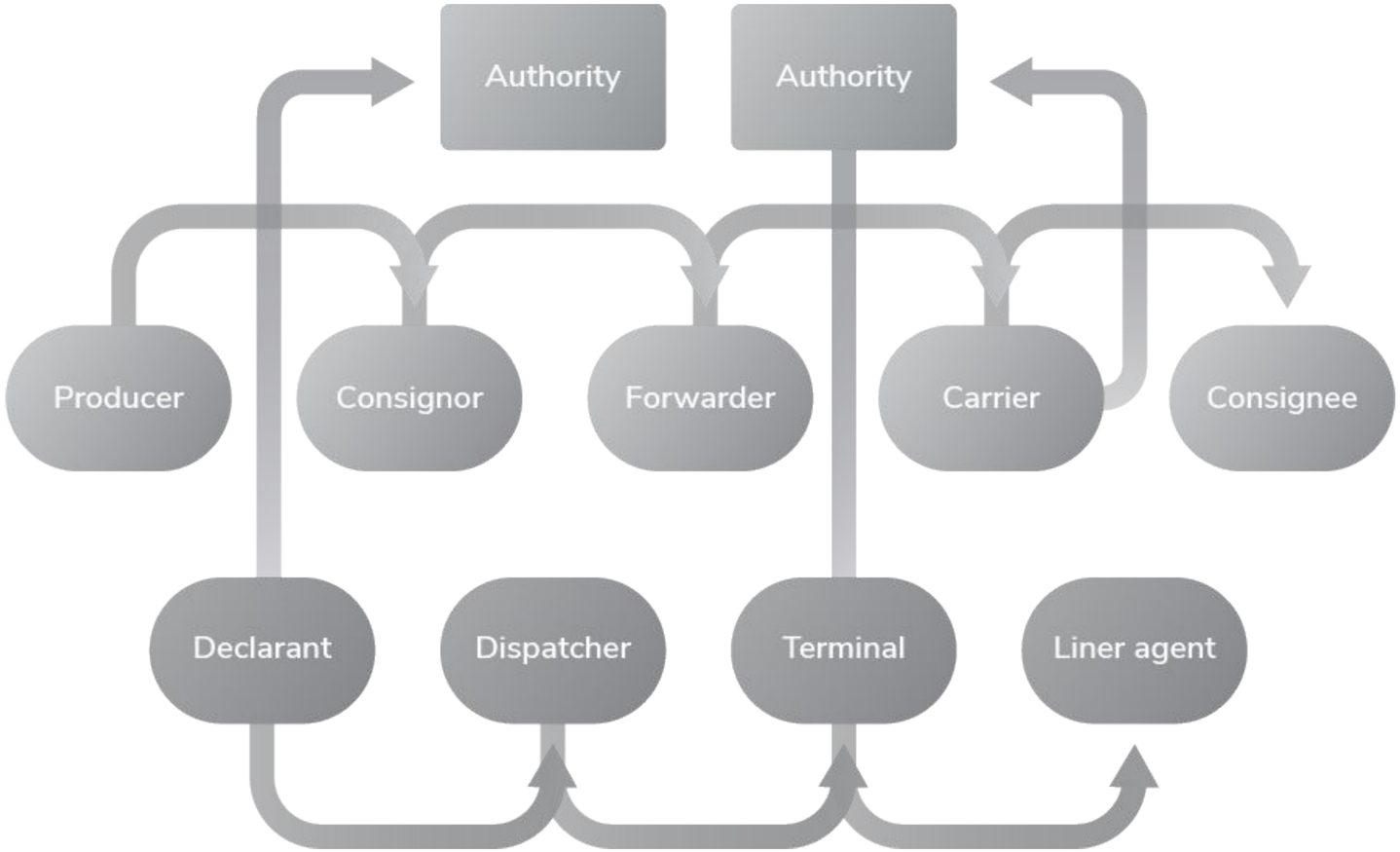


3 TYPES OF FLOW *

*SPECIFIC TRADE LANES WILL DETERMINE EXACT FLOWS AND STAKEHOLDERS

IOTA

...and their processes are predominantly manual.

