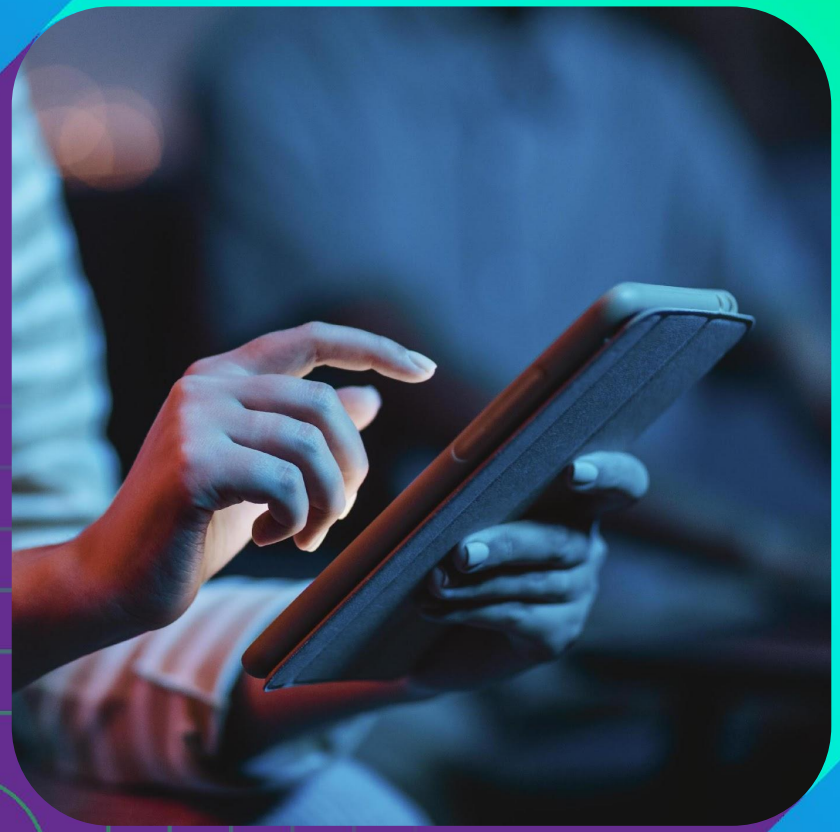
PROJETO ILIADA

Blockchain
em evolução.



Blockchain: The New Internet of Trust - ILIADA Project

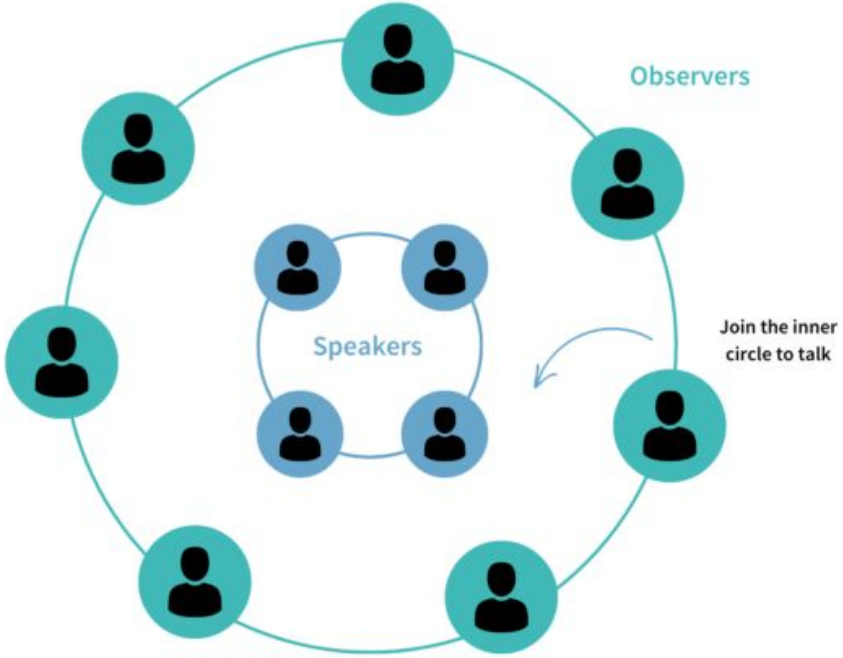
Fishbowl

Leandro Ciuffo, Larriza Thurler e Luiz Folly
(RNP - Brazilian NREN)

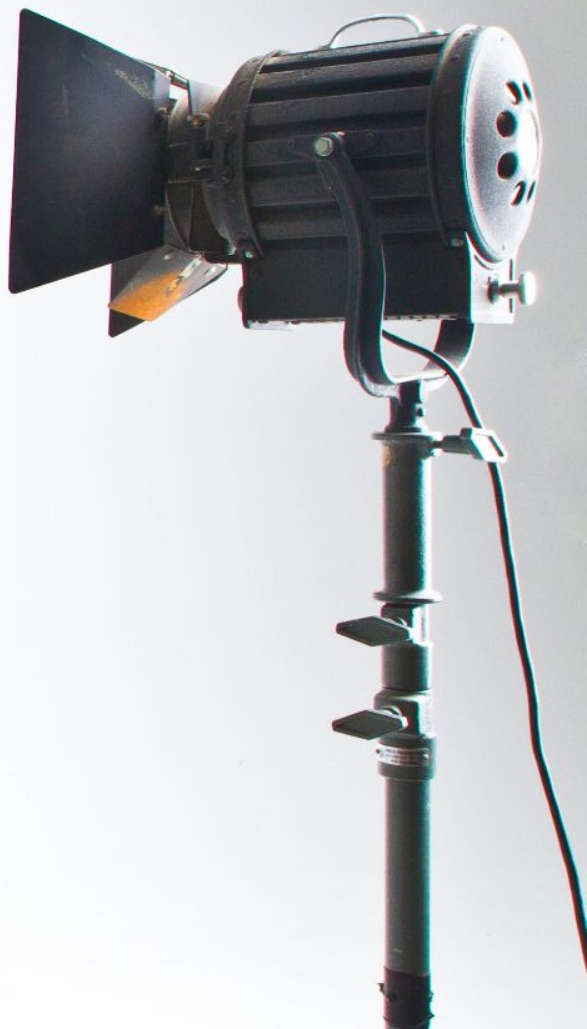
AoIR

What is a Fishbowl session and how it works?

