IOTA

Connecting our world to{day,morrow}

INVESTING IN CRYPTOCURRENCIES
ON MY WAY TO A LAMBORGHINI
LOSER
2
LAMBO
"I'm in it for the technology."
AWWWWWWWW
YAAAAAAAA
MILLIONAIRE

Crossing the Chasm

Important Puzzle Pieces

Technology

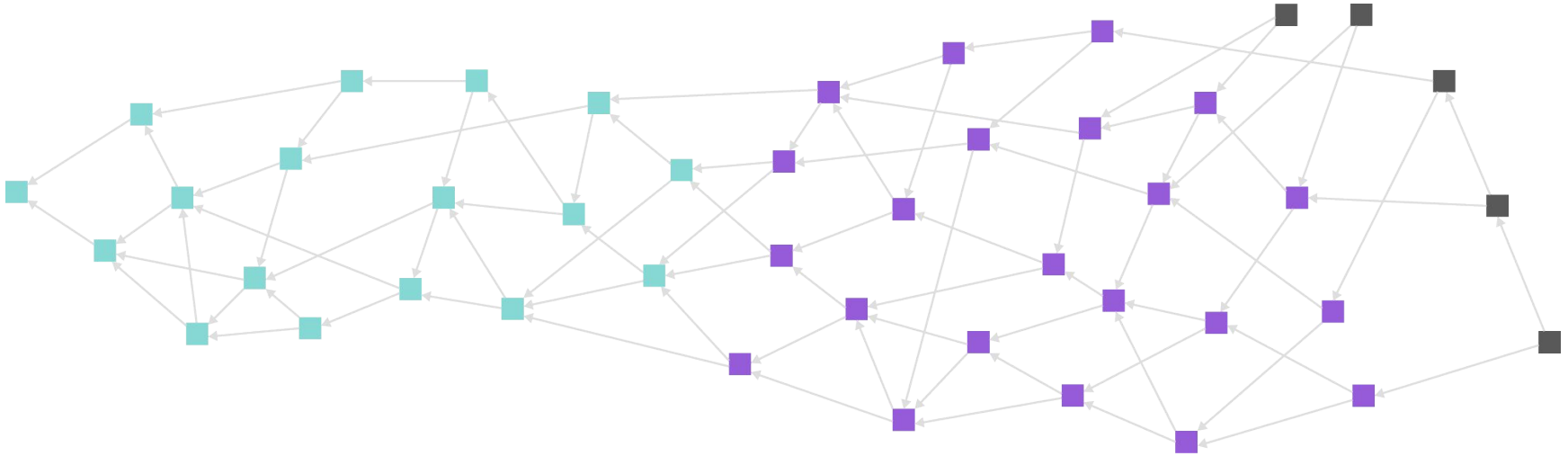
Governance

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.

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.

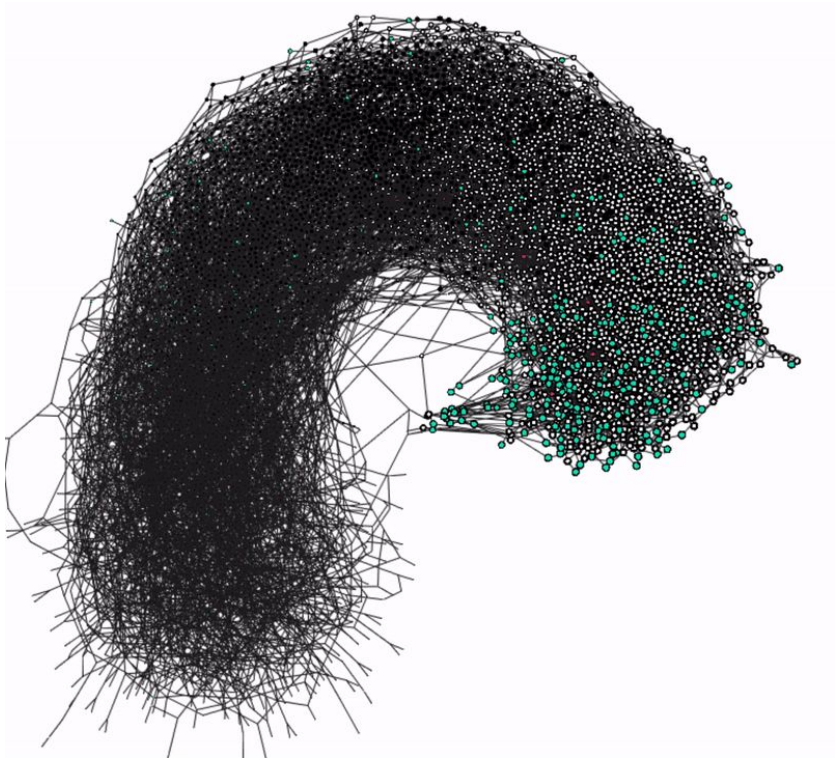
The Tangle

Feeless, Scalable, Quantum-immune

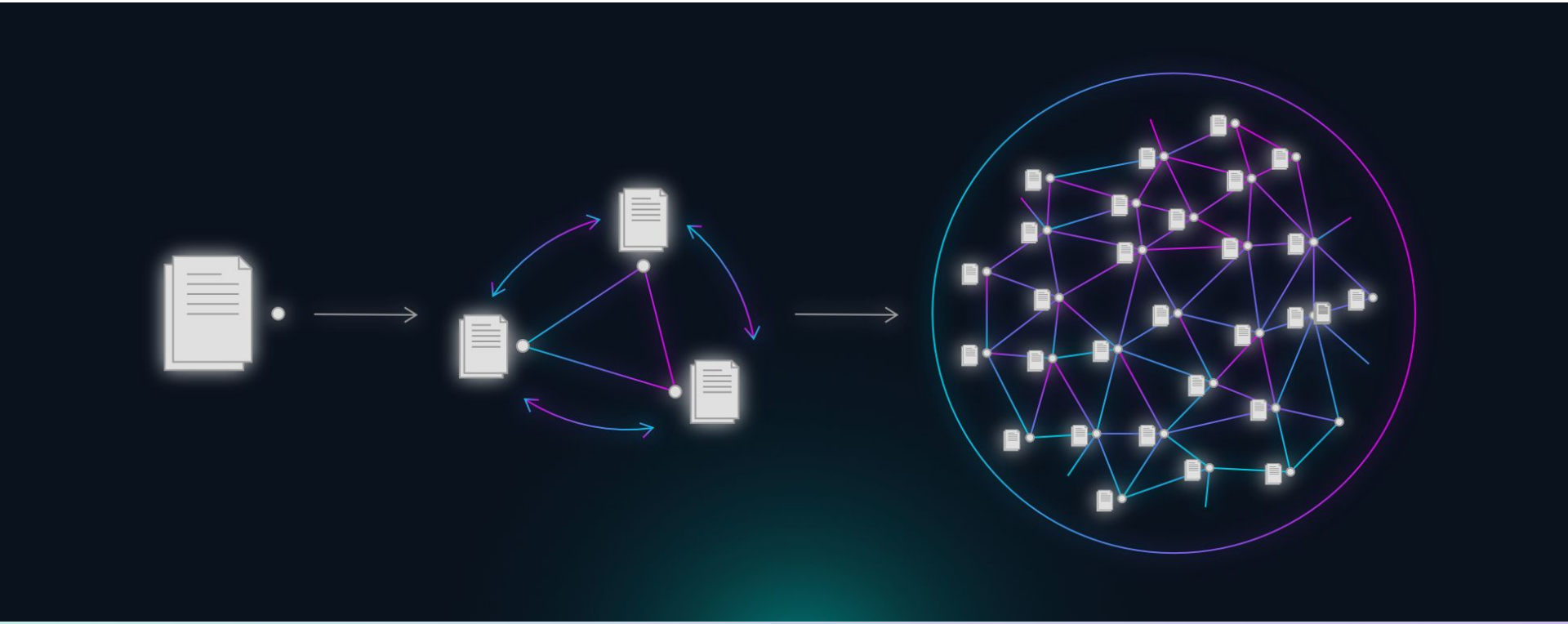
Permissionless Ecosystems are the Future