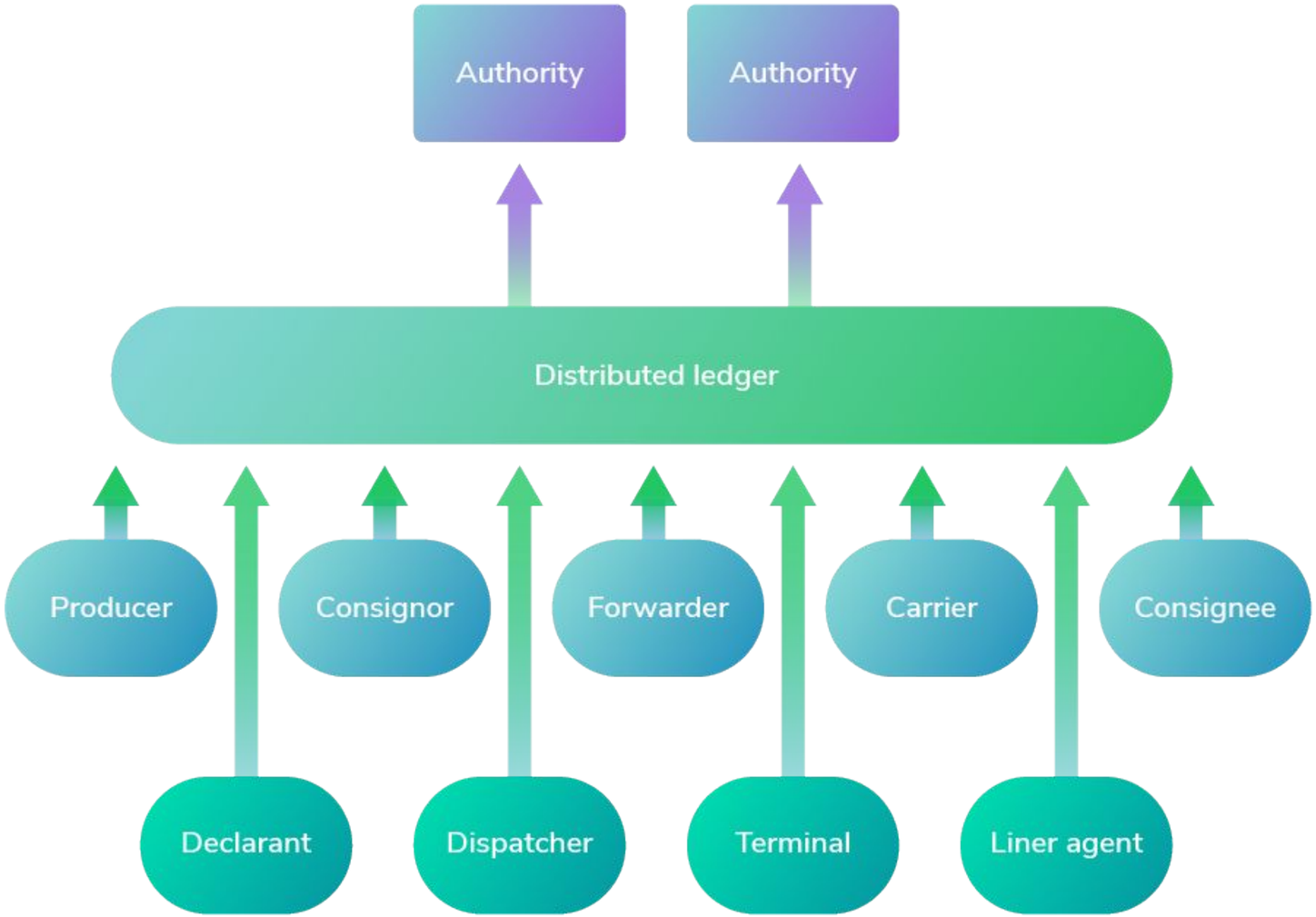


Innovation in the international trading has been so far unsuccessful due to the following too established practices:

- Emails, phone calls and paper documents are the daily details of moving goods;
- Information is delivered bilaterally and retyped into new systems with introduction of errors and loss of data integrity and authenticity;
- Multiple data formats are used and often not compatible one with the other.