1. The moderator presents the topic and defines the basic rules.
2. Up to four people occupy the central chairs, leaving one chair vacant. Only those in these chairs may speak.
3. Those seated in the outer circle may indicate that they wish to contribute by taking the free chair in the center. When this happens, one of the current participants in the center gives up their seat and moves to the outer circle, maintaining an active rotation dynamic.
4. Anyone may enter or leave the discussion throughout the session, always respecting this flow.



Setting the scene….



Main Blockchain Characteristics

Decentralization

Blockchain distributes data across multiple nodes, eliminating central control and enhancing resistance to censorship.

Immutability

Once recorded, data cannot be altered or deleted, ensuring integrity and reliability of information.

Transparency

Public blockchains allow open viewing of records promoting auditability and trust among users.

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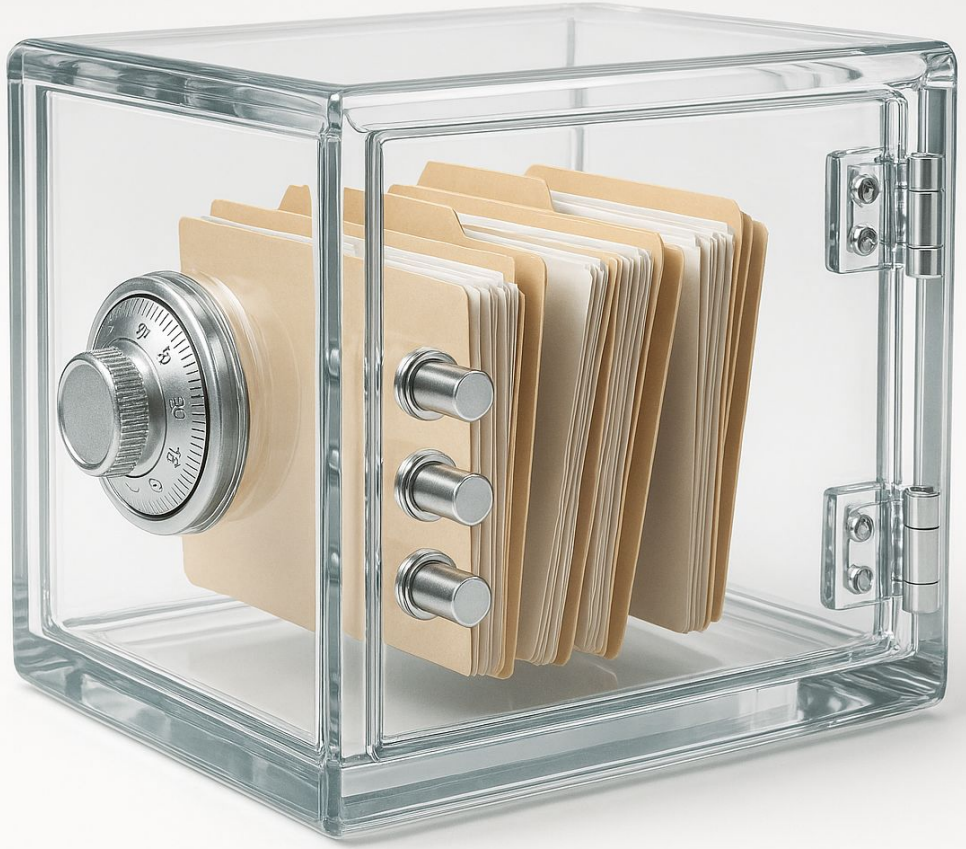

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Main Blockchain Characteristics

Chronological Transaction Records

Blocks are added sequentially, enabling traceability and auditing of transaction history over time.