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

A Healthy Tangle

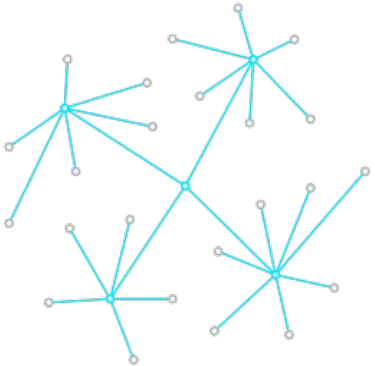


What are Distributed Ledgers?

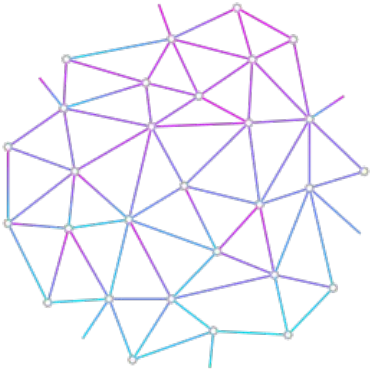


Networks

Centralized

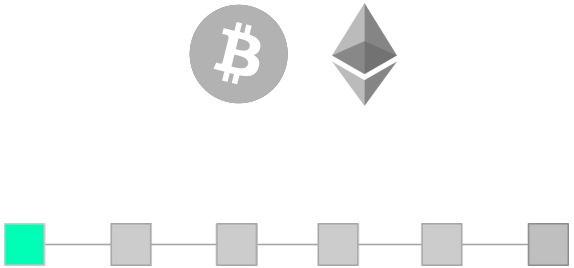


Decentralized
With Intermediaries

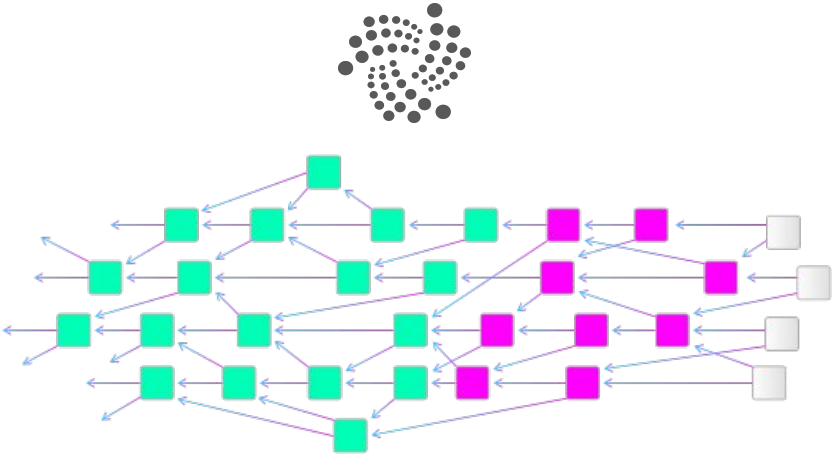


Distributed
No Intermediaries

Blockchain vs. Tangle

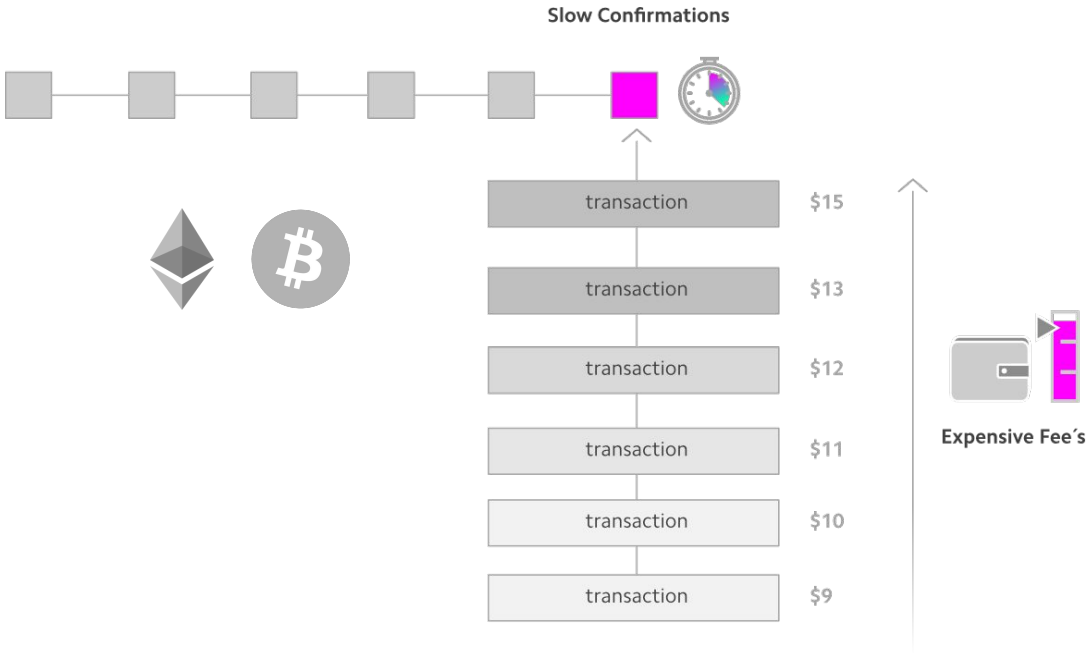


Blockchain

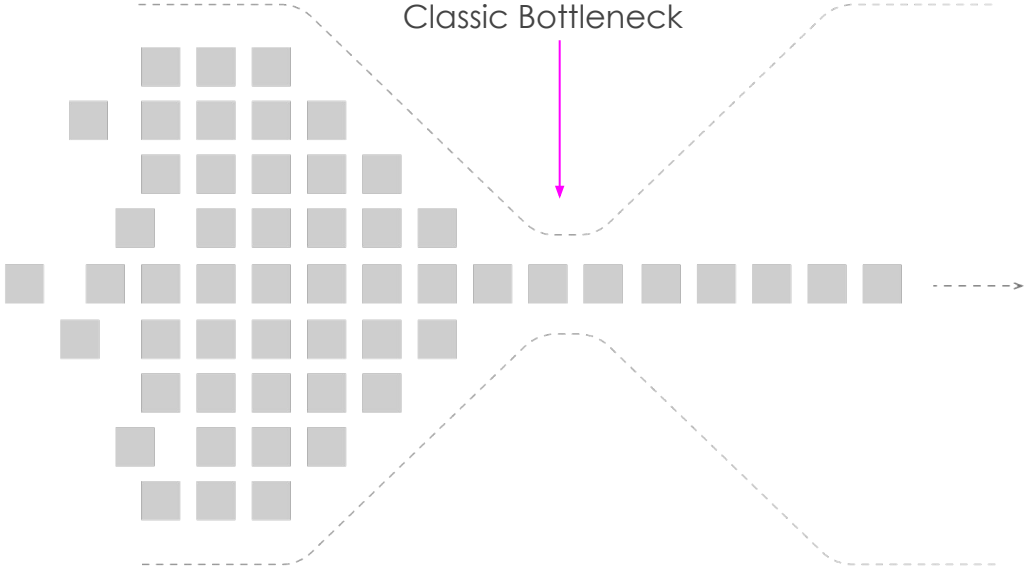


Tangle
(DAG / Directed Acyclic Graph)