As result, actors are unable to automatically broadcast/receive notification of events to relevant parties. This generates delay, inefficiencies and loss.

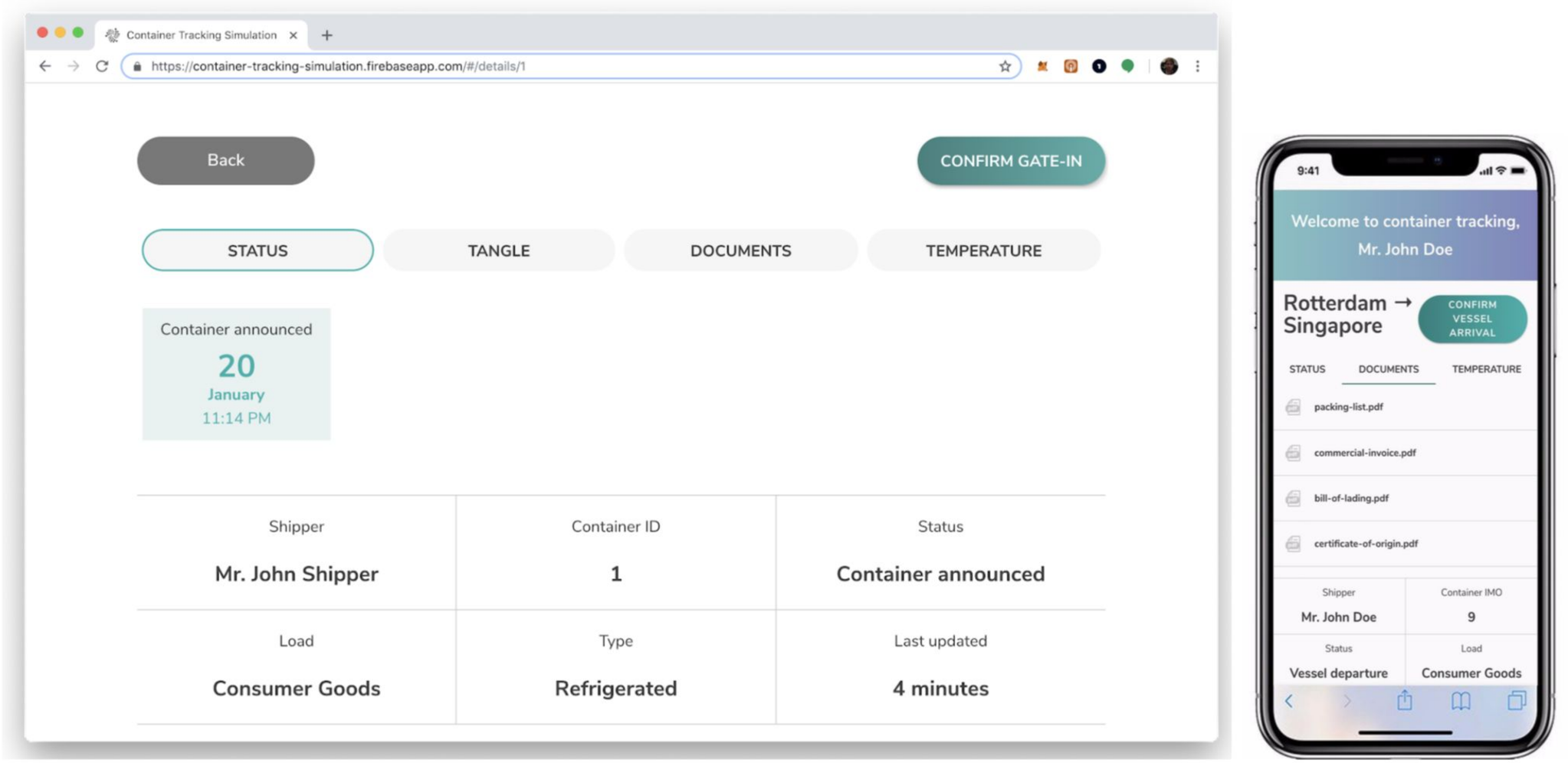
Introducing DLT to Global Trade



Use of distributed ledger technologies, and IOTA in particular, can help to mitigate these risks.