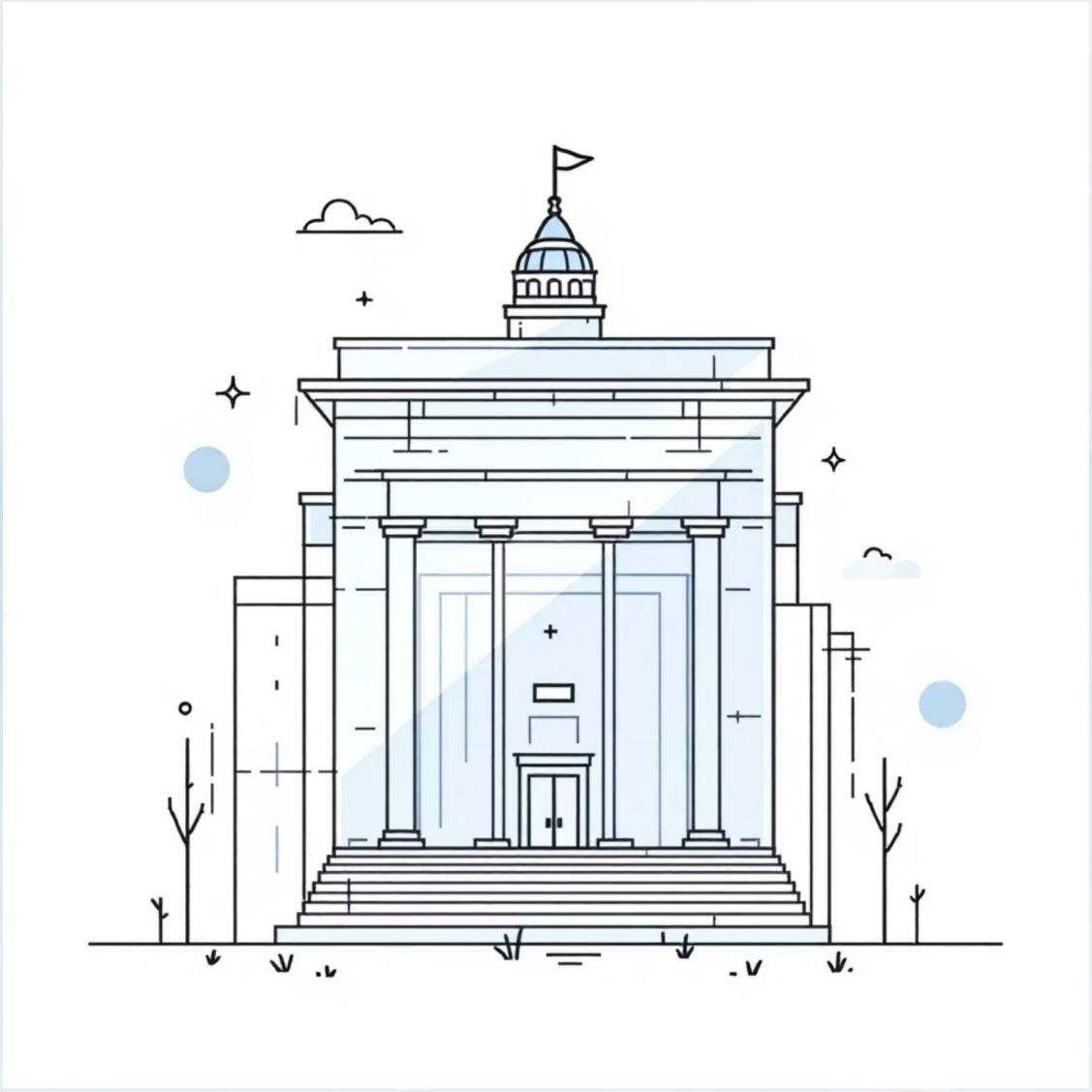
Smart contracts

Self-executing smart contracts automate actions when conditions are met, supporting complex blockchain applications.

This architecture fundamentally challenges traditional power structures where centralized authorities control information flow and access.

While most people associate blockchain with cryptocurrencies like Bitcoin, its applications extend far beyond finance.

Transparency and Accountability in Democracy



Real-Time Public Auditing

Citizens gain the ability to audit government activities in real-time, dramatically increasing trust and accountability.

Every transaction becomes traceable, every public money trackable.

Real-World Example: Ukraine has implemented blockchain solutions to monitor international donations, ensuring transparency during critical times and building public confidence in democratic institutions.

Resistance to Manipulation and Information Fraud

Immutable Historical Records

Once information is recorded on the blockchain, it cannot be retroactively altered or deleted. This prevents revisionist history and **protects against the manipulation of news archives.**

Combating Censorship

Decentralization makes it extremely difficult for centralized actors—whether governments, corporations, or malicious entities—to censor or manipulate information flows.

Collaborative Fact-Checking

Blockchain serves as infrastructure for trustworthy, collaborative verification platforms where fact-checks are permanently recorded and publicly auditable.

Breaking Big Tech's Data Monopoly

> Big tech companies—Google, Meta, Amazon, Apple, Microsoft, and X—concentrate enormous power over user data, controlling algorithms that influence opinions, consumption, and political decisions. They violate privacy while favoring extremist and authoritarian narratives worldwide.

Did you know blockchain can help combat this lack of control and sovereignty over data?

- Users regain ownership of their personal information
- Decentralized social platforms eliminate algorithmic manipulation
- Transparent data usage replaces opaque corporate practices
- Power shifts from corporations back to citizens

Challenges and Limitations to Consider (1/2)

Early-Stage Technology

Widespread implementation requires significant technical infrastructure and standardization.

Complexity of User Interfaces

Education Gap

Tech literacy is essential to maximize blockchain's benefits.

Shortage of skilled developers

Challenges and Limitations to Consider (2/2)

Regulatory

Jurisdictional Uncertainty

Blockchain operates across borders, but laws vary widely by country.

Data Privacy and Protection

Blockchain’s immutability may conflict with laws like the GDPR, which grant individuals the “right to be forgotten.

Environmental Concerns

Regulators are beginning to consider sustainability and carbon impact in blockchain policy.

PROJETO ILIADA

Blockchain
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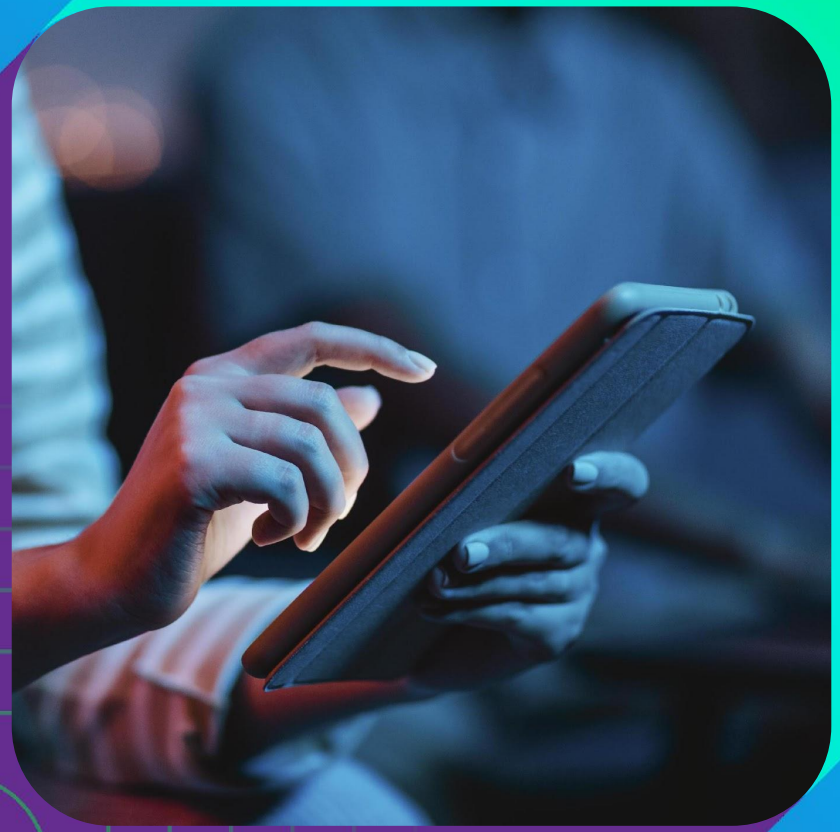


