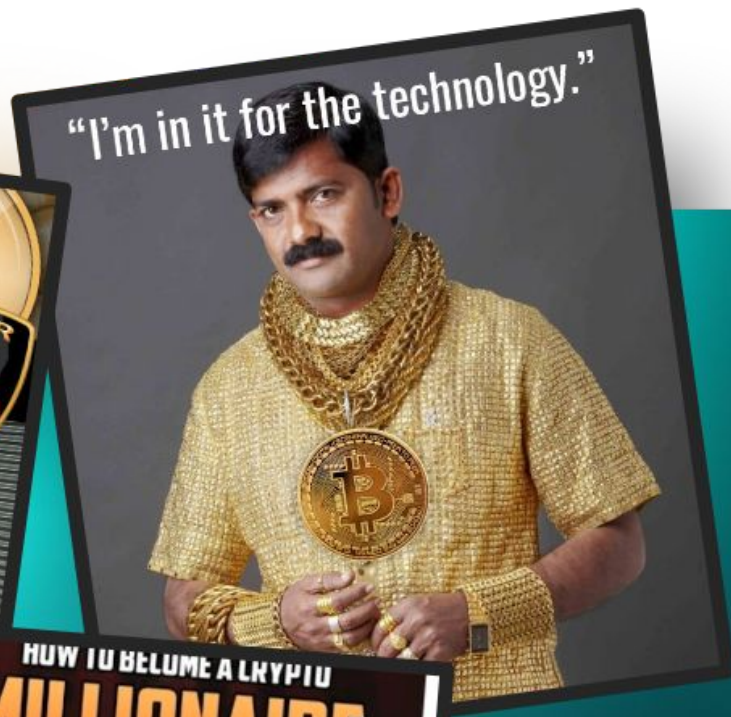


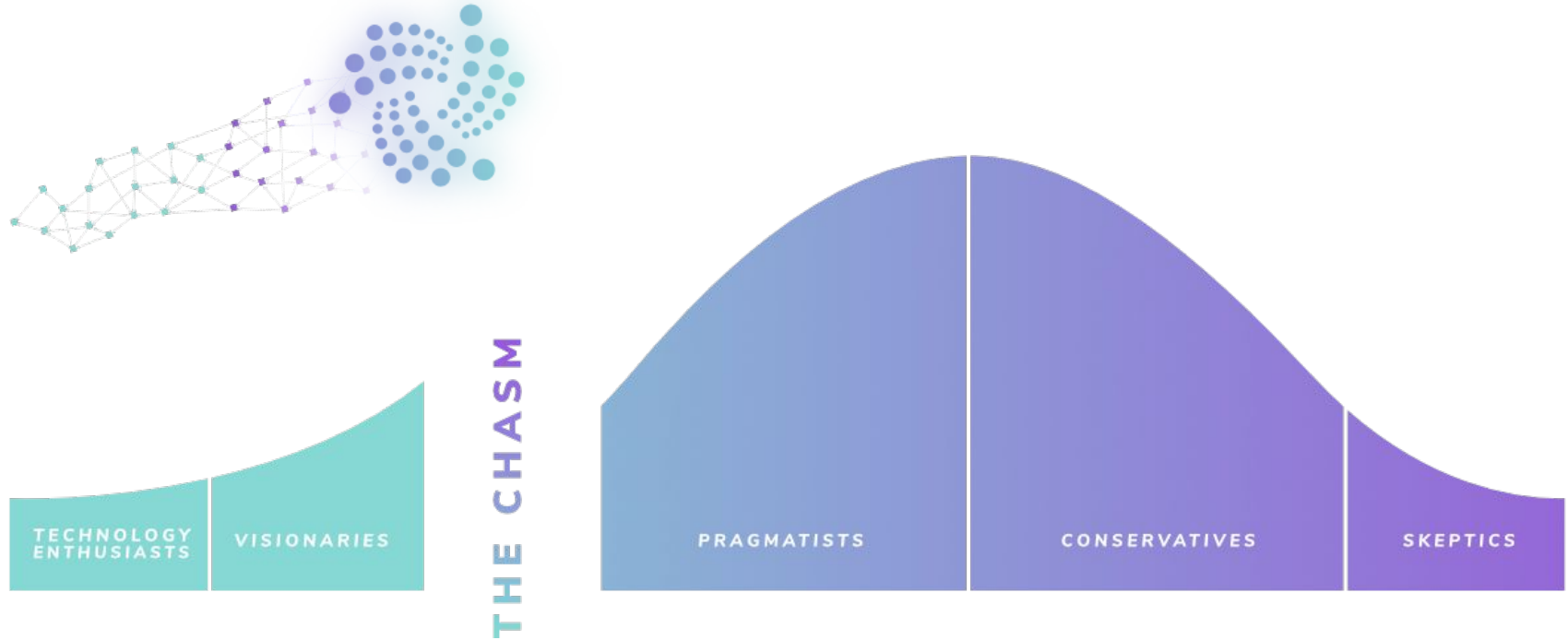


IOTA

Connecting our world to{day,morrow}



Crossing the Chasm



Important Puzzle Pieces



Technology



Governance



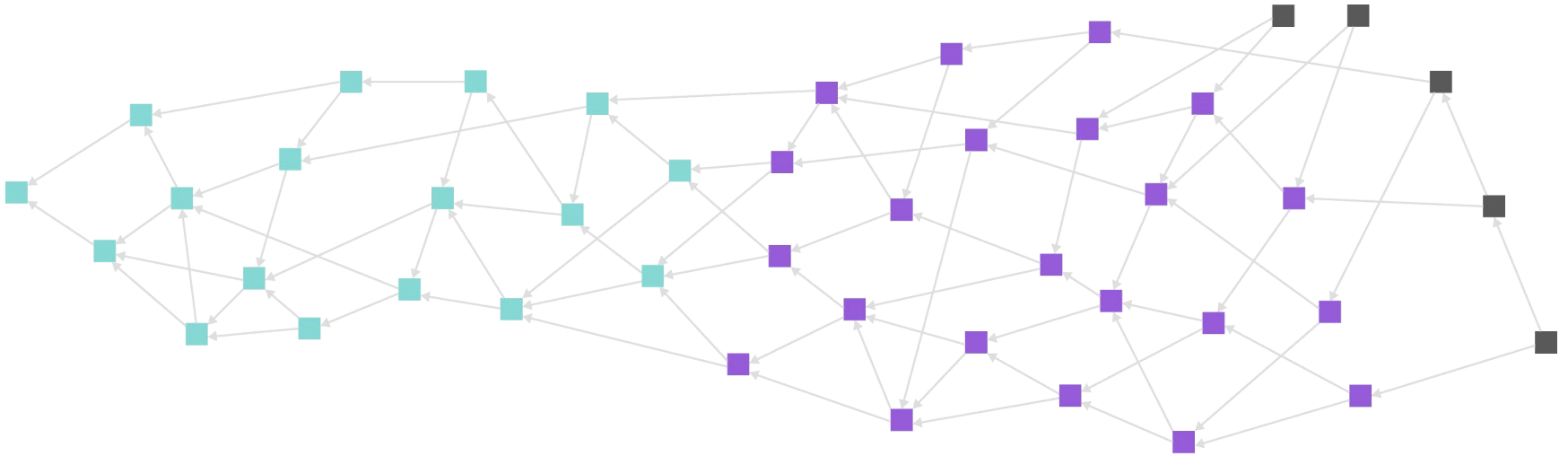
Ecosystem



Technology

The Tangle

Feeless, Scalable, Quantum-immune



The Tangle is a permissionless peer-to-peer network based on the open source distributed ledger protocol IOTA

The Tangle

Feeless, Scalable, Quantum-immune

Machine-to-Machine Payments

Today there is no protocol for machines to pay each other. With distributed ledgers, every machine will be able to have a wallet and they can freely transact with each other.

The Tangle

Feeless, Scalable, Quantum-immune

Data Immutability

Feeding data into a distributed ledgers makes it immutable and tamper-proof. Thanks to this data integrity, it is easy to share data with external parties in a verifiable manner.