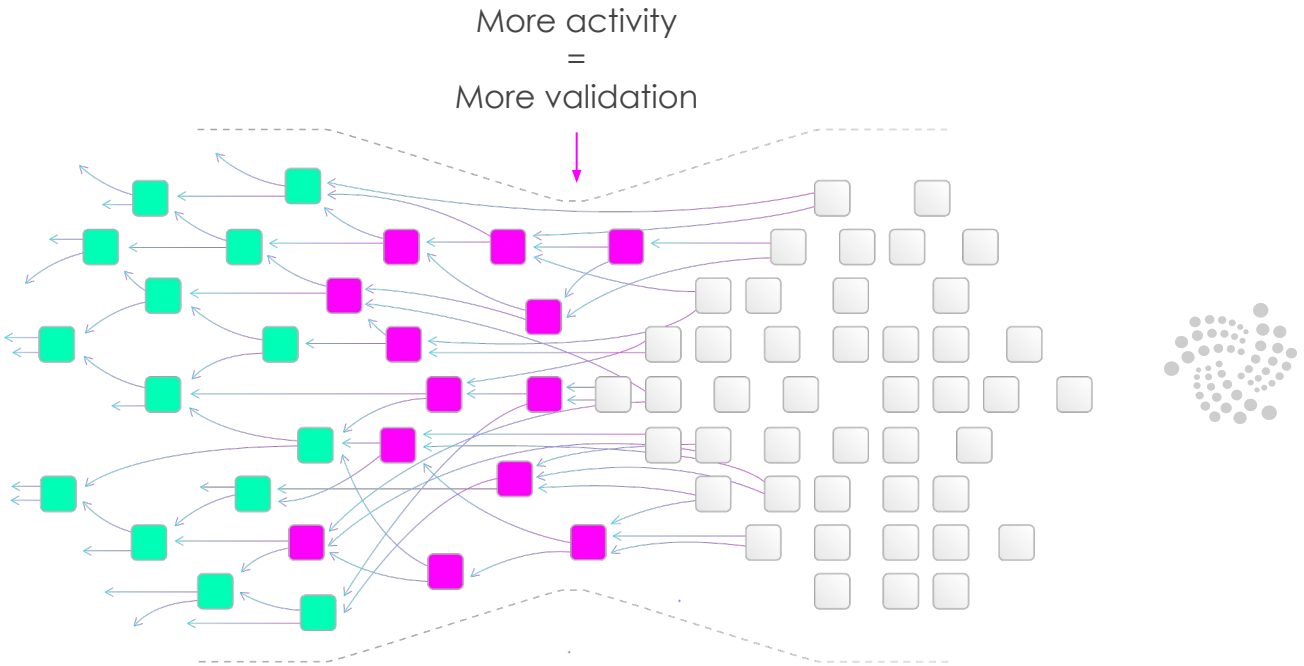
The Blockchain Bottleneck



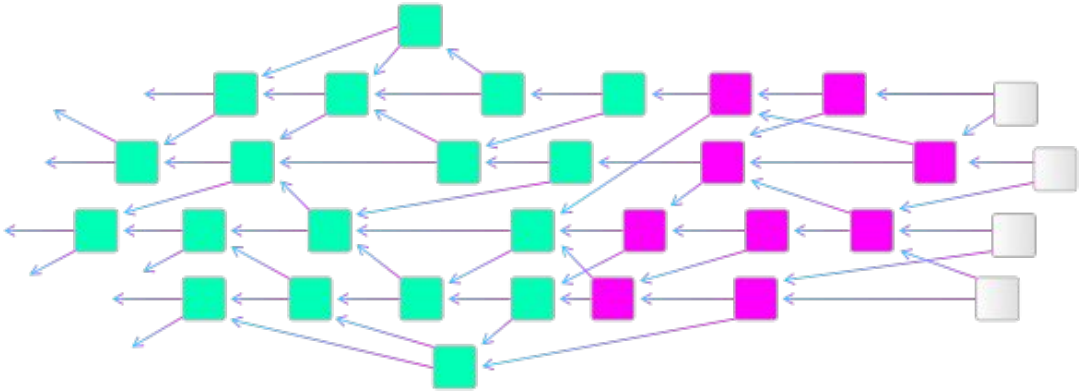
The Blockchain Bottleneck



Tangle scales!



Consensus in IOTA



Each transaction validates 2 previous unconfirmed transactions

- Chosen by Markov Chain Monte Carlo Random Walk algorithm

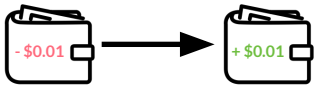
Signed with private key

Small amount of Proof of Work

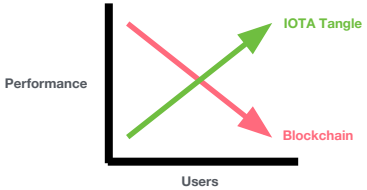
- Similar to Hashcash, not Bitcoin
- Spam and Sybil-resistance

Blockchain vs. Tangle

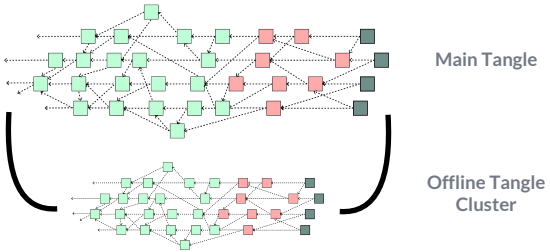
No Transaction Fees



Scalability



Offline Transactions (Partitioning)



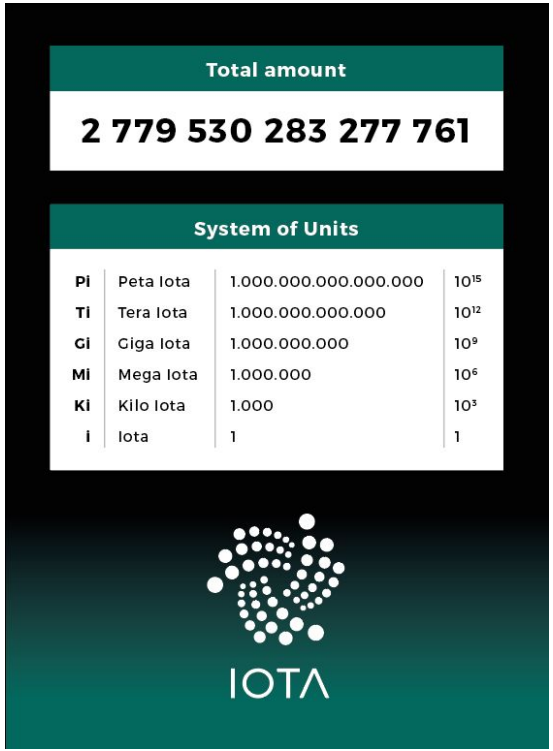
Other Benefits:

- 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

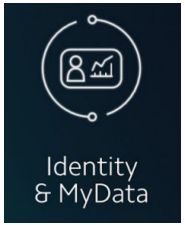
The IOTA Tangle today has
2,779,530,283,277,761 IOTA

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

A word of caution:

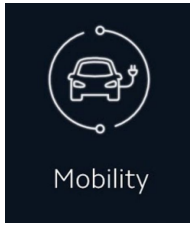
Exchanges work with MIOTAs don't let people scam you!