The New Internet of Trust

The role of the ILIADA Project

https://iliadablockchain.org.br

Key areas of the ILIADA Project

1

Testbed laboratory for blockchain technologies and applications

helps accelerate innovation and reduce the education gap

2

Blockchain application development in strategic domains

helps discover new valuable applications far beyond finance

3

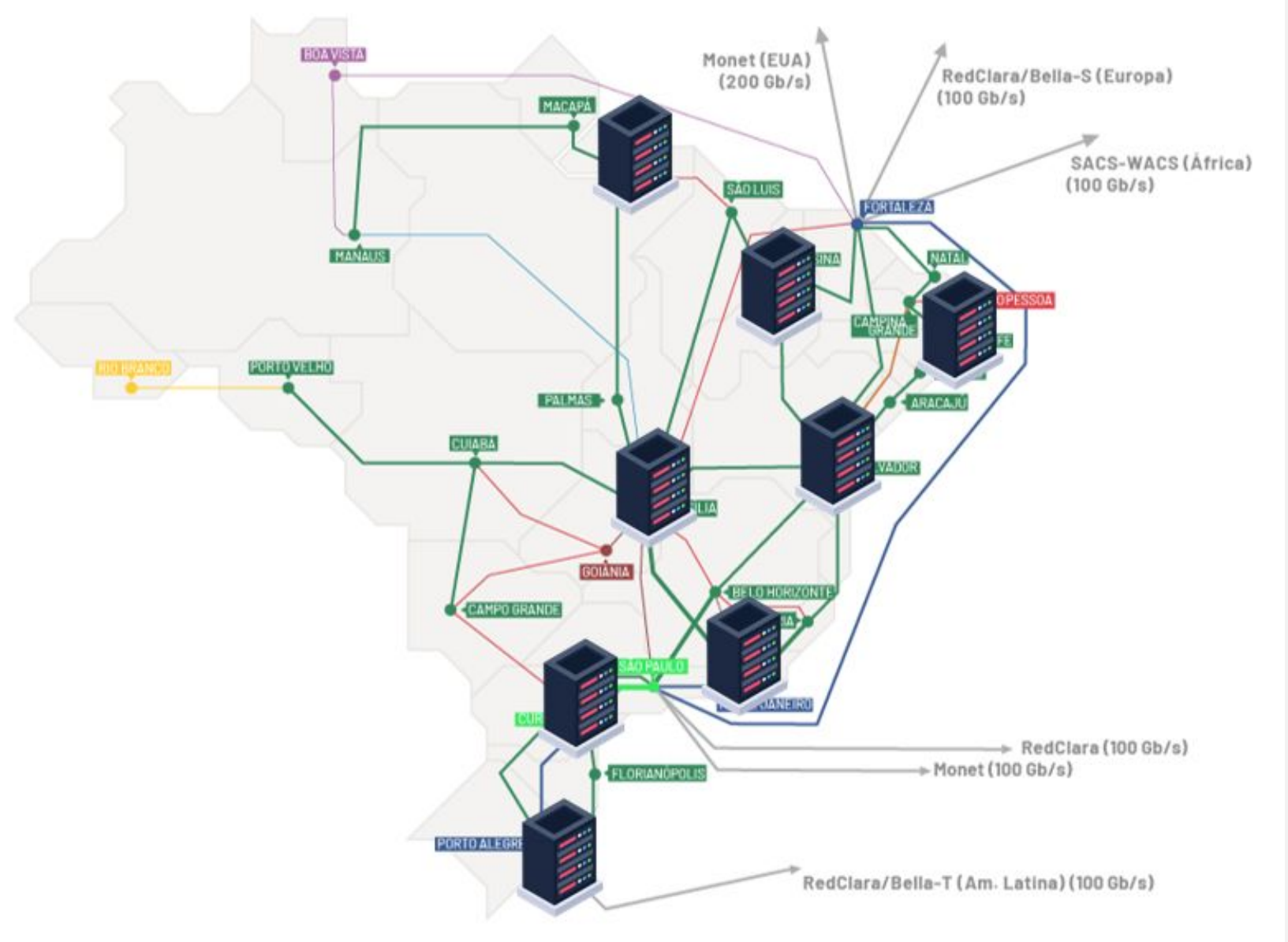
Sharing knowledge and use cases

[helps spread the value of blockchain]