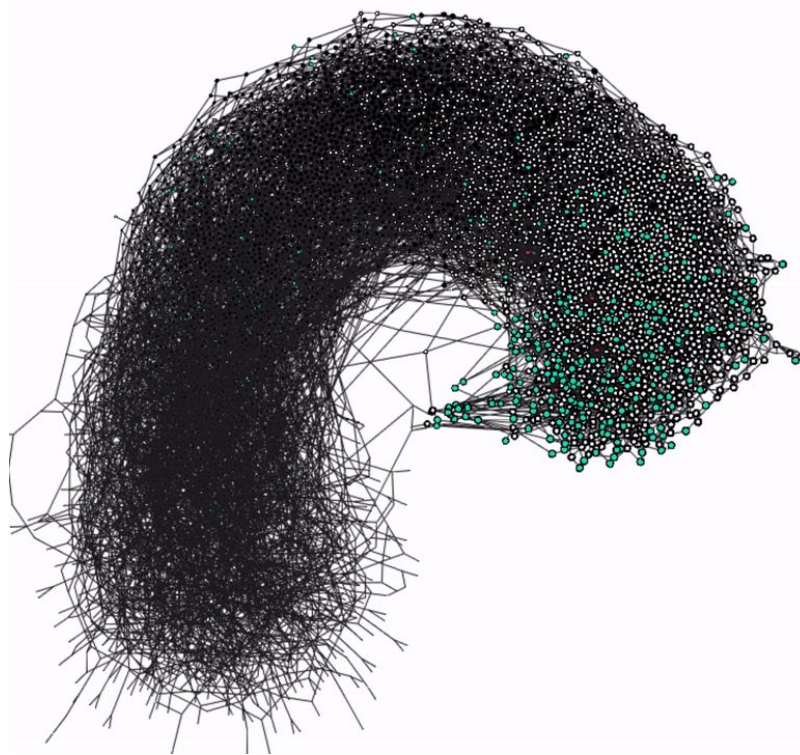
The Tangle

Feeless, Scalable, Quantum-immune

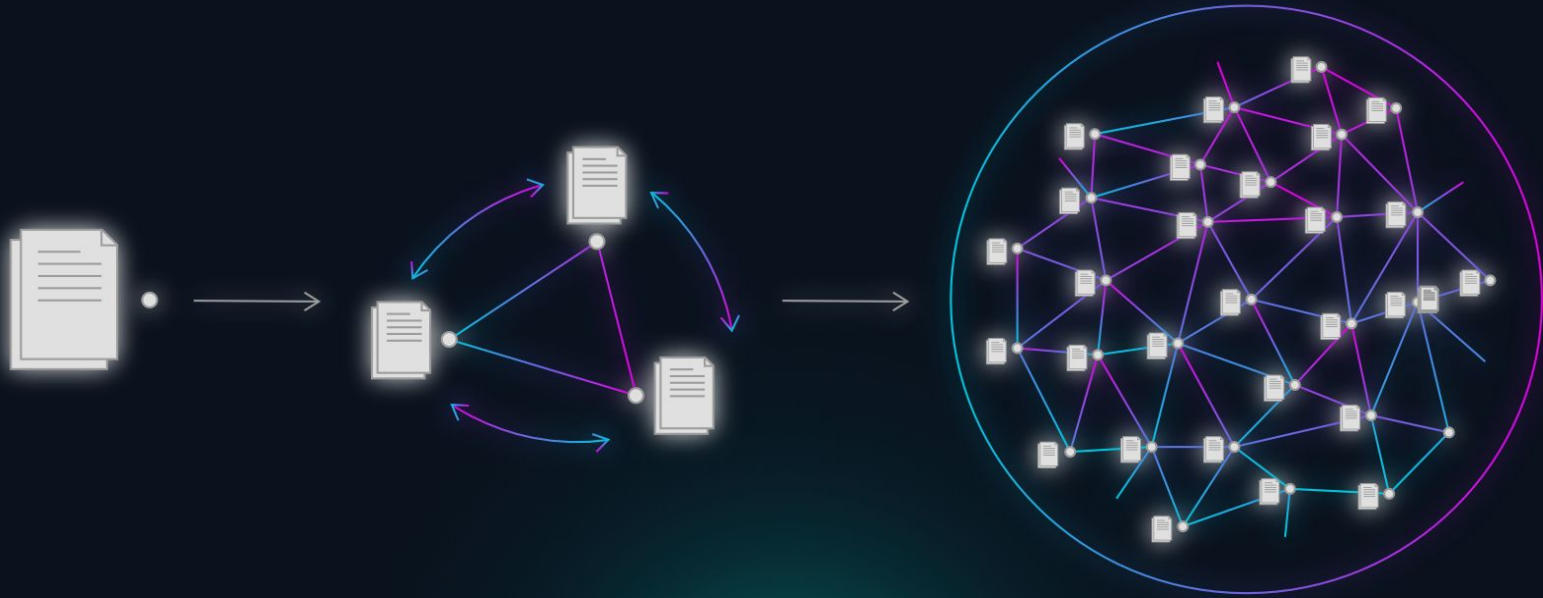
Permissionless Ecosystems are the Future

Everyone can participate in this Ecosystem from well established companies like Bosch, DNB, Airbus to Startups or single people.

A Healthy Tangle



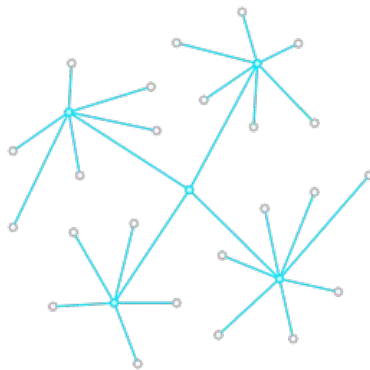
What are Distributed Ledgers?



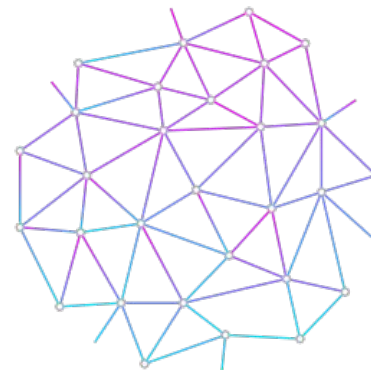
Networks



Centralized

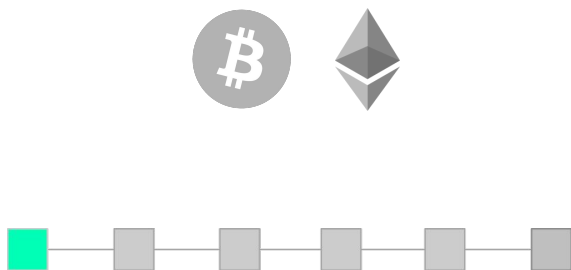


Decentralized
With Intermediaries

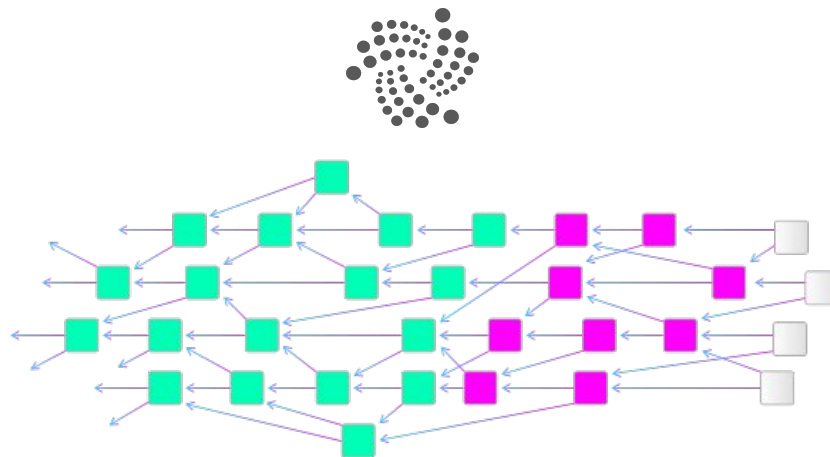


Distributed
No Intermediaries

Blockchain vs. Tangle

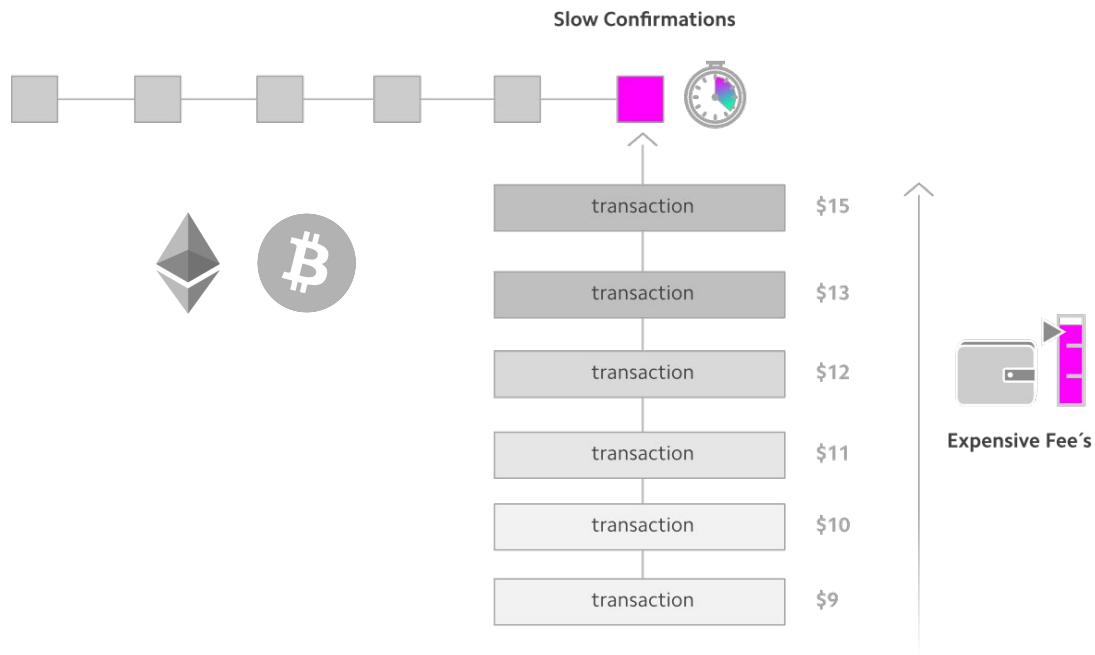


Blockchain

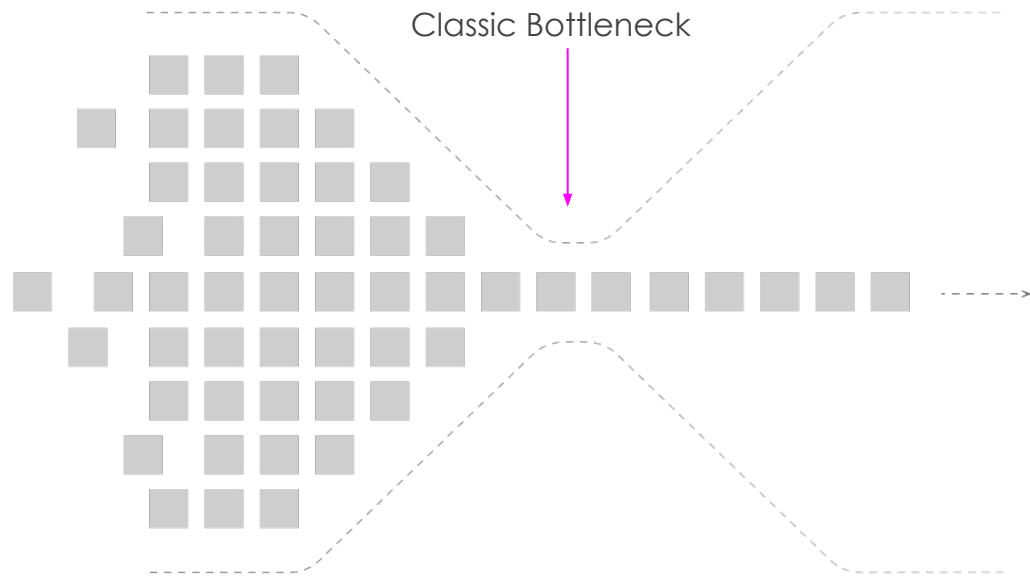


Tangle
(DAG / Directed Acyclic Graph)