The permissionless nature of IOTA Tangle allows for any party to start sharing the required information, with guaranteed tamper resistance.

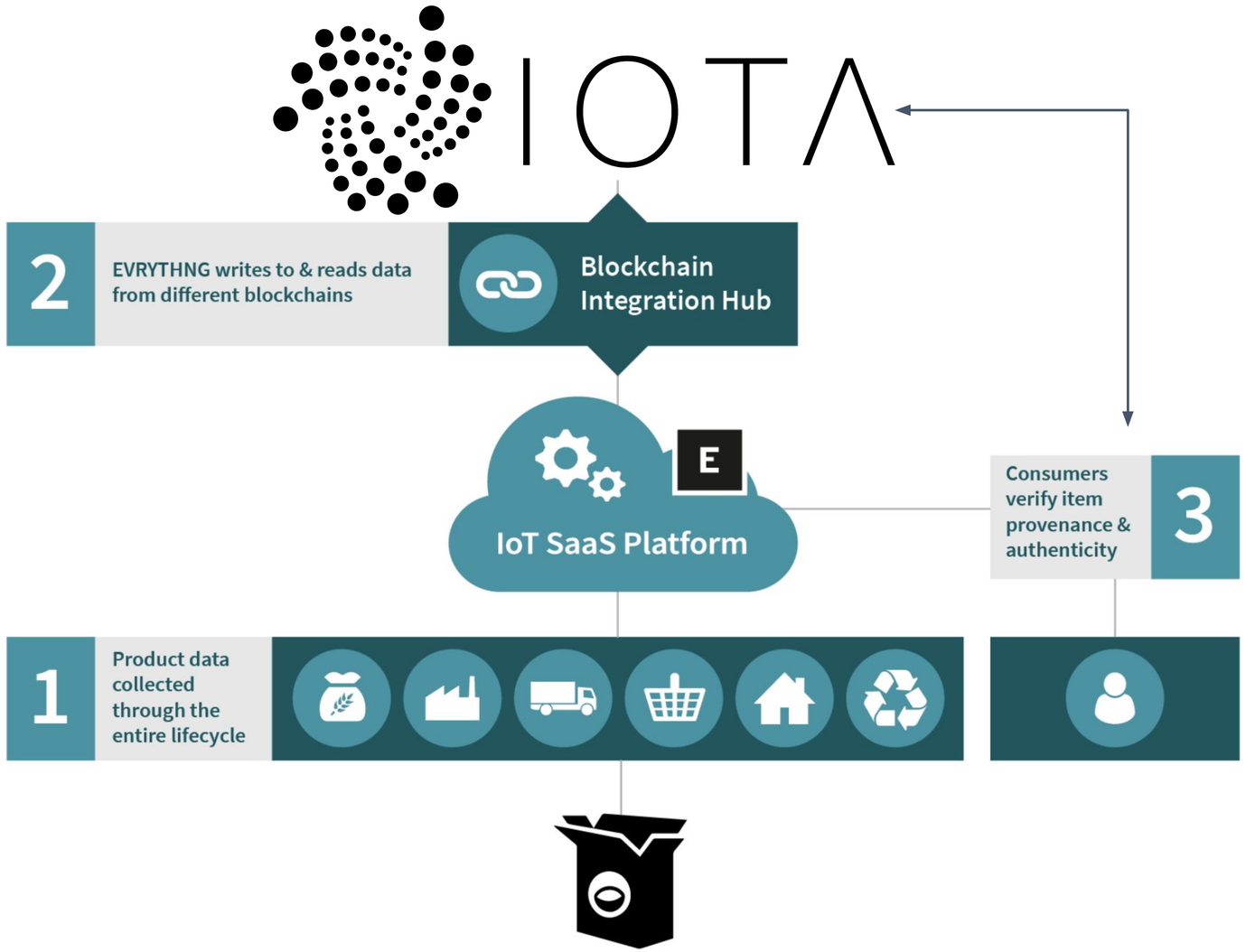
In addition, the use of an IOTA 2nd encryption protocol (MAM) allows for fine grain control of information access, despite the distributed nature of the IOTA Tangle.