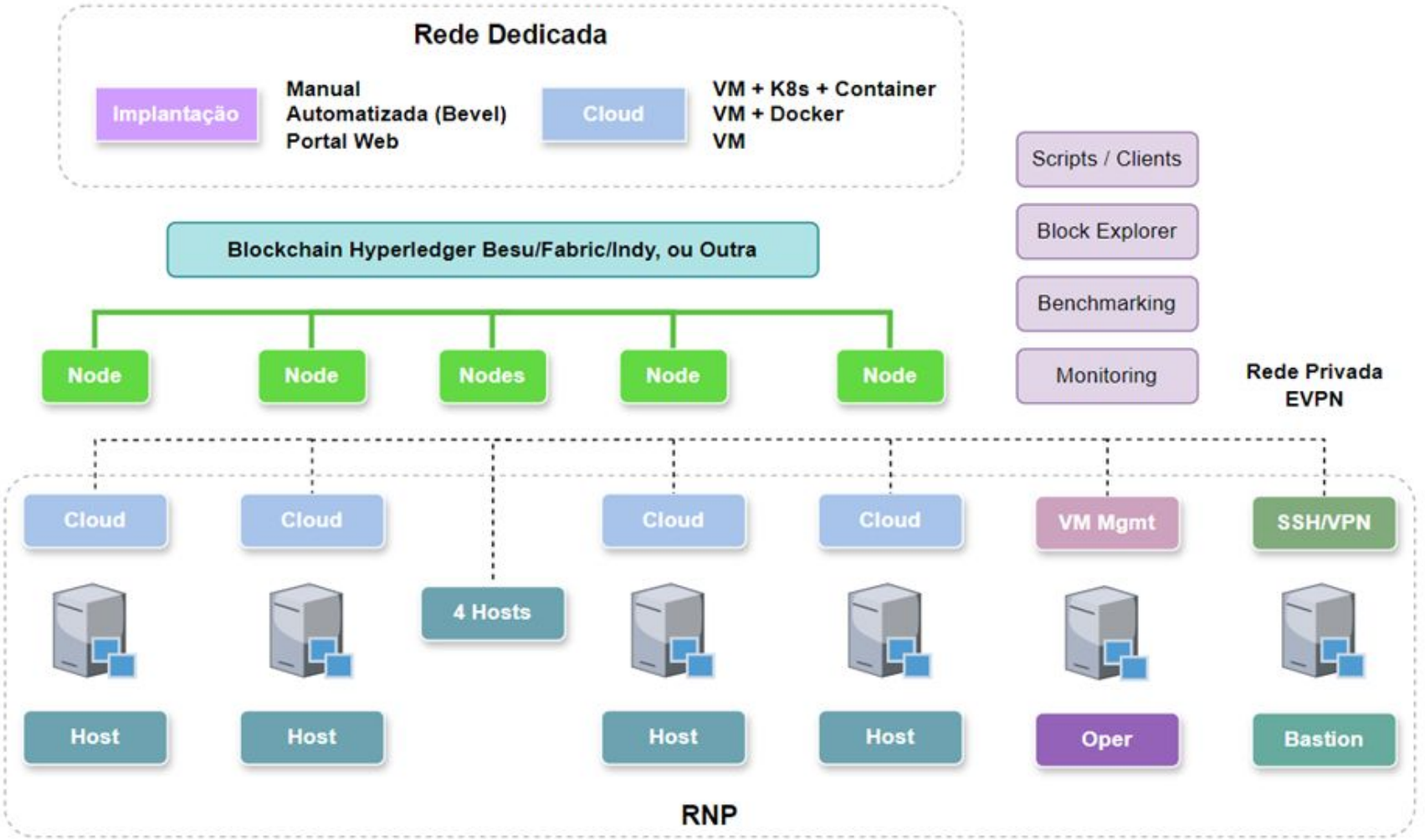
Testbed on the RNP - Brazilian NREN network

8 geographically distributed servers:

PoPs RNP ILIADA	
PoP (Point of Presence)	**City**
PoP-BA	Salvador
PoP-DF	Brasília
PoP-PE	Recife
PoP-PI	Teresina
PoP-PR	Curitiba
PoP-RJ	Rio de Janeiro
PoP-RN	Natal
PoP-SC	Florianópolis



ILIADA Testbed – Environments for Dedicated Networks



- **Exclusive dedicated environment**
- **Researcher-led governance**
- **High degree of customization**
- **Infrastructure provided by RNP**
- **Blockchain deployed by the researcher or by the ILIADA team**

Environments

Equipments

Blockchain em evolução.

ILIADA - Platforms

Open source Ethereum client

Hyperledger BESU

- Ethereum – Permissioned EVM
- Smartcontracts in Solidity
- RBB – Brazil Blockchain Network
- DREX pilot – pilot of Brazil's central bank digital currency (DREX)

Modular architecture and Privacy

Hyperledger FABRIC

- Private channels
- Smart contracts in NodeJS, Go, Java
- Government and Academia

Tools and Libraries for digital identities

Hyperledger INDY

- DDI
- No native smart contracts

Blockchain em evolução.