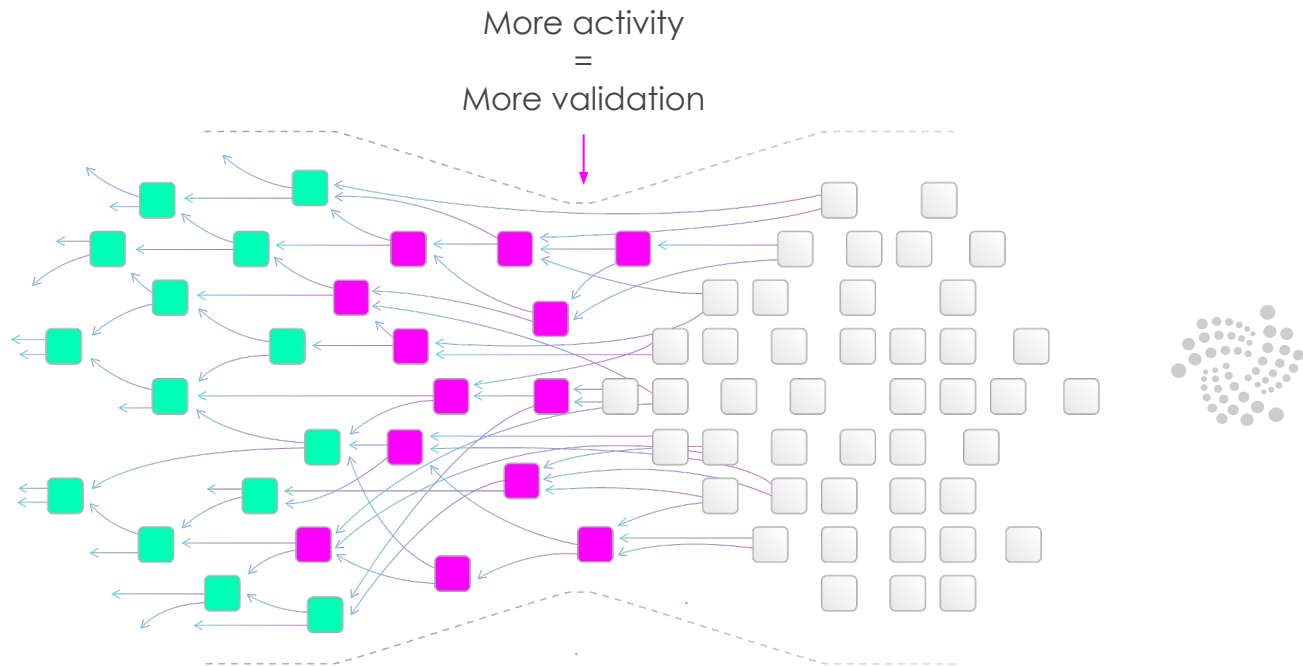
The Blockchain Bottleneck



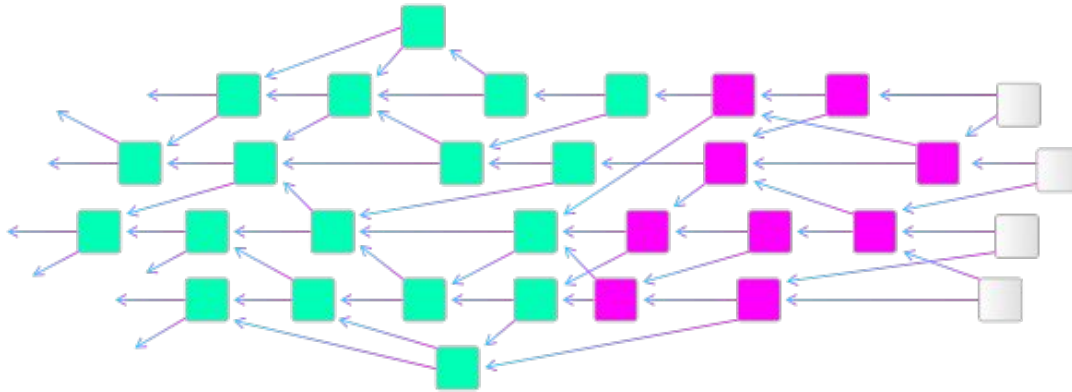
The Blockchain Bottleneck



Tangle scales!



Consensus in IOTA



Each transaction validates 2 previous unconfirmed transactions

- Chosen by Markov Chain Monte Carlo Random Walk algorithm

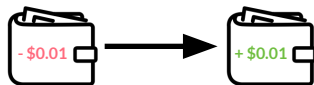
Signed with private key

Small amount of Proof of Work

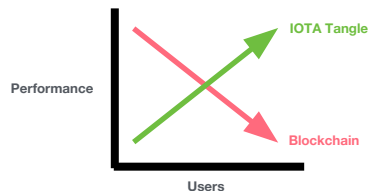
- Similar to Hashcash, not Bitcoin
- Spam and Sybil-resistance

Blockchain vs. Tangle

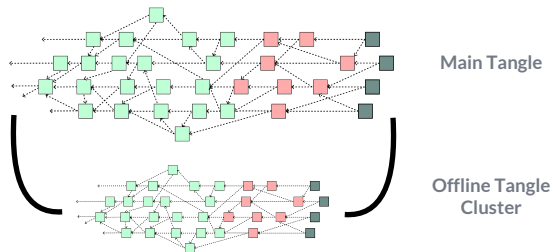
No Transaction Fees



Scalability



Offline Transactions (Partitioning)



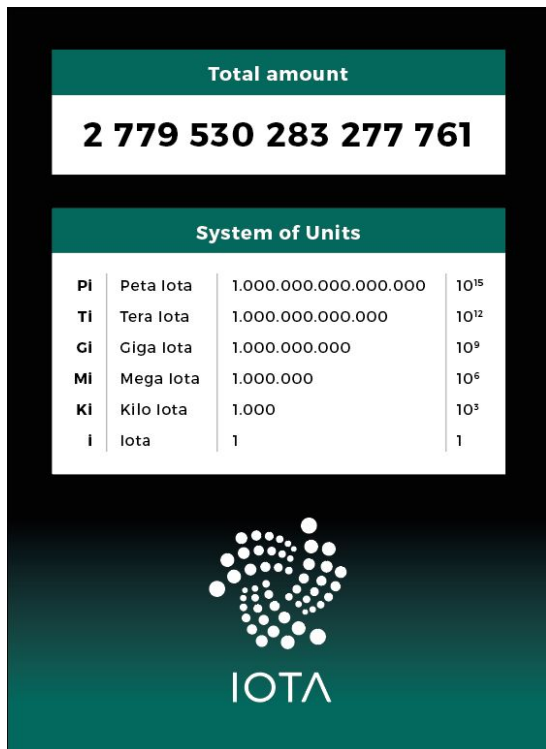
Other Benefits:

- No Miners
- Quantum immune

Disadvantages:

- Need a large enough network to be self-sustainable

Bitcoin vs. IOTA



Other Comparison:

BTC has:

2,100,000,000,000,000 Satoshi

The IOTA Tangle today has

2,779,530,283,277,761 IOTA

So almost 3 Quadrillion IOTAs and only a difference of roughly 680 trillion units

A word of caution:

Exchanges work with MIOTAs don't let people scam you!