IOTA Use case and Industries



iampass

BiiLabs



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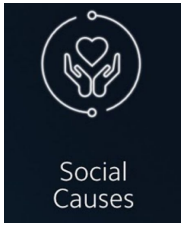
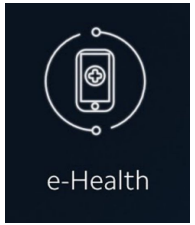
MOBI

Audi

+CITYXCHANGE



UNOPS

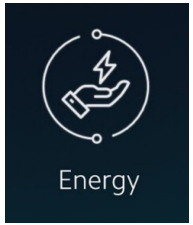


ALPHA VENTURI

OSLO CANCER CLUSTER

Norwegian Centre for
E-health Research

OSLO MED TECH



eNGIE Lab

CRIGEN

FUJITSU

IBCS Poland

DNB

CRYPTO FINANCE

SPACEBIT

SQC

eCl@ss

kontakt.io

Governance

The IOTA Foundation

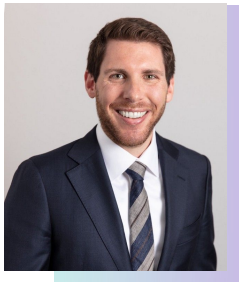
- Non-profit Foundation based and regulated in Berlin, Germany
- Growth from 6 to 90+ full time employees distributed across 17 countries
- $140m+ in funding
- Focused on Technical and Regulatory Challenges of Crypto-Currencies & DLT

(Some) Latest IOTA Foundation Member(s)

Martyn james

Software Engineer.

He truly is the definition of a full stack developer, who has spanned the gamut developing on everything from embedded controllers, back-end services, through to web, mobile, and desktop front-ends.
Martyn is a polyglot coder, adept in C, C++, C#, JavaScript, and TypeScript among others. He has been an architect and team lead on multiple projects in a diverse range of industries: Utilities (gas/electricity), Financial trading systems for multiple FTSE 100 banks, Document management, clustering and search, Accounting, Home automation with embedded controllers, Signal analysis, data capture and processing



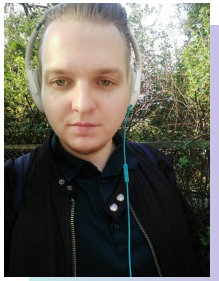
Felix Krupar

Regulatory Affairs Specialist

Felix will bring his expertise in regulatory and IT law to the foundation. His background in academia and practice is a great fit for his role at the intersection of legal research and policy

Rajiv Shah

Software Engineer.
In this role, he will focus on the Trinity wallet.



Phillip Blum

Developer Advocate of the Ecosystem team

his experience as a software developer and technical consultant is a tremendous contribution to IOTA foundation. The intersection between technical development and adoption is key to bring IOTA to the masses as a standard

Marcos Andrade

Illustrator.

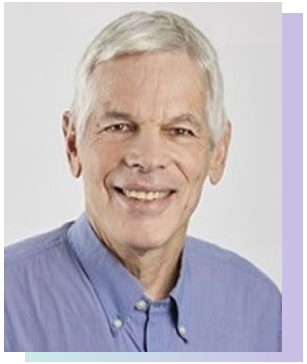
In this role, Marcos will focus on developing graphics and digital illustrations for our Multimedia content.

The IOTA Research Council

IOTA RESEARCH COUNCIL

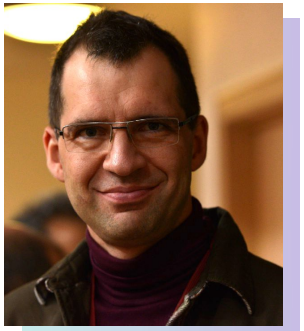
- The IOTA Research Council will work closely with our research department
- Strategic technological direction
- Provide academic oversight to IOTA research
- Assess and grant funding to academic partners
- Oversee collaboration with academia and other research organizations
- Consists of distinguished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

The IOTA Research Council Members

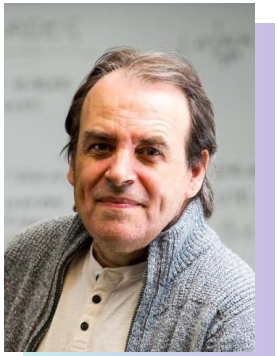


Gur Huberman is the Robert G. Kirby Professor of Behavioral Finance at **Columbia Business School** where he has taught since 1989. Prior to that, he taught at Tel Aviv University and at the University of Chicago. Between 1993 and 1995 he was Vice President at JP Morgan Investment Management responsible 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.

Dr. Moody Alam obtained a PhD in computer science (distributed artificial intelligence) at the Univestity 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.