EasyLedger Portal available to the user: create your own blockchain network

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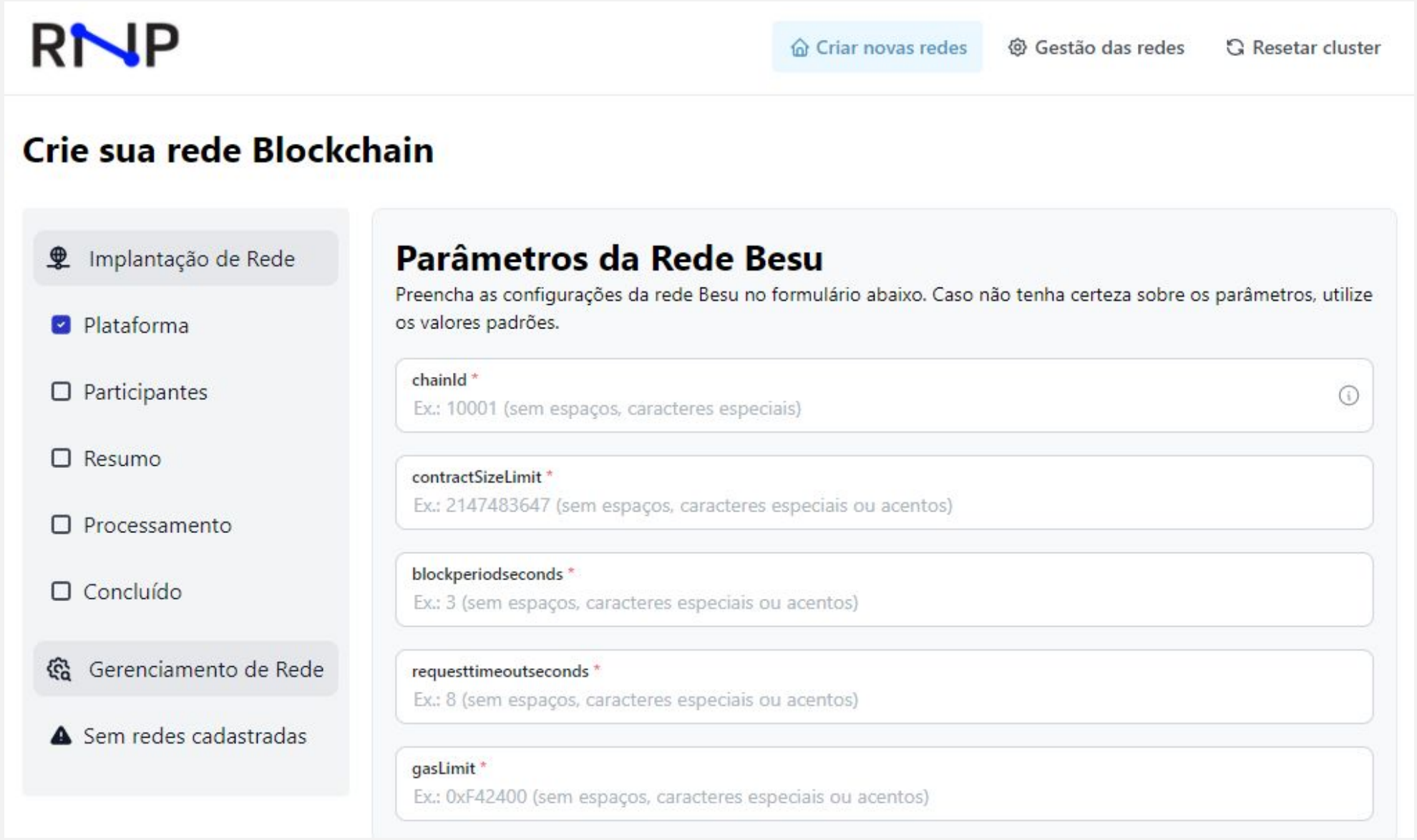


Creation of a permissioned network for R&D activities in Digital Identity (DDI) with other ICTs

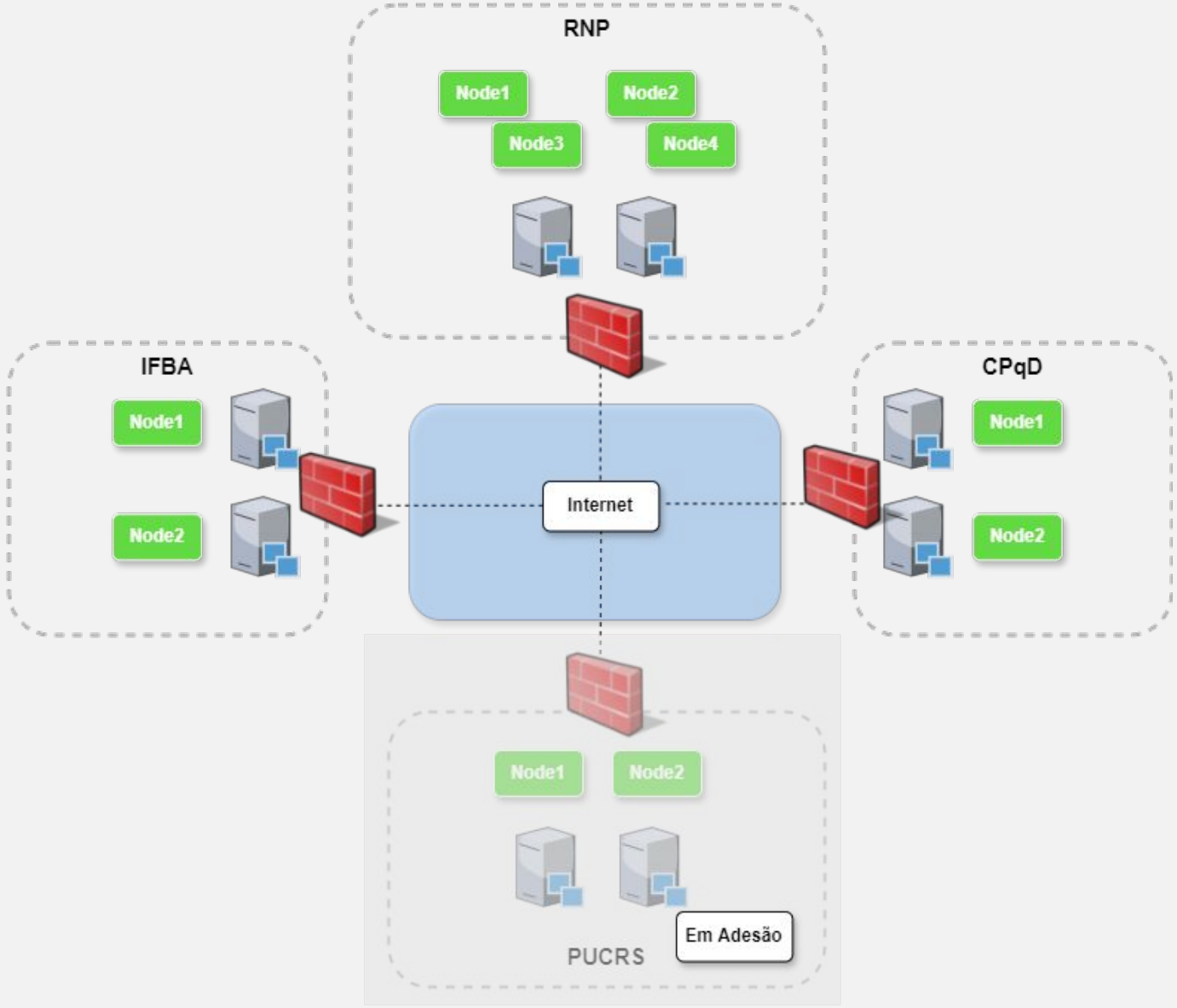
Rede IDD Besu v1.3

- Hyperledger Besu – PoA QBFT
- IDD Smart Contracts
- Prometheus Monitoring
- Block Explorer
- Configuration similar to the Brazil
- Blockchain Network (RBB)