IOTA Use case and Industries



Identity
& MyData

iampass

 BiiLabs



Mobility



Audi



Smart Cities &
Infrastructure

+CITYXCHANGE



Social
Causes



UNOPS



e-Health

ALPHA VENTURI



Norwegian Centre for
E-health Research



OSLO
MED
TECH



Energy

 ENGIE
Lab
CRIGEN



Supply
Chain

FUJITSU



Fintech

DNB



Industry 4.0



SPACEBIT

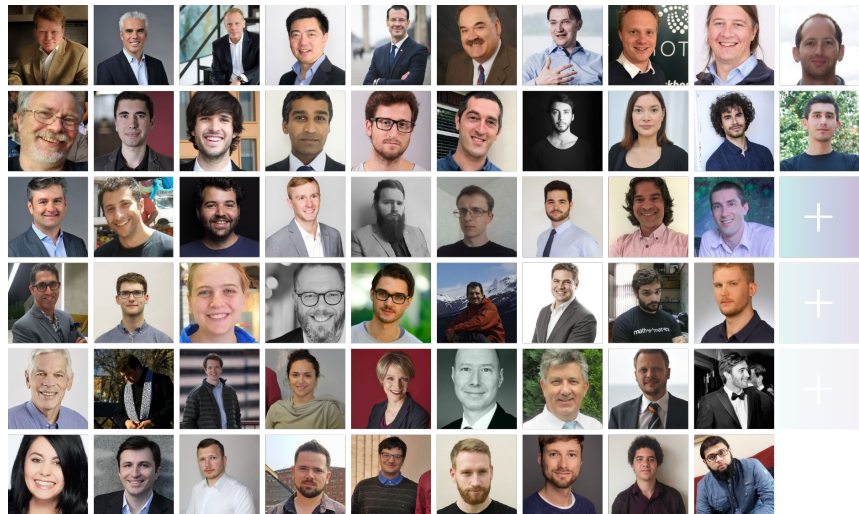


 kontakt.io



Governance

The IOTA Foundation



- Non-profit Foundation based and regulated in Berlin, Germany
- Growth from 6 to 70+ full time employees distributed across 17 countries
- \$140m+ in funding
- Focused on Technical and Regulatory Challenges of Crypto-Currencies & DLT

(Some) New IOTA Foundation Member(s)



Angelo Capossole

Senior Researcher.

He designed and developed security solutions focused on the protection of national critical infrastructures from cyber threats and collaborated with companies and research centres to help design novel technologies. He worked on different verticals such as smart cities, digital manufacturing and creative industry, touching a wide spectrum of web technologies and programming languages.



Dani Shaanan

Research Scientist.

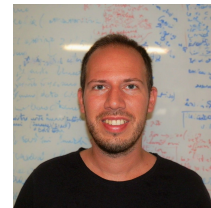
Will focus on the Coordicide project "the eventual removal of the Coordinator, a bootstrapping mechanism that creates additional security for the Tangle"



Wolfgang Welz

Researcher.

Designed and programmed the Ledger Nano S hardware wallet with a team of three other community developers



Luigi Vigneri

Senior Researcher.

Theoretical (network modeling, convex optimization) and programming (C, C++, Python, MATLAB) skills. IEEE publications



Anne Smith

Senior Project Manager.

Will help drive IOTA's adoption as the standard protocol and platform in the Mobility space.



Sadjy Sadjan

Networks, Systems and Security Engineer.
SysOps and Security Expert

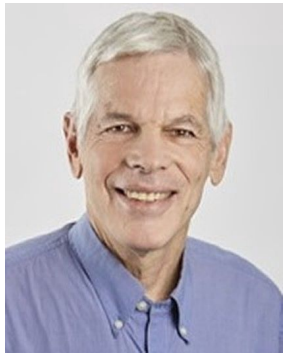
The IOTA Research Council



1 | IOTA
RESEARCH
COUNCIL

- The IOTA Research Council will work closely with our research department
- Strategic technological direction
- Provide academic oversight to IOTA research
- Assess and grant funding to academic partners
- Oversee collaboration with academia and other research organizations
- Consists of distinguished academics that are at the forefront of their area of expertise
- Oversee the quality to ensure high academic standards.

The IOTA Research Council Members



Gur Huberman is the Robert G. Kirby Professor of Behavioral Finance at **Columbia Business School** where he has taught since 1989. Prior to that, he taught at Tel Aviv University and at the University of Chicago. Between 1993 and 1995 he was Vice President at JP Morgan Investment Management responsible for research on quantitative equity trading. In that capacity, he also helped develop tax aware strategies for the private bank. He earned his Ph.D. (with distinction) in operations research from Yale in 1980 and his B.Sc. (cum laude) in mathematics from Tel Aviv University in 1975.

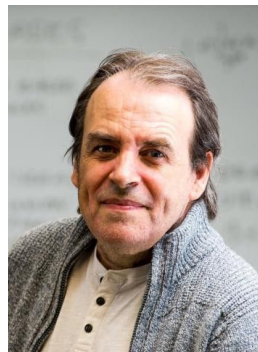


Serguei Popov
IOTA Foundation Board of Directors

is a research mathematician working in the field of Probability Theory and Stochastic Processes. He graduated from and attained his Ph.D. at the Moscow State University under the supervision of Professor Mikhail Menshikov, with whom he still happily collaborates. Around 20 years ago he moved to Brazil to do a postdoc, and then progressed to professorship first in the University of Sao Paulo, and then in the University of Campinas.

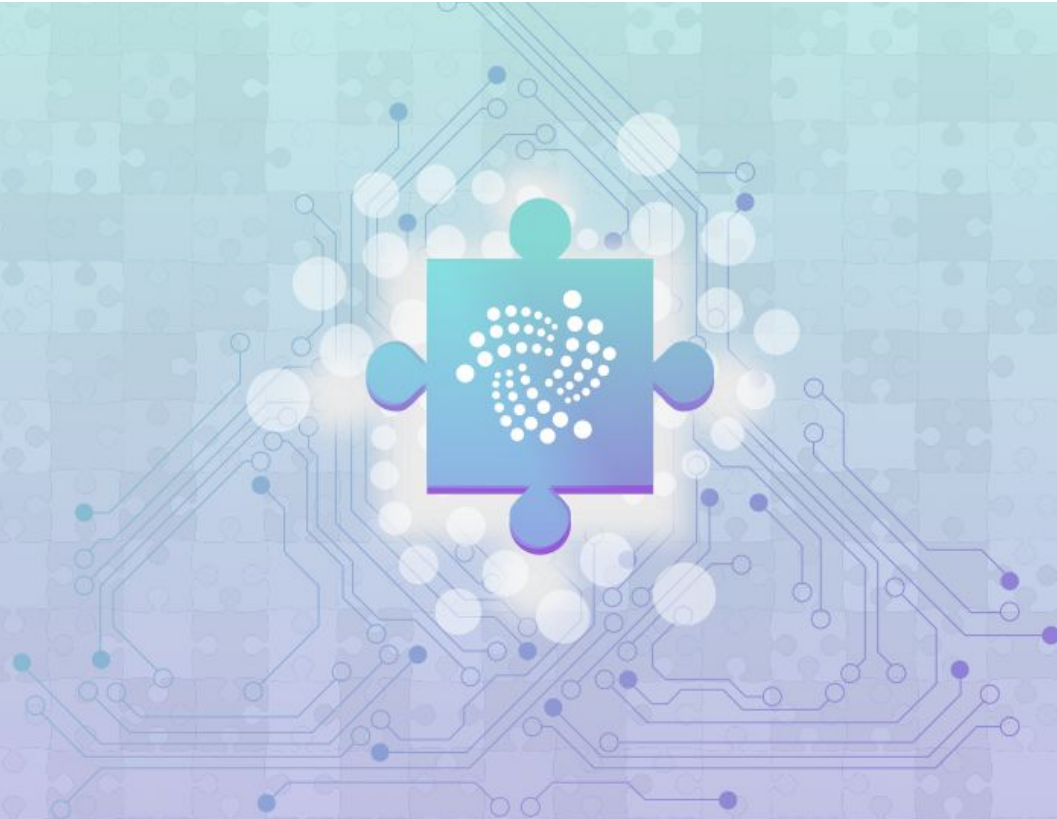


Dr. Moody Alam obtained a PhD in computer science (distributed artificial intelligence) at the University of Southampton in 2013. He spent a year at Microsoft Research, Cambridge investigating the AI aspect of smart energy systems. Spent two years in the AIC Research Group at the University of Southampton applying AI to develop smart energy systems. Then he moved to Machine Learning Research Group at University of Oxford to continue my research on smart energy systems. 2016, joined Energy Systems Catapult (an elite tech and innovation centre set up by the Govt. of UK's innovation agency - InnovateUK) as the Lead Data Scientist.



Bill Buchanan is a Professor in the School of Computing at Edinburgh Napier University, a Fellow of the BCS, and a Principal Fellow of the HEA. He was appointed an Officer of the Order of the British Empire (OBE) in the 2017 Birthday Honours for services to cybersecurity. In 2018, in partnership with Blockpass IDN, he set up the world's first blockchain identity research laboratory. he also currently leads the Centre for Distributed Computing and Security, and The Cyber Academy.

Production Readiness & Standardization



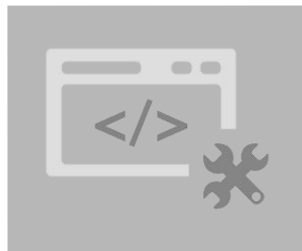
Production Readiness & Standardization



Research

Exploring the unknown

Going beyond IOTA and developing solutions for the Machine Economy requires the brightest minds to work together and research new solutions.



Development

Cutting edge technology

Development of production-ready software will make it possible for the Foundation's members to easily adopt and integrate the developed solutions.



Education & Promotion

Show your Competence

Educating members and non-members through seminars, educational materials and even larger events will ensure the Foundation's success in achieving its goals.

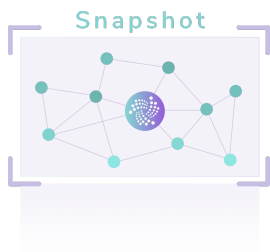


Standardization

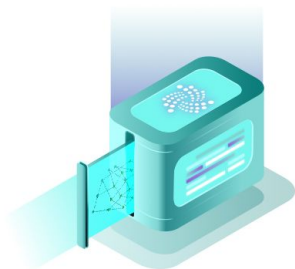
Of Core Protocols

Interoperability requires standardization. A major effort of the IOTA Foundation will be to standardize the core protocols that we're developing.