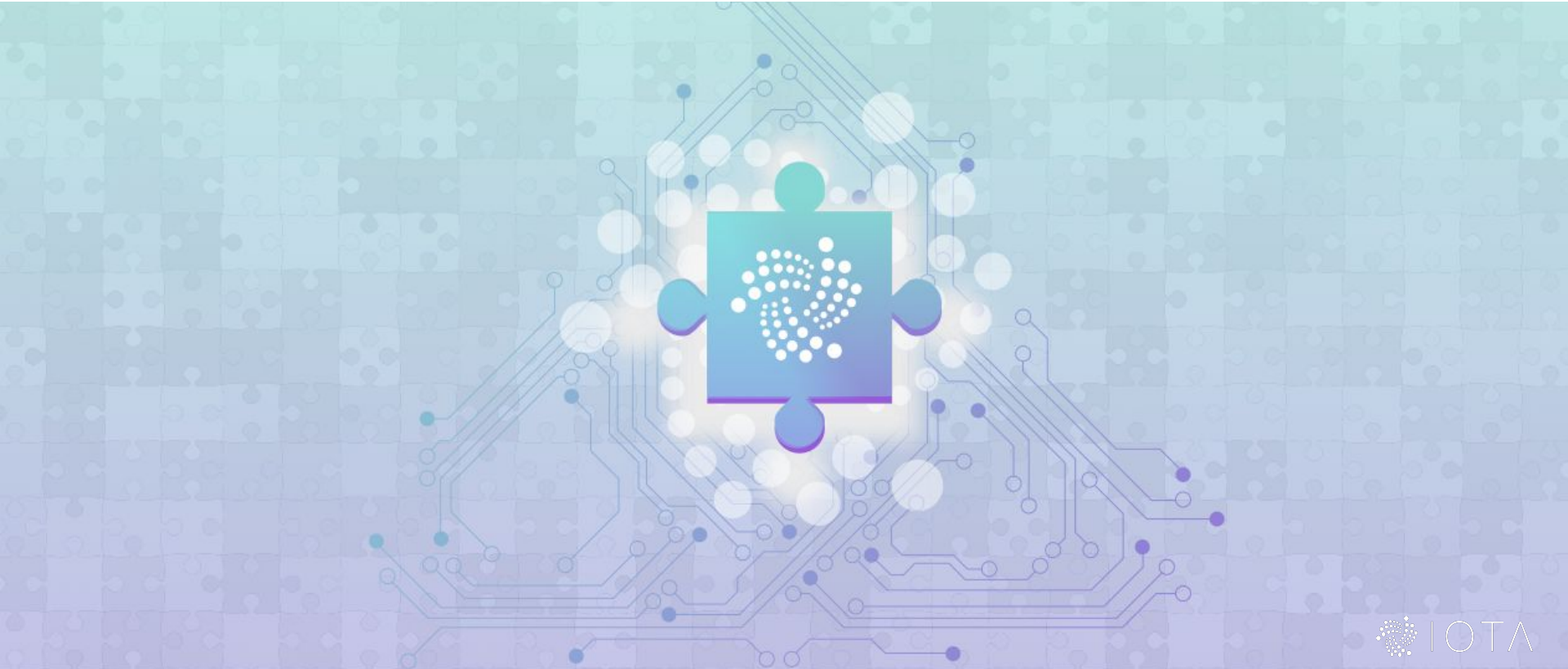


Serguei Popov
IOTA Foundation Board of Directors
is a research mathematician working in the field of Probability Theory and Stochastic Processes. He graduated from and attained his Ph.D. at the Moscow State University under the supervision of Professor Mikhail Menshikov, with whom he still happily collaborates. 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.



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

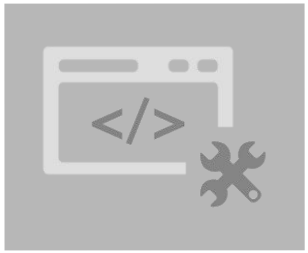


Production Readiness & Standardization

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

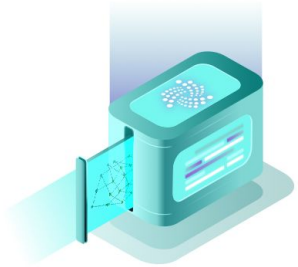
Of Core Protocols

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

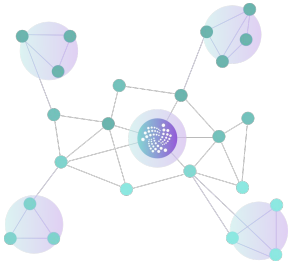
Milestones Ahead

Local Database Snapshots

✓



Permanent Data Record PermaNodes



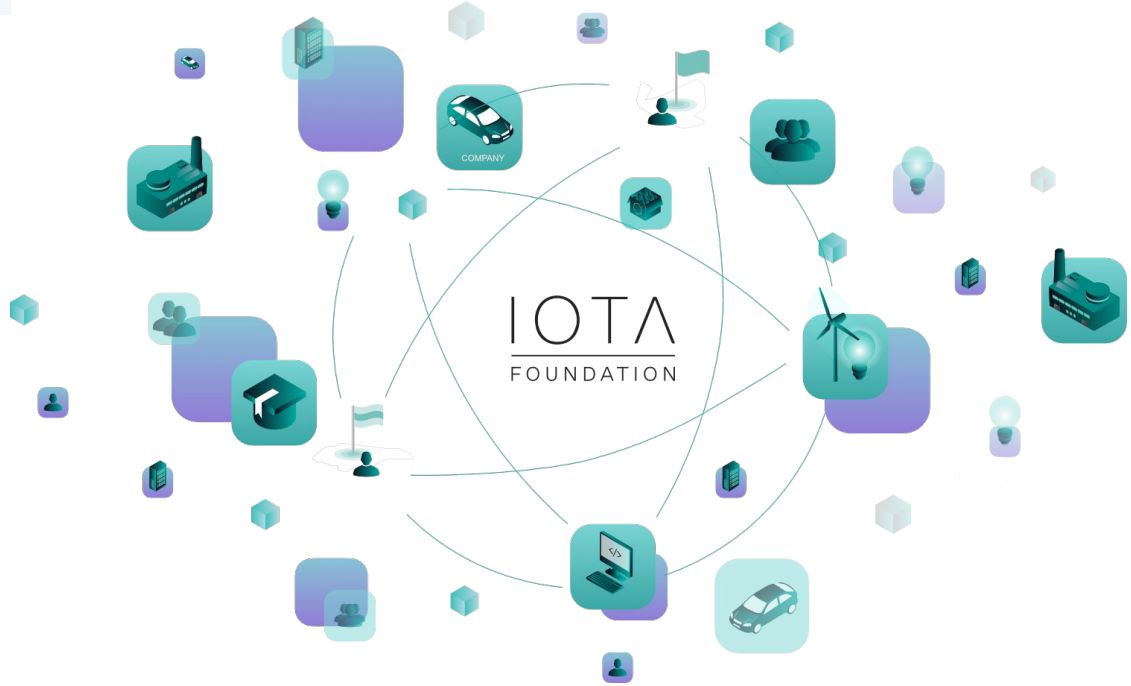
Scaling & Sharding

Economic Clustering

Removing the Coordinator

“The Coordicide”

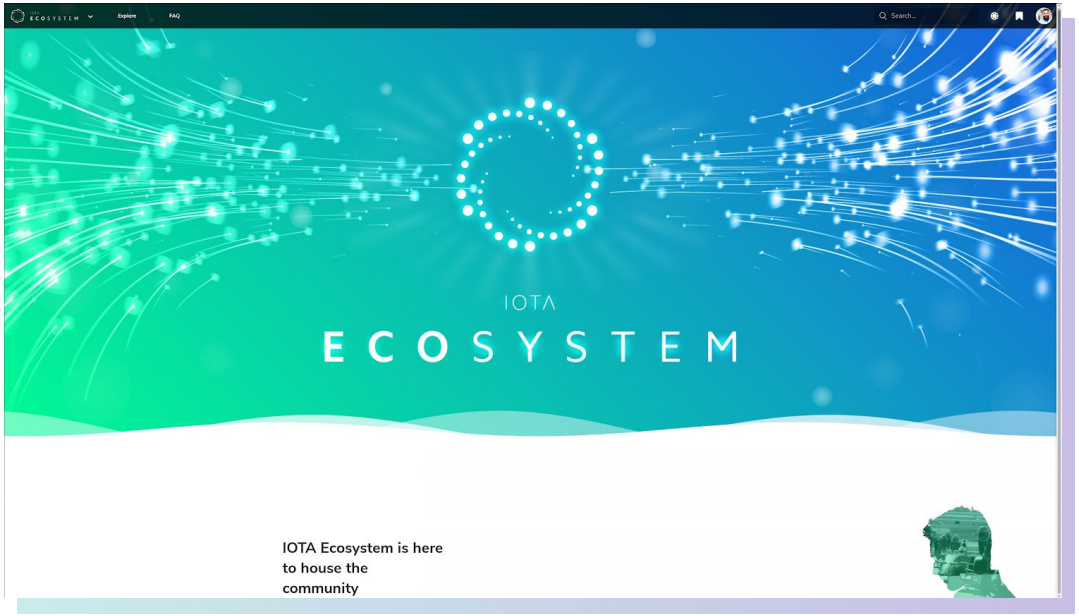
IOTA Foundation Ecosystem



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

The Ecosystem and Cooperations

IOTA Ecosystem gGmbH



Official IOTA Ecosystem

Tutorials

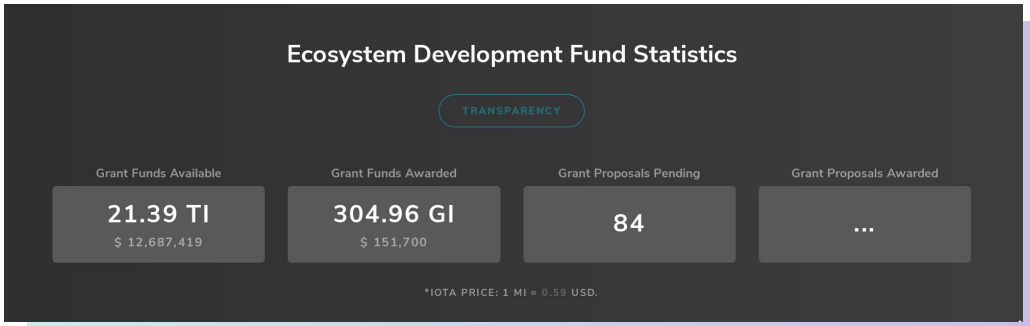
Projects

Events

Developers

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.