Live Demonstration: https://tradedemo.iota.org/

Open source code: https://github.com/iotaledger/trade-poc

Products authenticity



- Objects carry a unique digital Identity
- Collected data are stored centrally and into IOTA ledger
- Consumers verify authenticity of data and products

Asset tracking

IBCS Poland
Relentless Innovation

- Tracking chain of custody of high value stands across value chain and competitors
- Using barcodes for identification (GS1 standard)

Michele Nati
Lead Architect
Email: michele@iota.org
@michelenati
@iotatoken

Useful resources

https://www.iota.org/research/
https://blog.iota.org/
https://iota.readme.io/docs
https://docs.iota.org/

IOTA
FOUNDATION

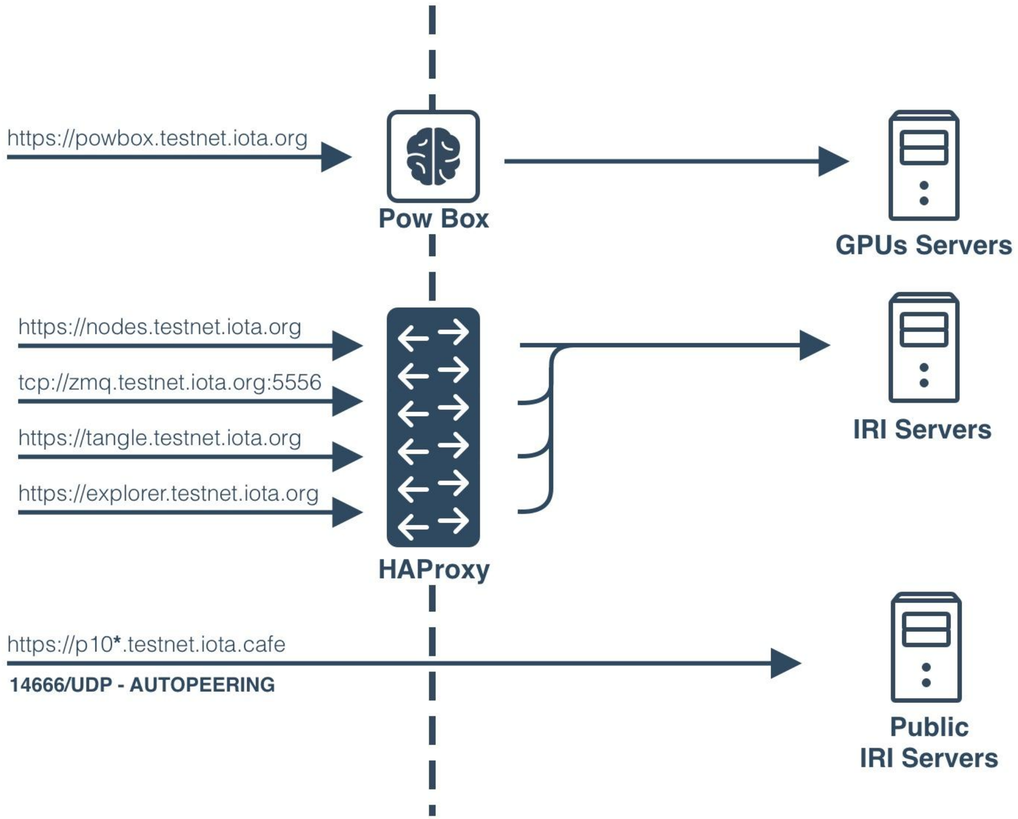
Building with IOTA

Questions before building

When looking to build an application there are a few questions that need to be asked before beginning to develop build with IOTA:

1. Is this problem solved by a DLT?
   More often than not the answer is no
1. Is this problem best solved by IOTA?
   IOTA has its advantages, but for situations with smart contracts, other solutions might be appropriate
1. Has this already been solved?
   Check to see if you problem has already been solved or if its in progress at the Ecosystem website.
1. What software, clients & 2nd layer libraries are needed to build something?
   We'll talk about that now