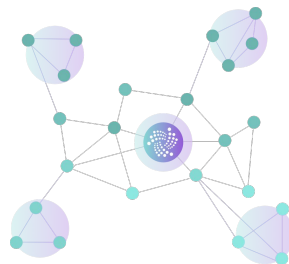
Milestones Ahead



Local Database
Snapshots
V1.6 on the way!



Permanent Data Record
PermaNodes

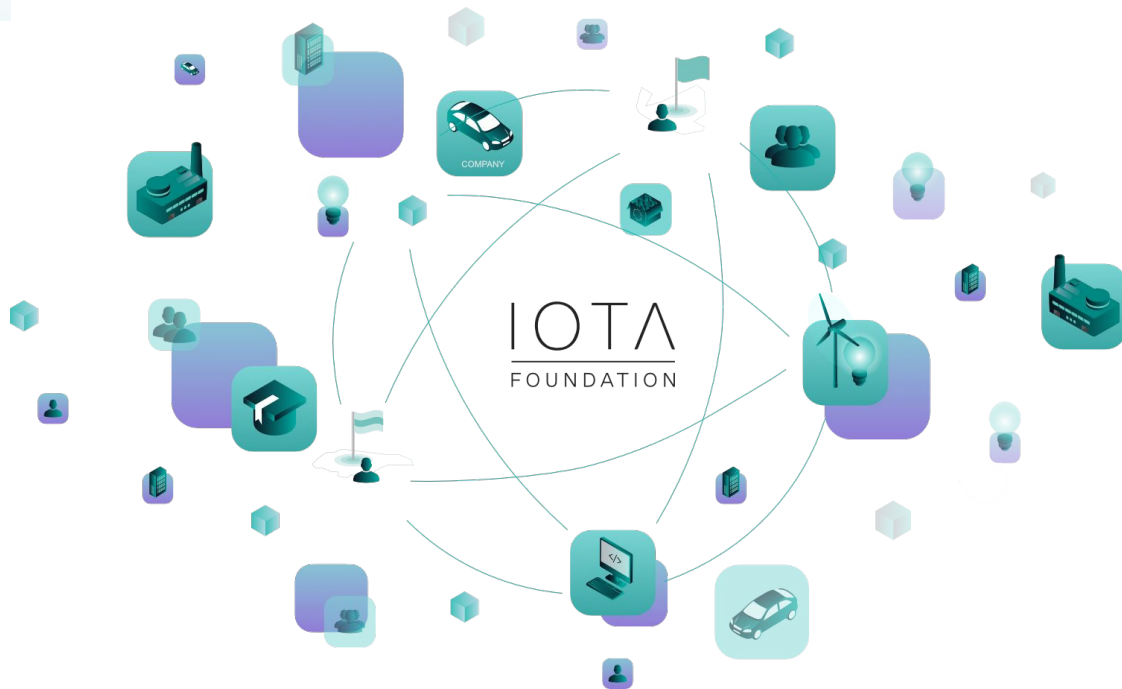


Scaling & Sharding
Economic Clustering

TURN OFF THE
COORDINATOR

Removing the
Coordinator
“The Coordicide”

IOTA Foundation Ecosystem

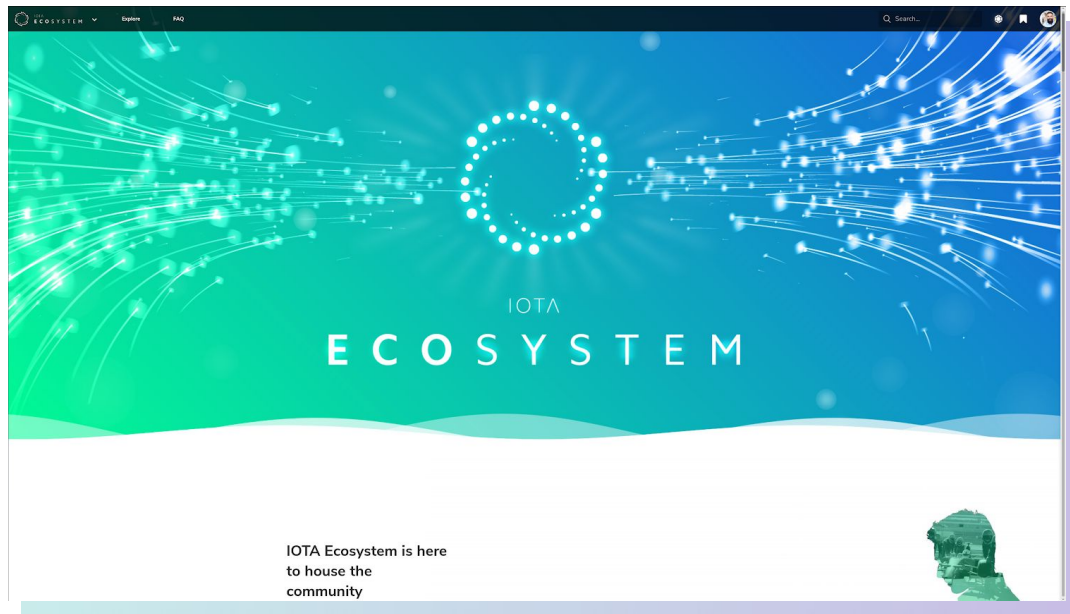


Our universe relies on a network of many collaborators
– corporates, academics, governments, NGOs



The Ecosystem and Cooperations

IOTA Ecosystem gGmbH



Tutorials

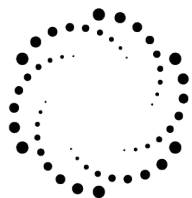
Projects

Events

Developers

Official IOTA Ecosystem

Ecosystem Development Fund



IOTA Ecosystem
Development **Fund**

Support projects in the IOTA
Ecosystem

e.g.

Proof-of-concepts, open-source utilities
and libraries, educational resources,
media, philanthropic endeavors, to
hack-a-thons, ideation workshops,
meetups.

Ecosystem Development Fund Statistics

TRANSPARENCY

Grant Funds Available

21.39 TI

\$ 12,687,419

Grant Funds Awarded

304.96 GI

\$ 151,700

Grant Proposals Pending

84

Grant Proposals Awarded

...

*IOTA PRICE: 1 MI = 0.59 USD.

IOTA Ecosystem Regional Community Leader



Antonio Nardella

Regional Community Leader
Altoadige/Südtirol

Meetups

Proof-of-Concepts

Regional contact for companies

DLT like any other technology is a tool and it fits the purpose and
never underestimate what a hacker can do with technology!

Ecosystem Funds Granted

Transform healthcare through engaging conversations

We create a simple, personal and delightful experience, in
which people become more engaged in their own health.

[Learn more](#)

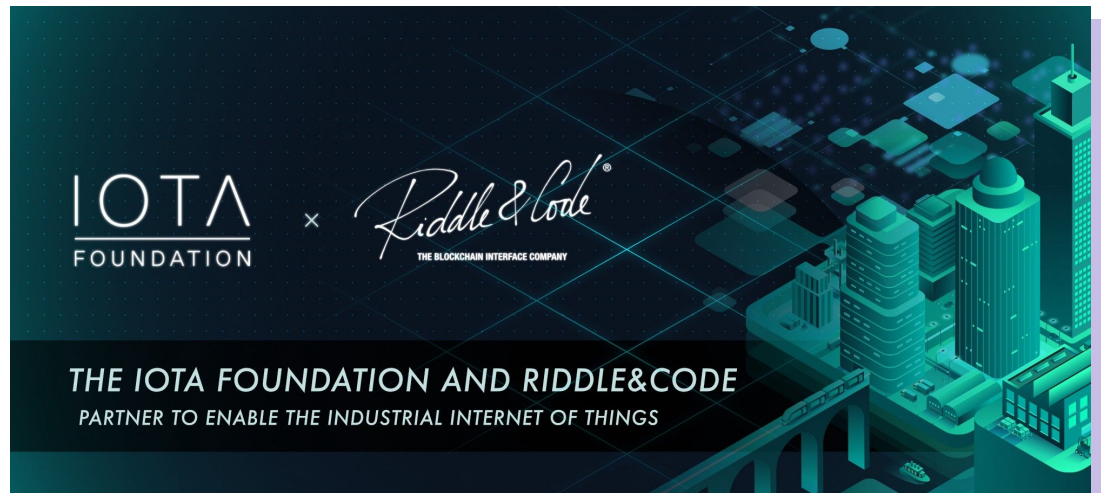


Untangle Care (USD \$234,000)

Goal of the Untangle Care project is to develop open source IOTA and HL7 FHIR based tools that help sharing health information in a simpler, more secure and faster way.

Ultimately, we envision a future where individuals have access and control over all health information needed to improve their own health.

Latest Collaboration(s)

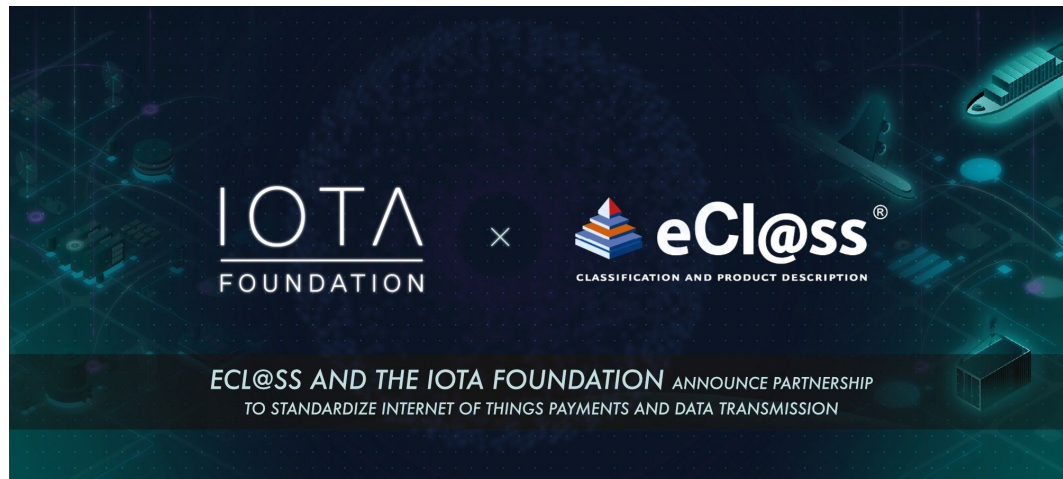


RIDDLE&CODE today announced their agreement to create a fully trusted path from sensor to Distributed Ledger by integrating their respective technologies. This collaboration enables autonomous machine-to-machine transactions using the IOTA Tangle. RIDDLE&CODE's blockchain-connected hardware enables a secure environment for business processes that will only allow reliable data from trusted sources.