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

Akita M2M economy showcase (USD $367,560)

This M2M ecosystem showcase shall provide a functioning prototype that can be demonstrated by Akita and replicated for a future IOTA Lab or other lab, any corporation or even at home.

The complete process will be documented from scratch to the final showcase. The code will be made public in an open source GitHub repository and all the necessary components will be listed in a respective blueprint cookbook (Hardware, Software, Programming Skills, external resources).

Latest Collaboration(s)

Andrew Dean, Head of Partnerships at Nova:" We want to make sure that IOTA entrepreneurs have the best possible chance of success. Some of the most exciting technological developments of our time are fueled by IOTA technology, and we're looking forward to playing a part in bringing some of those ideas to market."

Under this collaboration, the two companies will work together to increase the number of successful startups utilizing the next generation of Distributed Ledger Technology.

Nova will bring its expertise in partnering with aspiring entrepreneurs to co-found tech startups, which helps to eliminate many of the risks involved in starting a business. In addition to providing guidance across all areas of business, from market research to product development.

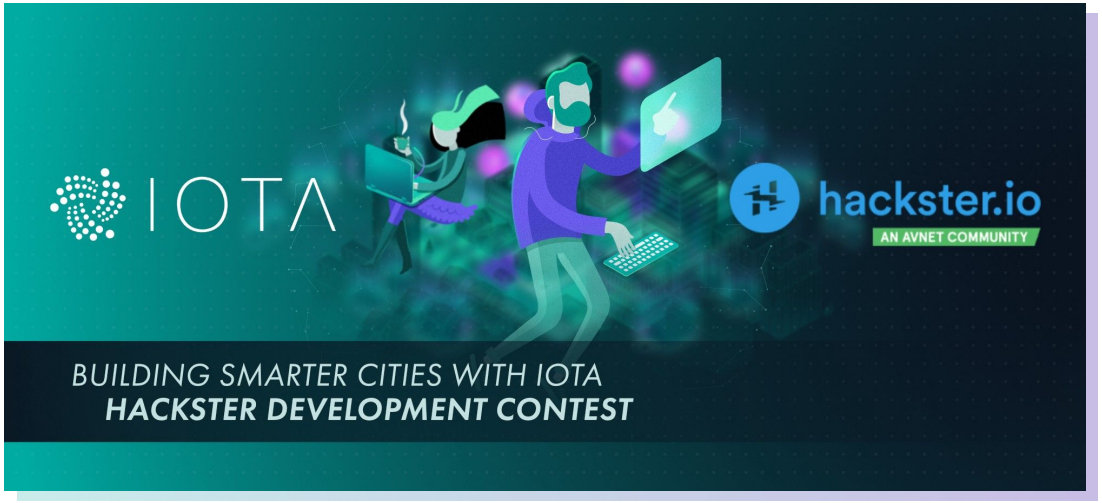
Latest Collaboration(s)

The IOTA Foundation will be supporting a number of challenges at the hackathon by providing technical support to teams before, during and after the event. We've chosen these challenges due to their compatibility of the IOTA protocol to solve them

The IOTA Foundation has joined the Odyssey Hackathon, in Groningen NL from April 12–14, as an Ecosystem partner.

The Odyssey Hackathon connects selected top teams (new teams, pre-startups, startups, and SMEs) to their potential launching customers from corporate, governmental, and non-profit sectors (among which: the Dutch Ministry of the Interior and Kingdom Relations, the Dutch Land Registry and the Chamber of Commerce, Vattenfall, KLM, Nutreco, and many others).

Latest Collaboration(s)

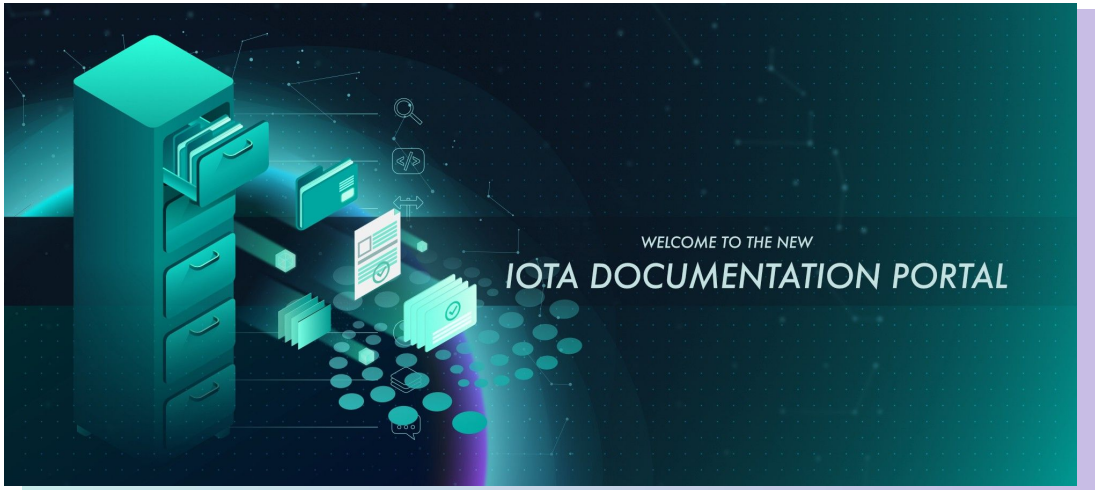


Global Developers are Invited to Create Solutions Using IOTA Tangle to Drive Smart City Innovation Worldwide

At the heart of the contest is the opportunity for developers from around the globe to solve inter-city challenges submitted by a variety of corporate entities. Hosted by Hackster.io, an Avnet community and the world's largest hardware developer network, the virtual contest kicks off today with both corporate and supporting sponsors.

What is going on

IOTA Documentation Portal



A much better user experience, both mobile and wide-screen desktop

Search for the information you need

Go through the content from basic to advanced in a book-like reading fashion.

Provide feedback on the content you visit.

Read on some of the newly added content.

Tutorial - Private testnet with Compass

By releasing Compass, the IOTA Foundation aims to further its research into finding a viable replacement for the Coordinator.

Compass is an open-source Coordinator that can be used to protect an IOTA network against attacks. Any transaction that's referenced by a Compass milestone is considered confirmed by any IRI nodes in the network.
Compass sends honest, zero-value milestones to IRI nodes at regular intervals. Milestones can't modify balances or censor transactions because all transactions, including milestones, are validated by each IRI node in the network.
You can use Compass to create your own IOTA network for the following use cases:

- Security testing and research: Use Compass to create a controlled environment to test assumptions and produce attacks.
- Development of proof of concepts: Use Compass to develop proof-of-concept applications without sharing your ideas on a permissionless network.