IOTA Networks



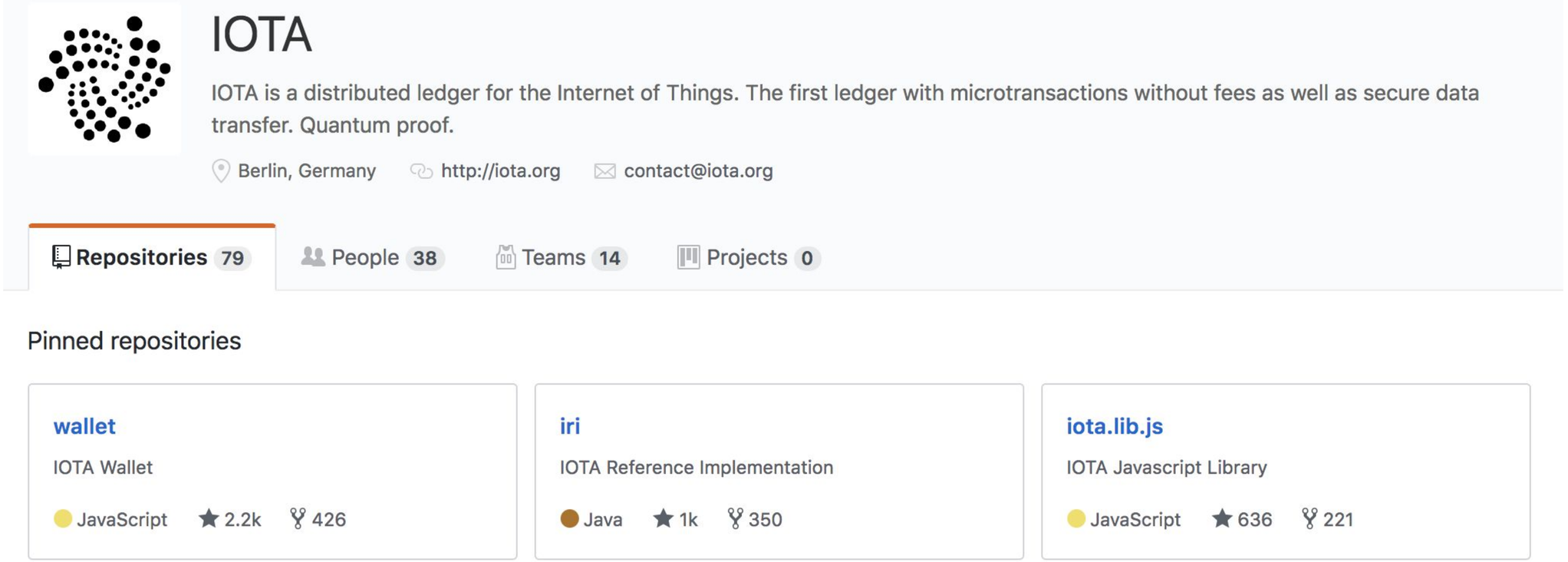
The configuration of the `Devnet`

Due to the nature of IOTA, you are able to send transactions on the **Mainnet** without fees. This lets you publish transactions with data directly on the **Mainnet** for no cost.

However, it is best to use the **Devnet** to build Proof of Concept applications. This network is run by the IOTA Foundation for developer to use and test on as they please. We also have a **Faucet** which dispenses tokens for use on the **Devnet**.

We also have a **Spamnet** for testing the protocols resilience to high TPS.

Foundation Software



The software that the IOTA Foundation produces is publicly available on it's official Github: https://github.com/iotaledger

IOTA Tutorials

```
const IOTA = require('iota.lib.js')
const iota = new IOTA({ provider: 'https://nodes.devnet.iota.org:443' })

iota.api.getNodeInfo((error, success) => {
  if (error) {
    console.log(error)
  } else {
    console.log(success)
  }
})

const trytes =
  'HELLOWORLDHELLOWORLDHELLOWORLDHELLOWORLDHELLOWORLDHELLOWORLDHELLOWORLDHE
const message = iota.utils.toTrytes('Hello World!')

const transfers = [
  {
    value: 0,
    address: trytes,
    message: message
  }
]

iota.api.sendTransfer(trytes, 3, 9, transfers, (error, success) => {
  if (error) {
    console.log(error)
  } else {
    console.log(success)
  }
})
```