RIDDLE&CODE, the Blockchain interface company, is a European start-up that builds hardware and software stacks bringing trusted identity to objects and people.

Together with its tier one clients and partners, RIDDLE&CODE brings greater efficiency and new business models to financial markets, energy distribution, supply chain management and the Internet of Things.

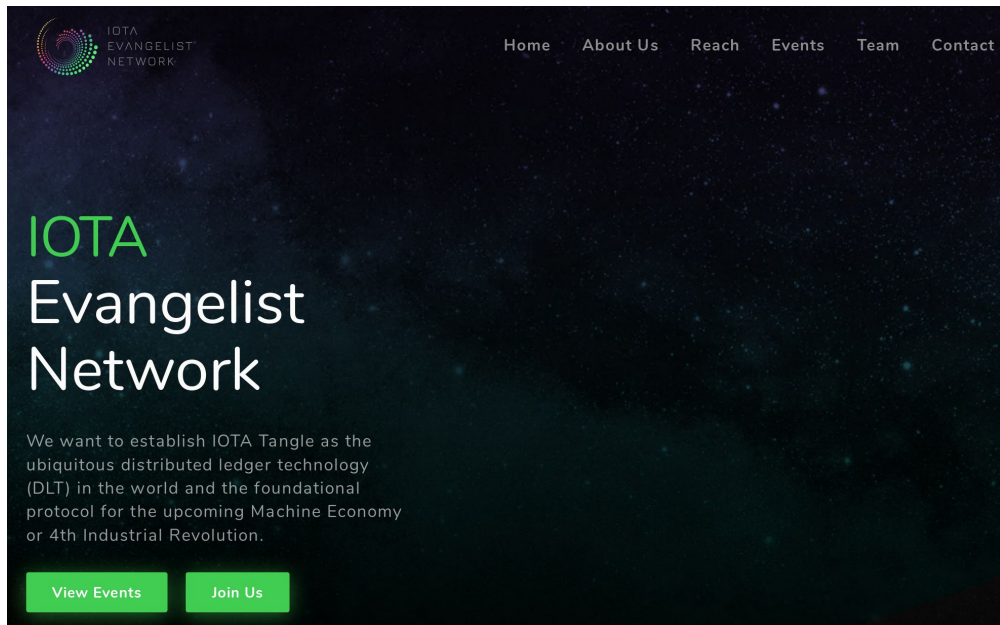
Latest Collaboration(s)



eCl@ss has established standards for the classification and description of connected devices with a worldwide consortium of leading companies including Lufthansa, Siemens, Staples, PBS Network and Medtronic among many others. The organization's standardized catalogue allows companies to quickly introduce trusted identification and simplified communication between IoT devices, while simultaneously lowering costs associated with device management.

By implementing a universal standard between devices, eCl@ss also enables organizations to develop new methods of machine-to-machine payments.

IOTA Evangelist Network - IEN.io



Content Creating

IOTA Demo

IOTA PoCs

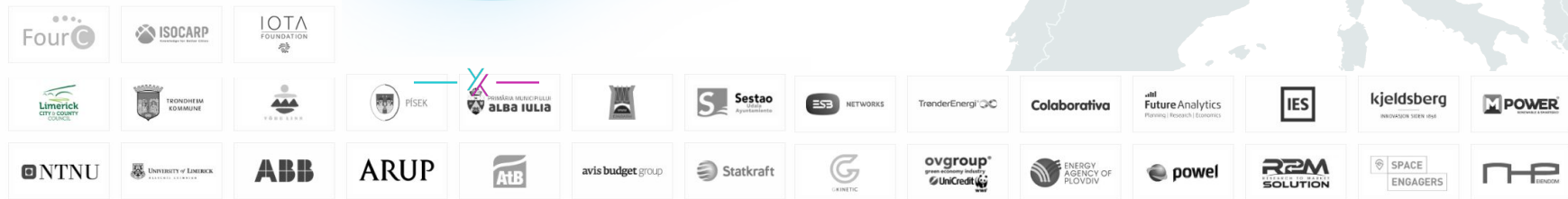
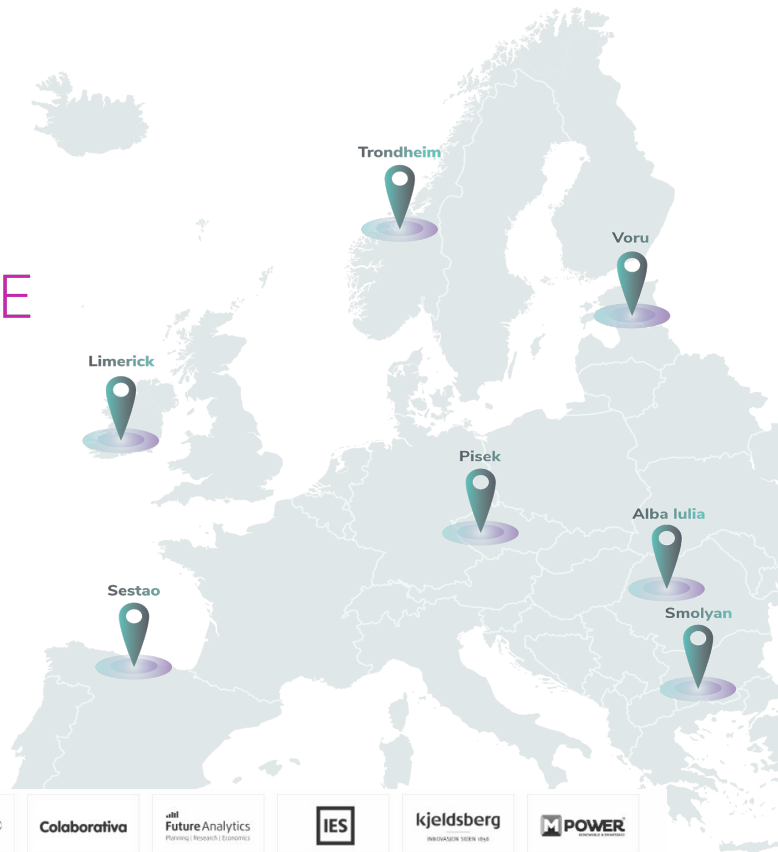
140+ members so far

A world-wide strong community of IOTA enthusiasts.



What is going on

IOTA and the European smart city consortium +CityxChange



Industrial IOTA Lab Aachen

INDUSTRIAL IOTA LAB AACHEN

Werkzeugmaschinenlabor WZL
RWTH AACHEN UNIVERSITY



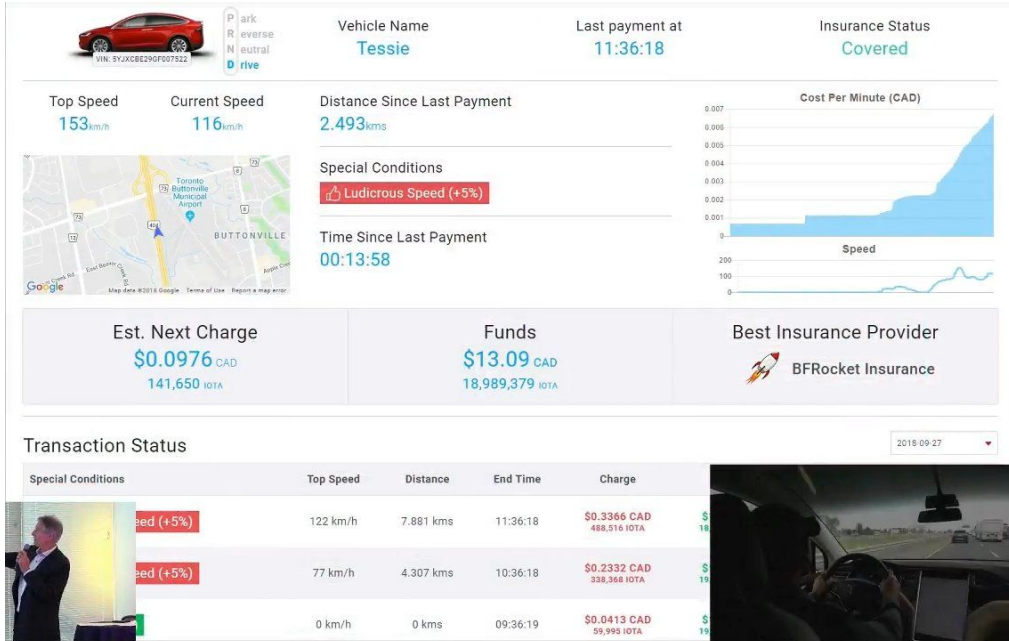
RWTH Aachen won the Cluster of excellence of the DFG (Science founding in Germany) with the internet of production with IOTA.