  Currently with 8 nodes:
- 4 RNP nodes
- 2 CPQD nodes
- 2 IFBA nodes

In the process of joining:

- 2 PUCRS nodes



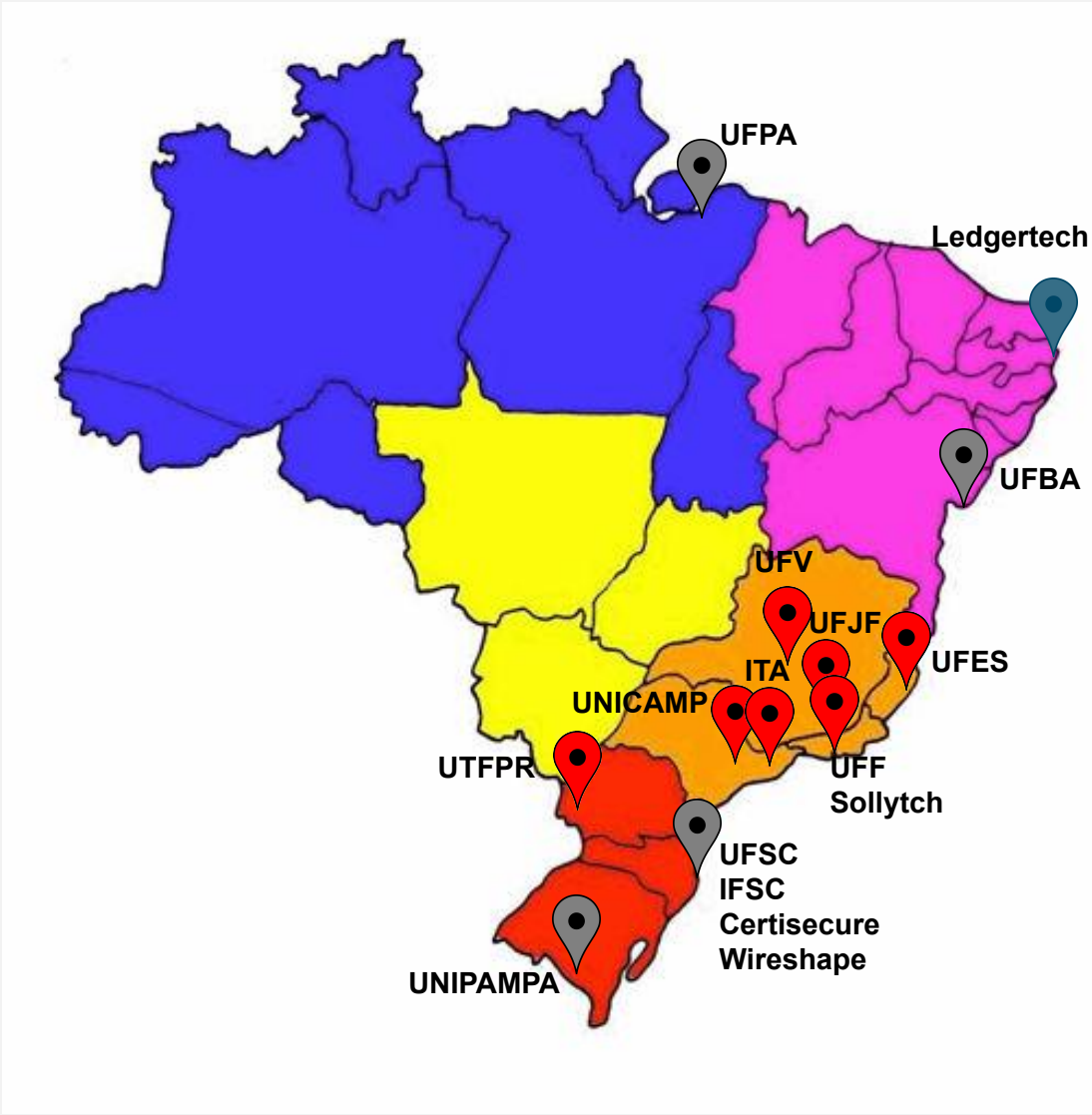
Total RD&I initiatives with universities and startups

13 Working Groups currently active

- 8 WGs selected in 2024 for the development of technological components to evolve existing blockchain platforms
- 5 WGs focused on developing applications in strategic sectors to demonstrate the value of blockchain technology

4 Startups

- Development of Proofs of Concept (PoCs) to enhance existing solutions using blockchain and to demonstrate the value of adoption in market-oriented applications



RD&I in Technological Components

Developments launched in November 2024 through partnerships with universities.