Snippet from the `First Transaction` tutorials on https://docs.iota.org

```
const trytes =
  'HELLOWORLDHELLOWORLDHELLOWORLDHELLOWORLDHELLOWORLDHELLOWORLDHELLOWORLDHE
const message = iota.utils.toTrytes('Hello World!')

const transfers = [
  {
    value: 0,
    address: trytes,
    message: message
  }
]

iota.api.sendTransfer(trytes, 3, 9, transfers, (error, success) => {
  if (error) {
    console.log(error)
  } else {
    console.log(success)
  }
})
```

For some tutorials on how to use the client and second layer software check out our docs or the wide range of tutorials on our Ecosystem website:

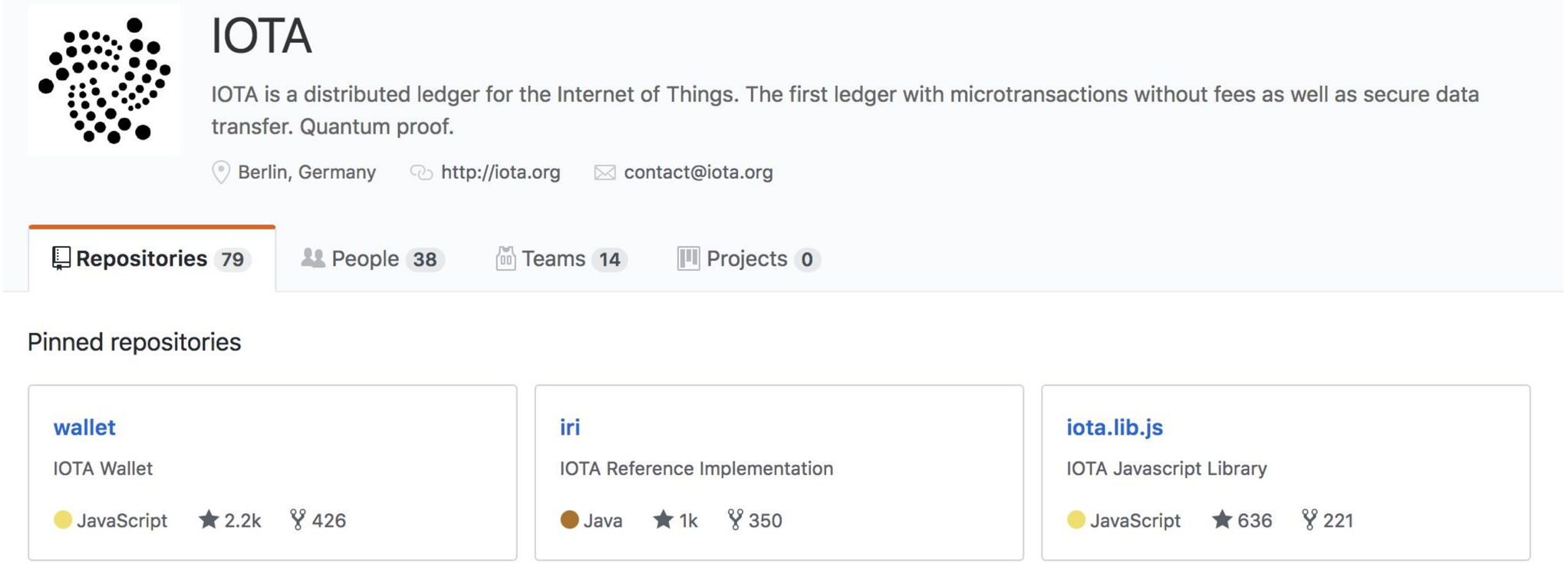
https://docs.iota.org/introduction/

https://ecosystem.iota.org/discover/tutorials

IOTA


IOTA

Step 1: Nodes



The software that the IOTA Foundation produces is publicly available on it's official Github: https://github.com/iotaledger

Step 2: Clients

Javascript Library

C Library

Java Library

COMMUNITY

C++ Library

COMMUNITY

Python Library

COMMUNITY

Go Library

COMMUNITY

Client libraries are the way to interact with Nodes for most operations. They abstract away all the heavy lifting and give you simple interfaces to build with.