Applying IOTA in Global Trade and Supply Chains

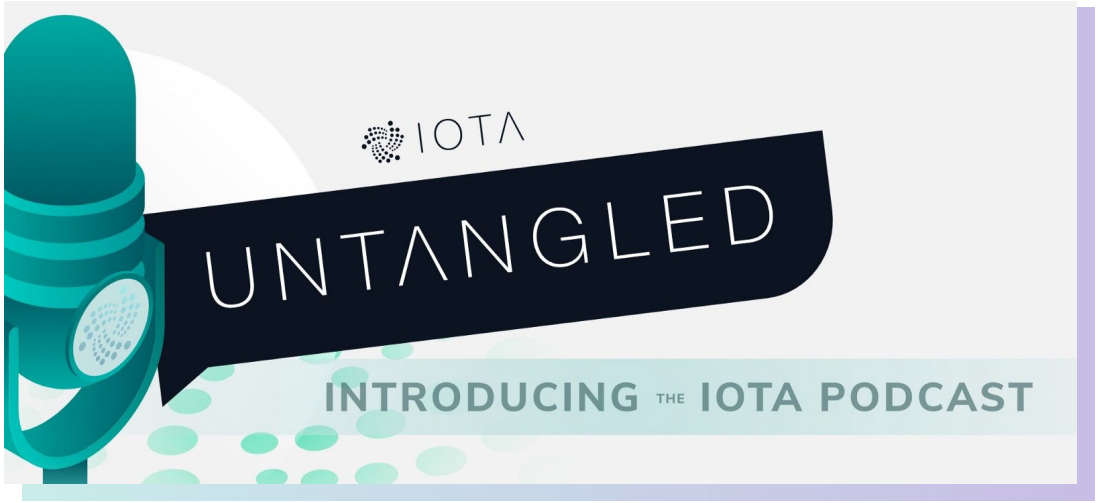
The IOTA Foundation has supported partners to use IOTA technologies and created general guidelines and blueprints that will help other interested parties to replicate similar and more advanced solutions by using IOTA open source code.

Trade facilitation, track & trace, provenance...

Opportunities to apply Distributed Ledger Technologies (DLT) to international trade and build true innovation

We have identified Minimum Viable Ecosystems of actors, and engaged in piloting activities, starting with small Proof of Concepts, all part of a bigger effort aiming to revolutionize the trade community and bring trade processes into the 21st Century. As result of these activities, we have learned where and how IOTA can be integrated with existing systems to add an interoperable trust layer for data exchange. To share some examples and guidelines for IT developers to get started, and for trade practitioners and policy makers to be inspired.
Demo: https://tradedemo.iota.org

Untangled - The IOTA Podcast



The podcast will be released every other week and explore the many different use cases of the Tangle in the real world in a tangible way for real people. Through interviews with community members, developers, experts, business executives and IF members the podcast will offer a number of different perspectives about topics which will differ between episodes. It will be published over a wide array of channels and will also provide links for background knowledge as well as extended knowledge of IOTA and the included use cases.

ICT - IOTA Controlled agenT

is an experimental IOTA node for the Internet-of-Things (IoT)

IoT will be full of tiny devices directly connected to each other in a dynamic mesh network

Some of these devices will move around, or suddenly turn off or on

a constantly changing environment requires a data integrity protocol with enough redundancy to deliver messages and make data accessible, despite the unpredictable nature of the network (fog computing)

IOTA Foundation is aiming to build its own IoT microcosm, with Ict as a fundamental building block.

ICT - IOTA Controlled agenT

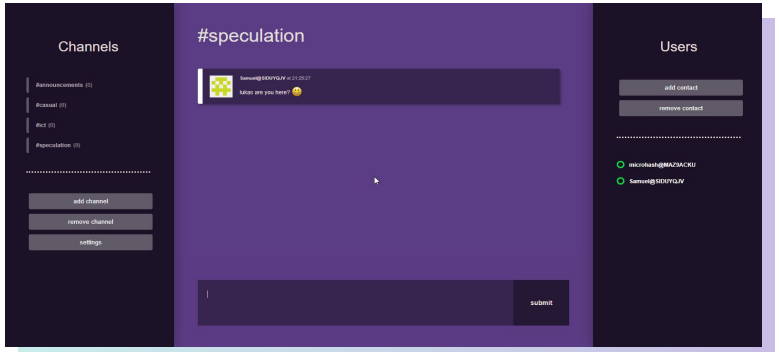
Gossip Protocol—to receive and forward IOTA transactions, plus validation of signatures etc., similar to what IRI is currently doing.

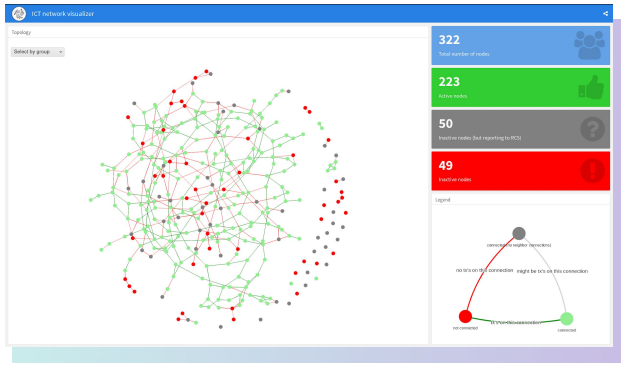
IOTA eXtension Interface (IXI)—a simplistic interface as a modular approach, to make the Ict core client extensible with various plugins and applications—the “IXI modules”.

Swarm Logic—to achieve shared goals in a swarm, where individual Icts adjust their level of redundancy, to filter out transactions not relevant for that goal.

Economic Clustering—will be the only consensus mechanism integrated into the Ict core client. Other consensus mechanisms must be implemented as IXI modules running on top.

ICT - IOTA Controlled agenT - IXI Modules



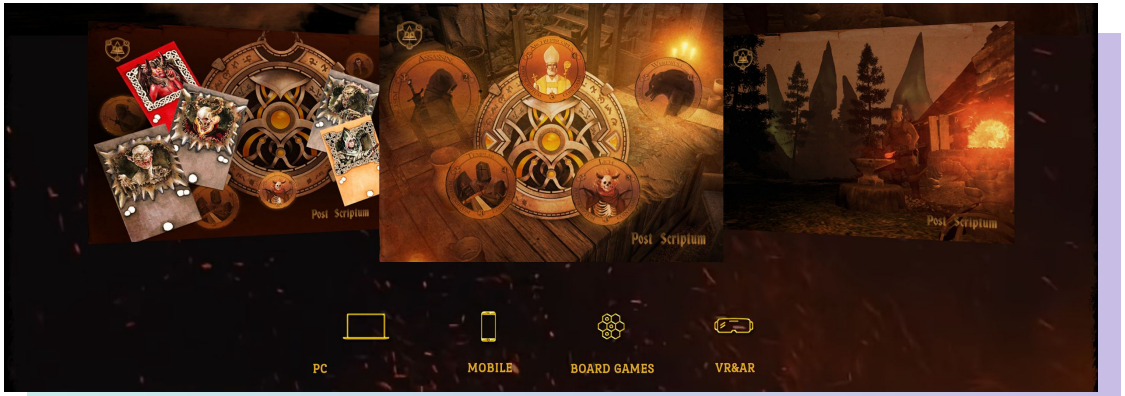


IOTA eXtension Interface

Chat.ixi - Cryptographically secure chat over the Tangle

Report.ixi - ICT nodes reporting tool - Made by the IOTA Community (ixuz, test, schaeff, Bouke, lambtho)