Research Topic	Researcher's institution
Auditability of access logs and paths	UFES
Development of Post-Quantum Cryptography algorithms and benchmarks	UTFPR
DLT for shared resource management	ITA
Interoperability between blockchains	UFJF
Privacy and auditability through machine unlearning techniques	UFF
Decentralized Digital Identity for the transition from a federated to a decentralized model	UFF
Implementation of Post-Quantum Cryptography algorithms and consensus protocols	UNICAMP
Vulnerability assessment in smart contracts	UFV

RD&I in blockchain applications

Developments in partnership with universities and startups

Economic Sector / Area of Development	Partner
Agriculture / Tokenization of Carbon Credits	UFBA
Public Administration, Defense, and Social Security / Chain of custody of digital evidence using blockchain infrastructure	UFPA
Agriculture / Tracking of Family Farming	UNIPAMPA
Education / Identity management and authentication in WiFi networks	UFSC
Education / Application of VCs and DIDs for Identity and Access Management	IFSC
Finance / Trading of tokenized assets	Wireshape
Education / Digitalization of academic collections	Certisecure
ICT / NFT models of adjustable life cycles	LedgerTec
Agriculture / Traceability of soil residue chemistry	Sollytch

To kick off the debate about RD&I

Considering your domain of expertise, do you have any ideas for applying blockchain technology that you would like to share?

To kick off the debate about RD&I

What concrete mechanisms will enable ILIADA Project to scale R&D collaboration across academia, industry and government — and which institutional risks or inequities must we mitigate to keep it sustainable?

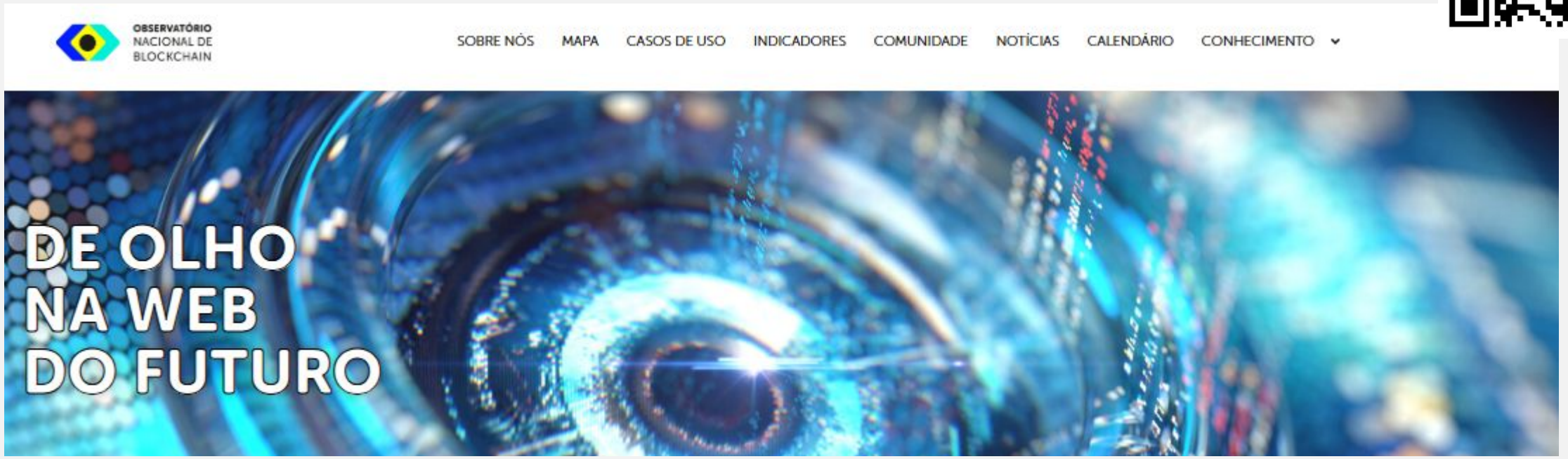
What are your thoughts?

https://
observatorioblockchain.org.br

OBSERVATÓRIO
NACIONAL DE
BLOCKCHAIN

PROJETO ILIADA RNP cpqd Softex MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÃO GOVERNO FEDERAL BRASIL UNIÃO E RECONSTRUÇÃO

Brazil's National Blockchain Observatory



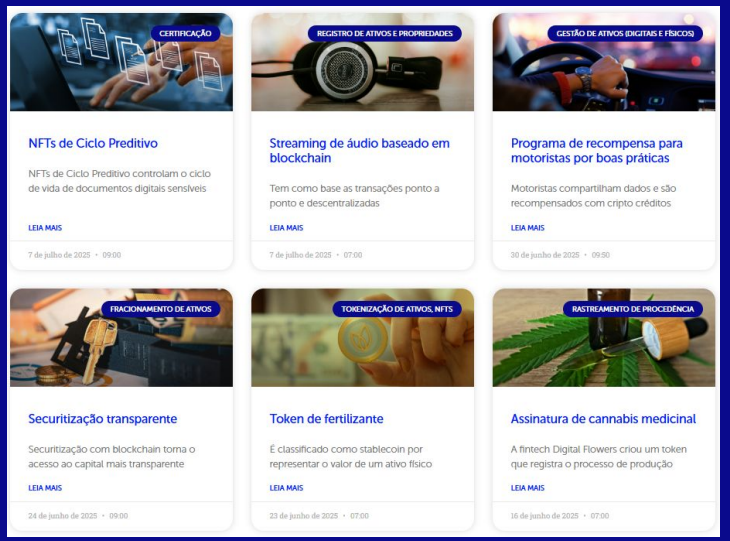
Brazilian observatory for monitoring and analyzing blockchain's ecosystem

A reliable source of information that help advance the debate about blockchain technology in Brazil.

A hub for innovation and intersectoral dialogue

A website that fosters exchange and cooperation between academia, government, and the private sector, promoting the topic across multiple formats (indicators, publications, maps, etc.) and engaging the community around the challenges and opportunities that drive digital transformation.

- Scientific Production Indicators Panel
- Use Case Library
- Initiatives Map
- Events Calendar
- Articles, News & Publications



To kick off the debate about dissemination of knowledge and engagement

The Observatory has a Community of Experts, a trusted environment for dialogue, sharing of best practices, and collective learning. What are the best ways to keep such communities inclusive, diverse, and impactful?

What are your thoughts?

Thank you

PROJETO ILIADB

cpqd

RNP

MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÃO

GOVERNO FEDERAL BRASIL UNIÃO E RECONSTRUÇÃO

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