Official and community libraries are listed at https://docs.iota.org

Step 4: Build

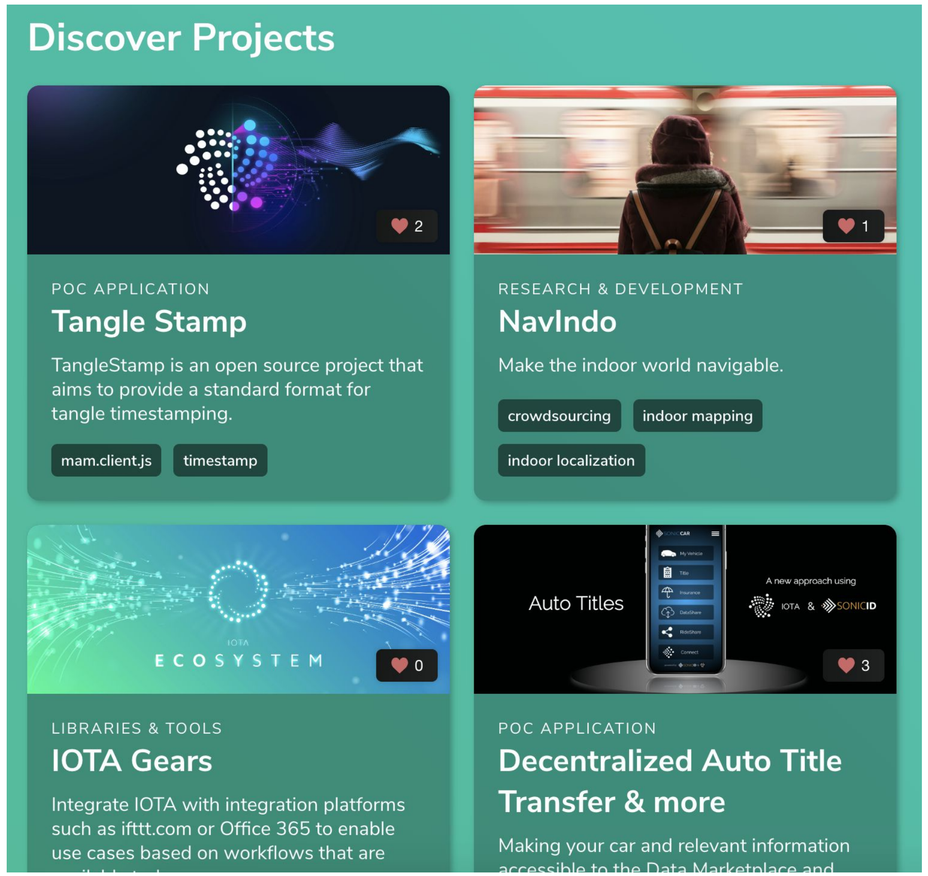
When building your application there are multiple places where you can interact with other developers when you get stuck or to share your experiences.

Our official realtime chat platform is **Discord**. This is where we house our development channels that cover software and languages.

Additionally we have a **StackExchange**, which has a wide variety of technical questions and answers.

Join Discord:
https://discord.gg/hMt3daQ
Join StackExchange:
https://iota.stackexchange.com/

Step 5: Publish & Collaborate



The Ecosystem website is setup to showcase the work of the IOTA community. It's easy to navigate **Projects**, **Tutorials**, **Events** and **Community Members**.

After a developer builds a proof of concept, library or application they can submit it to the IOTA Ecosystem by signing up for an account. This will increase the visibility of a project and also allow donation addresses to be added.

To view the project on the Ecosystem website go to: https://ecosystem.iota.org/discover/projects

TRAINING.IOTA.ORG

IOTA Onboarding Course for Developers

IOTA

IOT1 ACADEMY

Useful resources

https://docs.iota.org/ - General info and basics tutorial

https://ecosystem.iota.org/discover/tutorials - IOTA Ecosystem tutorials

https://www.mobilefish.com/developer/iota/iota_quickguide_tutorial.html - Video tutorials on different IOTA technologies

https://hribek25.github.io/IOTA101/ - technical tutorial with code snippets in Python and NodeJs