Caer Sidi - Post Scriptum

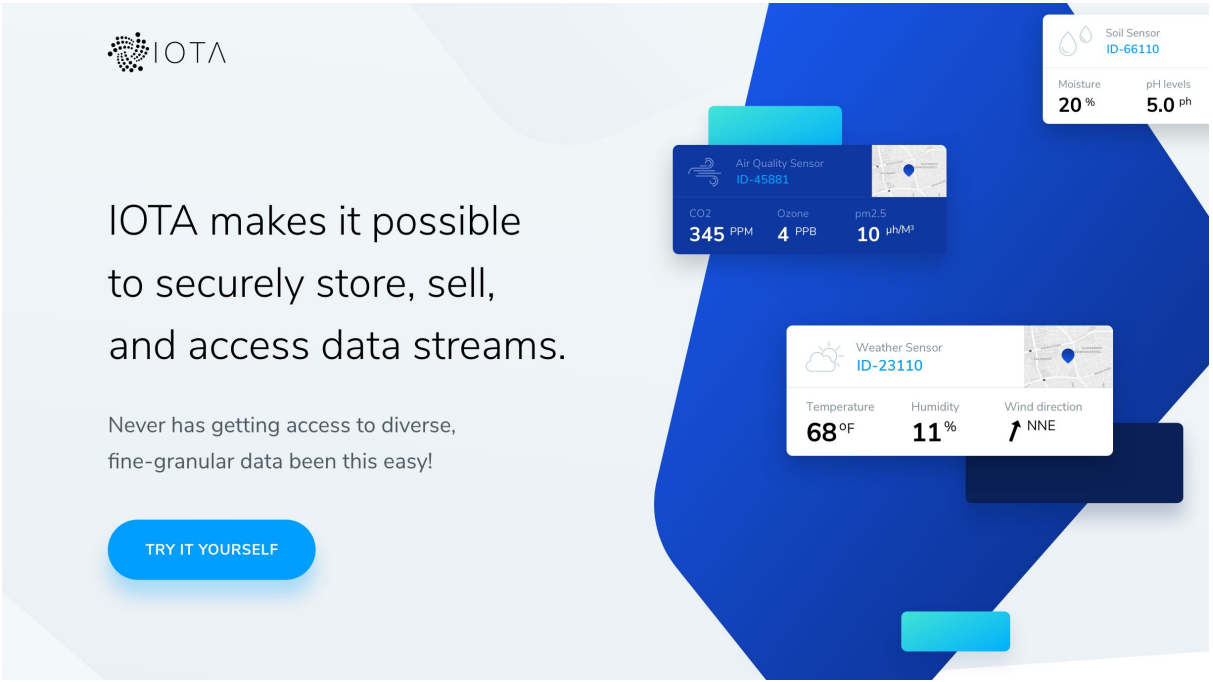


Medieval MMO sandbox

Unique personal assets and their history in a distributed ledger

Digital token = real token

Data Marketplace - Open Sourced



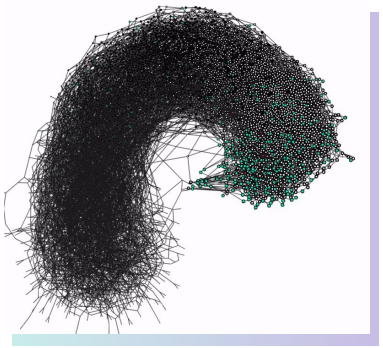
Meetup Relevant Projects

Project #STODT - Objective

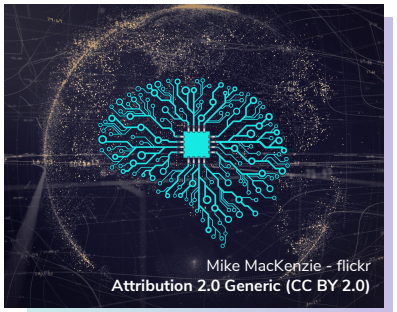
South **T**yrol **O**pen **D**ata **T**angle

Create Tangle streams for Open Data in South Tyrol.
Streams of raw as well as AI-processed data.
Develop an open reference implementation of an AI system which uses these streams as training data.

OPENDATA HUB SÜDTIROL ALTO ADIGE



The IOTA Tangle



Romantic representation of AI

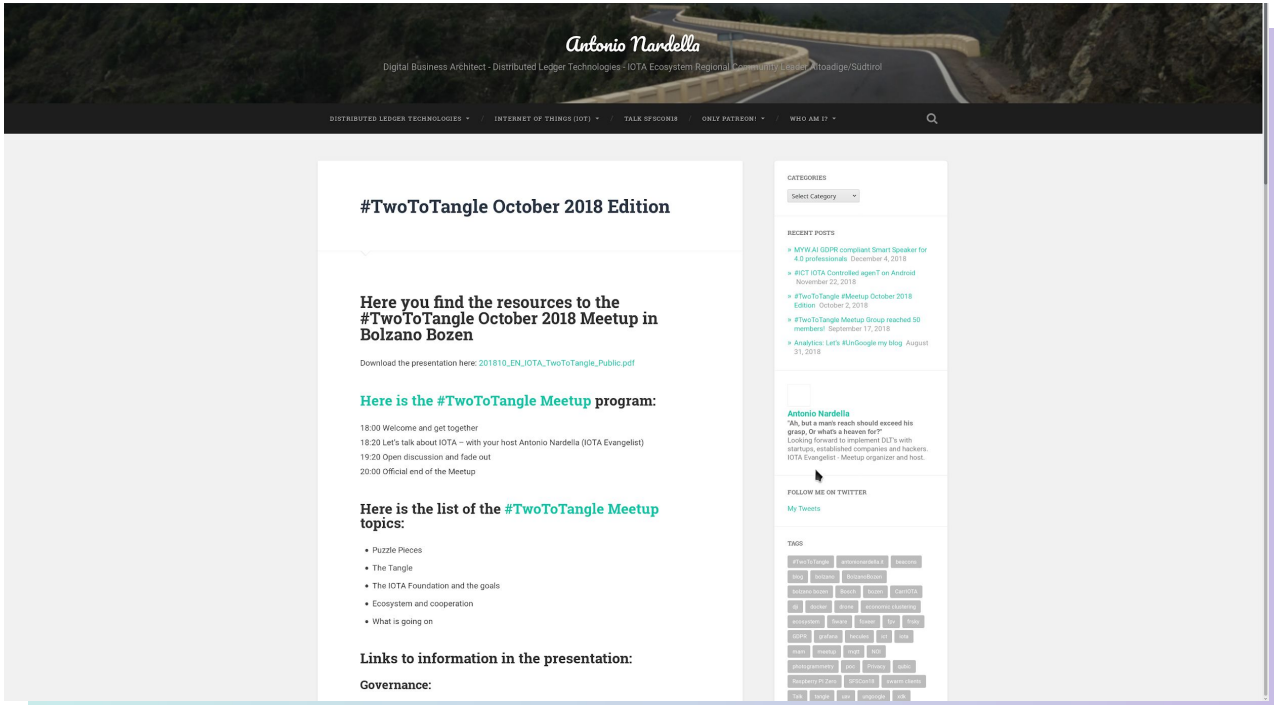
Let’s innovate with

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 antonionardella.it



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

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