RWTH Aachen won the cluster of excellence which is a Federal German excellence initiative. The RWTH Aachen won it for the project of the internet of production which is powered by IOTA. This means a grand for 7 years of funding with the option of additional 7 years afterwards.

blOTAsphere Insuremycar PoC



TESLA



Insuremycar PoC

Dynamic insurance provider

Direct payments

Vehicle monitoring



High Mobility API



Powerful Auto API

The most comprehensive standardised API for connected cars at your disposal.



Cross-Brand Compatible

Connect and communicate with vehicles across multiple carmaker brands in a single development effort.



Immersive Car Emulators

Test car capabilities or build simulations to test your app scenarios on true-to-life virtual vehicles.



Carmaker Workspaces

Organise your work, access developer programs and test using the latest digital models via designated carmaker workspaces.



Hardware Enabled

Enjoy running your applications on hardware that is already built into the vehicles; an authentic testing ground for your innovative app or service.



Privacy And Security

The platform implements end-to-end encryption between the car and the SDKs. This granular permissions system ensures the car owner's privacy.

Omoku



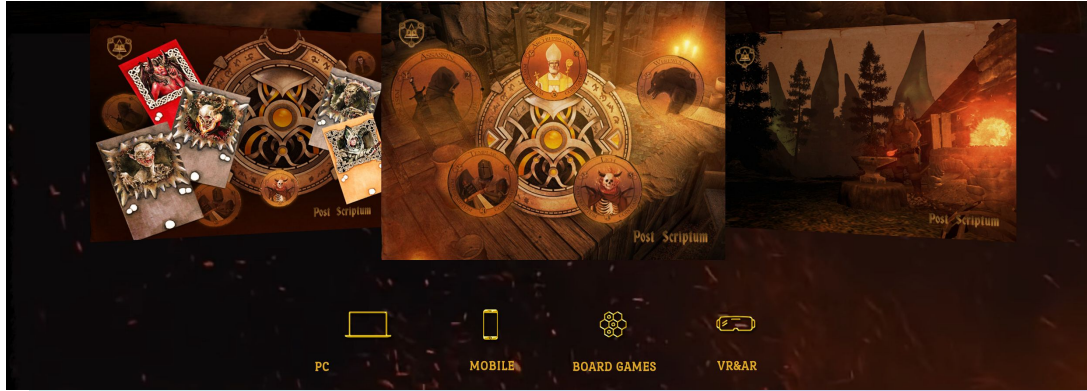
IOTA/EURO Gateway

SEPA / SOFORT / Klarna/
CreditCard direct to IOTA and
viceversa

API's

Waiting for authorization by
Swiss authorities

Paracosm - Post Scriptum



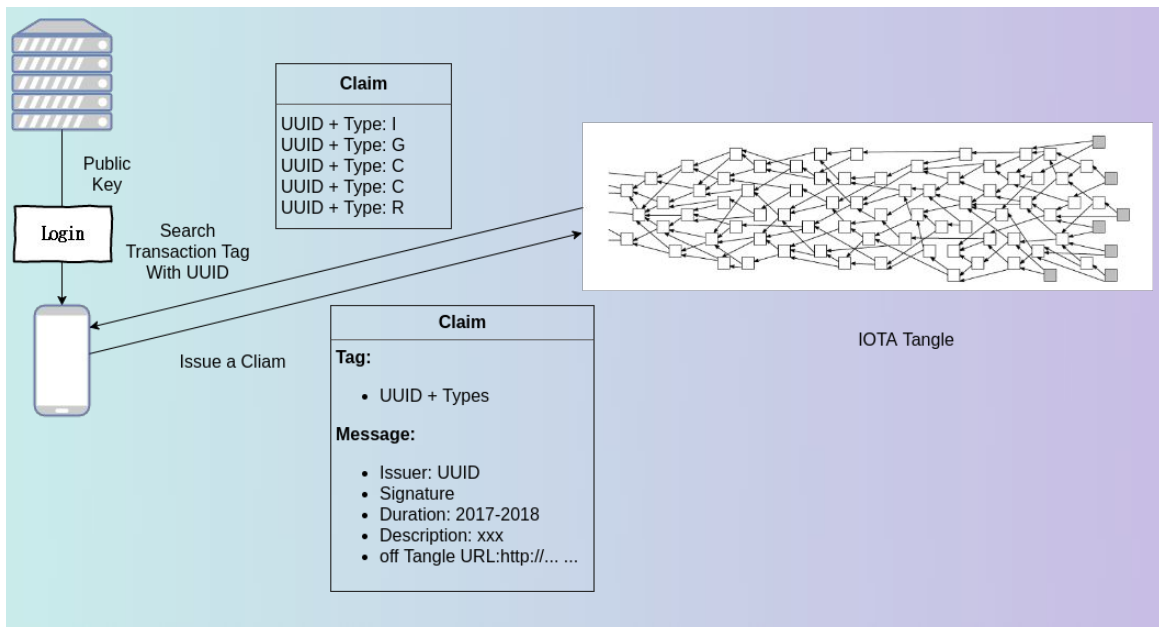
Medieval MMO sandbox

Unique personal assets and
their history in a distributed
ledger

Digital token = real token



TangleID



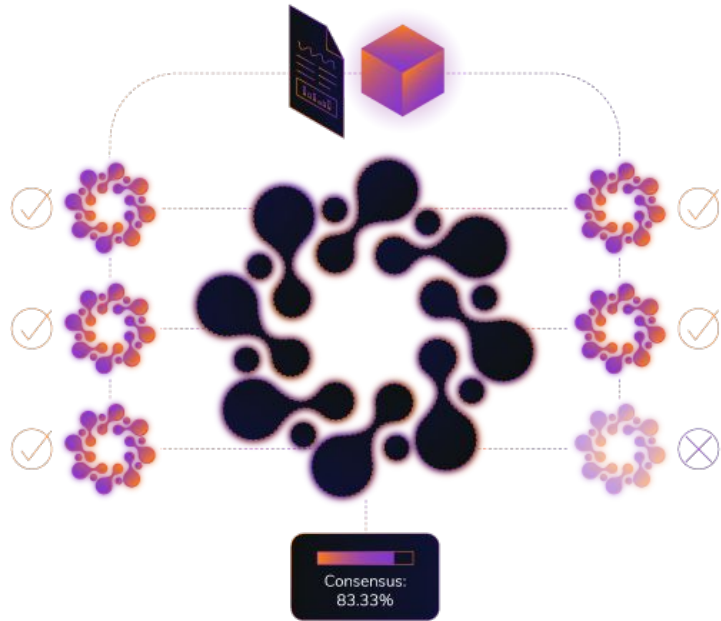
BiiLabs TangleID

GDPR compliant identification
over Tangle

Framework for Mobile App
Developers

TangleID is a secure, easy-to-use system for self-sovereign
identity, built on IOTA/Tangle

Qubic and Abra



Quorum Based Computing

Oracles

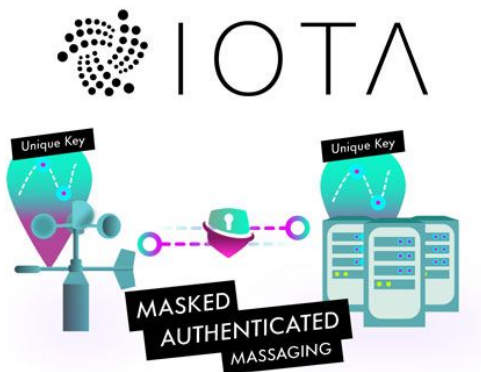
Smart Contracts

Distributed Computing



Meetup Relevant Projects

Development



Bosch XDK110 and
Masked Authentication Messaging

IOTA MAM can run on Bosch XDK (32-bit cortex)

Secure sensor data transmission to the Cloud via IOTA

Micropayments to the Cloud

Transfer sensor data to DLT IOTA/Tangle via MAM - DIY - Ecosystem Project

Bosch XDK



Bosch XDK collects data:

- ID
- Temperature
- Humidity
- Pressure



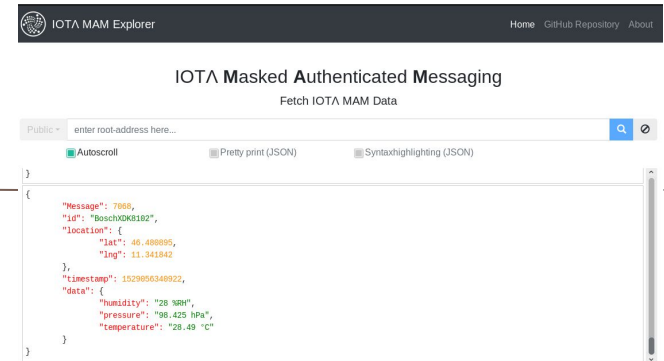
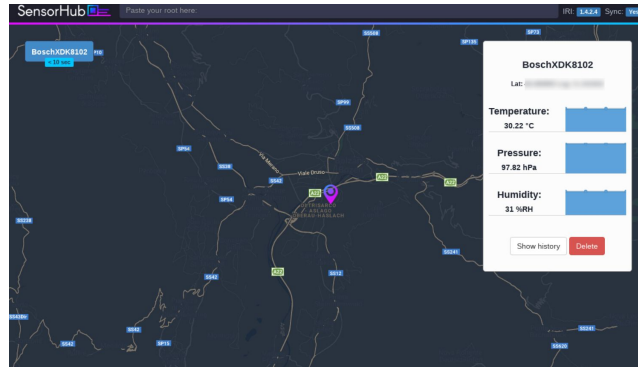
IOTA/Tangle

Data is sent as JSON over mqtt to the broker

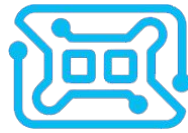
NodeJS App on server sends data to IOTA/Tangle via MAM

Data is sent encrypted to the nodes via MAM (Masked Authenticated Messaging)

Only with the **RootKey** it is possible to see/collect the data



XDK2MAM.io



XDK2MAM main goal is to provide open source software to allow interaction between this powerful hardware and the promising IOTA Tangle.

- HTTP
- MQTT
- USB
- BLE

We deliver open source software to take advantage of Bosch Cross Development Kit over IOTA's Protocol Masked Authenticated Messaging.

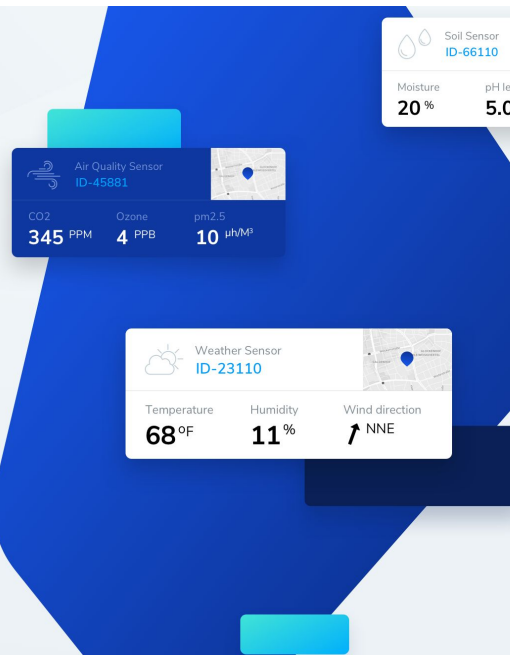
Data Marketplace



IOTA makes it possible
to securely store, sell,
and access data streams.

Never has getting access to diverse,
fine-granular data been this easy!

TRY IT YOURSELF

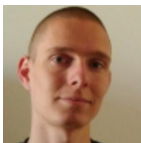


Codename “RaspiTIN” PoC

HW:
Raspberry Pi
Bosch XDK
PiStop Traffic Lights
Lego

SW:
Node RED
IOTA Tangle
XKD2MAM.io

Rewrite in Python by Alexander Lang

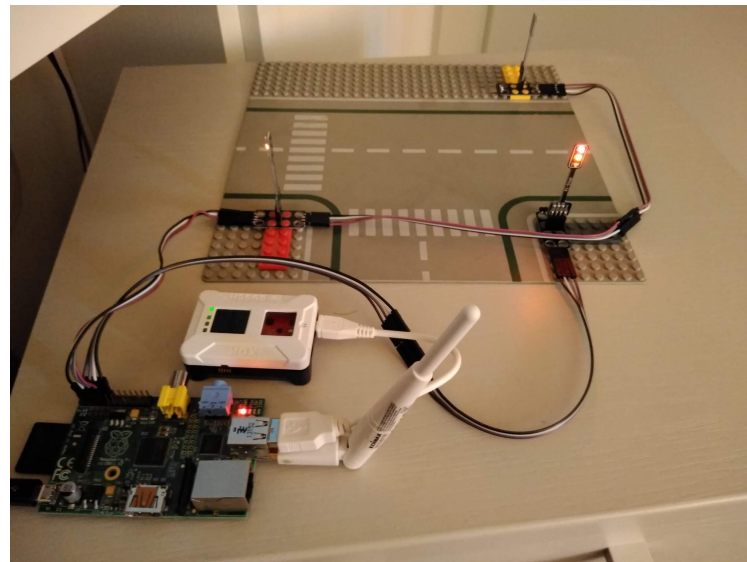


Presented at



Working Group
Artificial Intelligence
Machine Learning

NOI Techpark
Via A. Volta / Voltastraße 13
Bolzano/ Bozen



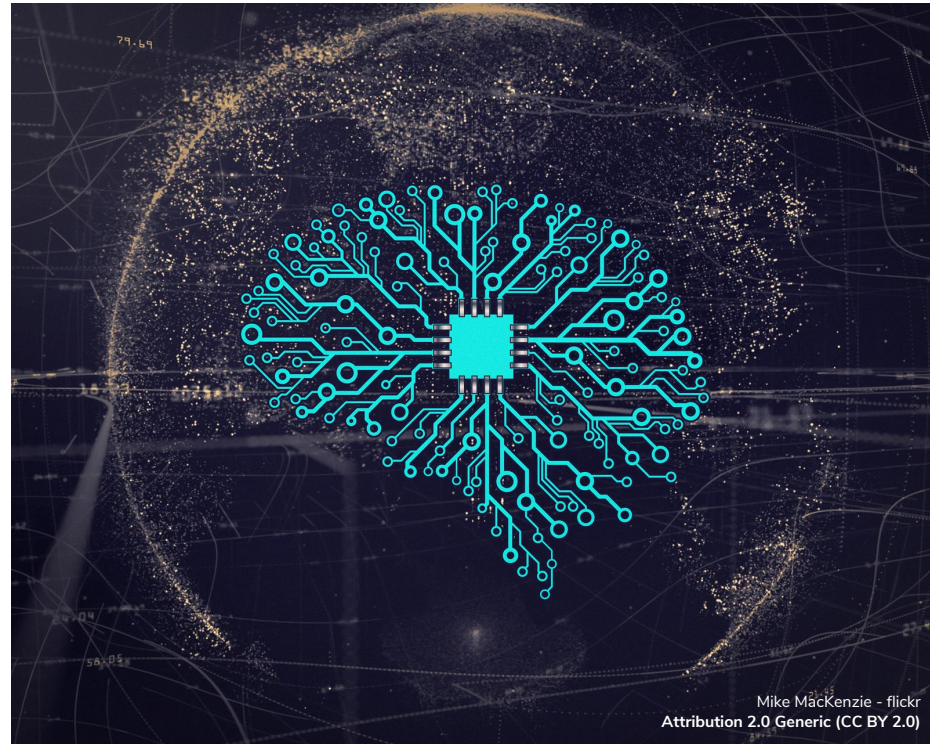
Goals

RaspiTIN:

- Enable a path to Smart Road Crossings
- Connection to High Mobility API
- Collect and sell traffic Datasets for ML/Research
- Collect and sell weather data for ML/Research

AI:

- Traffic optimization
- Predictions for semi-/autonomous cars and test out planning scenarios
- Integrating an AI system for traffic lights (signal) control
- Finding mechanisms for fleet operators and cities to work together by sharing data about congestion or pollution hotspots, and rerouting around the problem before it becomes serious



Mike MacKenzie - flickr
Attribution 2.0 Generic (CC BY 2.0)

Let's innovate with



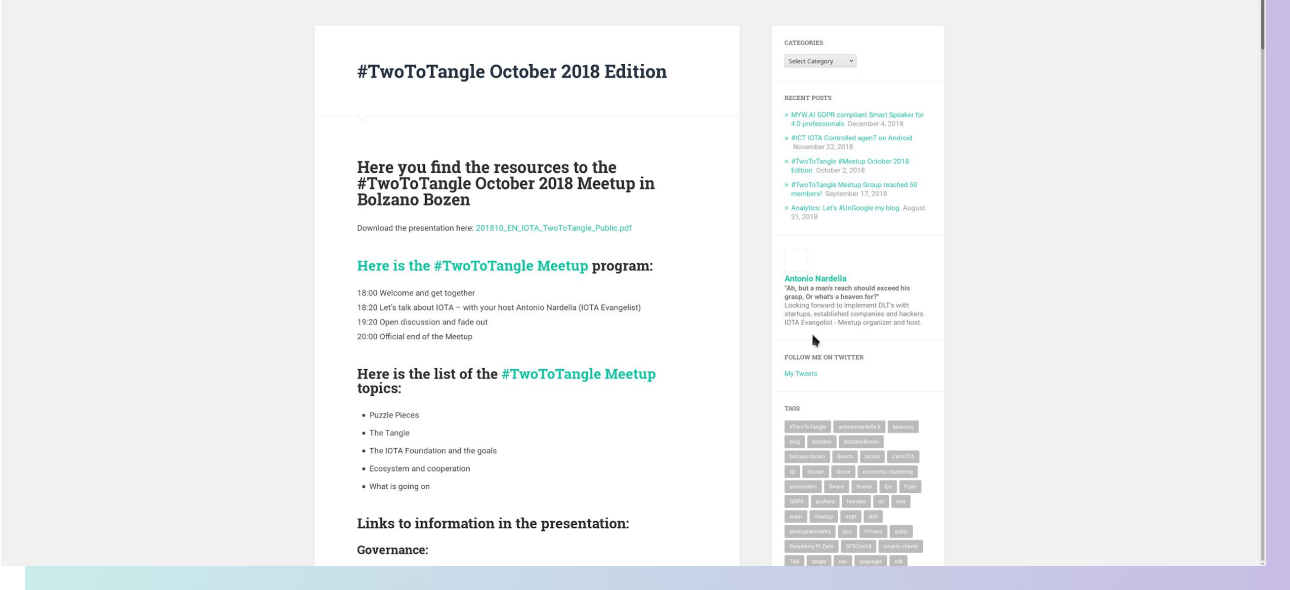
A Final Remark

In open source,
we feel strongly that
to really do
something well,
you have to get a lot
of people involved.

Linus Torvalds



Invite to



- Resources and Presentations
- Latest News and articles in Italian about IOTA
- Geeky Stuff

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EMPOWERING POS-SYSTEMS

mergeport.com



Luca Sartori
Graphic Designer and
Art Director
lucasartorigd.myportfolio.com