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ITU Workshop on Distributed Ledger Technology Scalability and Interoperability
Geneva, Switzerland, 2 August 2019

JELURIDA

THINK BLOCKCHAIN. EXPERIENCE BLOCKCHAIN.

ITU

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Functioning Solutions to DLT and non-DLT Interoperability

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WHAT IS INTEROPERABILITY

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Interoperability: the ability of computer systems or software to exchange and make use of information.

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WHY DOES IT MATTER WITH BLOCKCHAIN?

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DLT and blockchain protocols are not inherently compatible with one another or with legacy systems, resulting in friction or incompatibility when dealing with other businesses.

Furthermore, some smart contract platforms like Ethereum, give you the complete flexibility to custom code your own processes on the blockchain, but since everyone is custom coding their own functionalities the resulting tokens or digital assets are not necessarily compatible with others in the same ecosystem. Hence, for example, efforts to standardize Ethereum tokens through ERCs.

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TYPES OF INTEROPERABILITY

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Per ITU-T FG DLT D1.1:

Inter ledger interoperability – ability of two or more distributed ledger protocols to exchange information and to use information that has been exchanged with one another.

Intra ledger interoperability - ability of two or more tokens within distributed ledger platform to operate with one another.

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OBSTACLES FOR DLT MAINSTREAM ADOPTION

Energy Waste

Scalability

Blockchain Bloat

Transaction Fee Payment

Smart Contracts Are Cumbersome

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ENVIROMENTALLY SUSTAINABLE:

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PIONEERS ON PROOF OF STAKE

Nxt Blockchain

nxt

- Born in 2013
- First blockchain coded from scratch after Bitcoin
- First **100% Proof-of-Stake** blockchain using 99% less energy than Bitcoin’s Proof-of-Work.
- Built in Java + API

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SCALABLE ARCHITECTURE

A new parent-child chain architecture that addresses the most relevant problems of the sector.

Parent chain that maintains the Proof of Stake consensus of the network

Child chains implementing decentralised applications

- **Scalability problem**: Allows higher capacity of transactions
- **Bloat problem**: Remove transactions when they are no longer needed

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ONE PARENT CHAIN AND MULTIPLE CHILD CHAINS OR VIRTUAL BLOCKCHAINS

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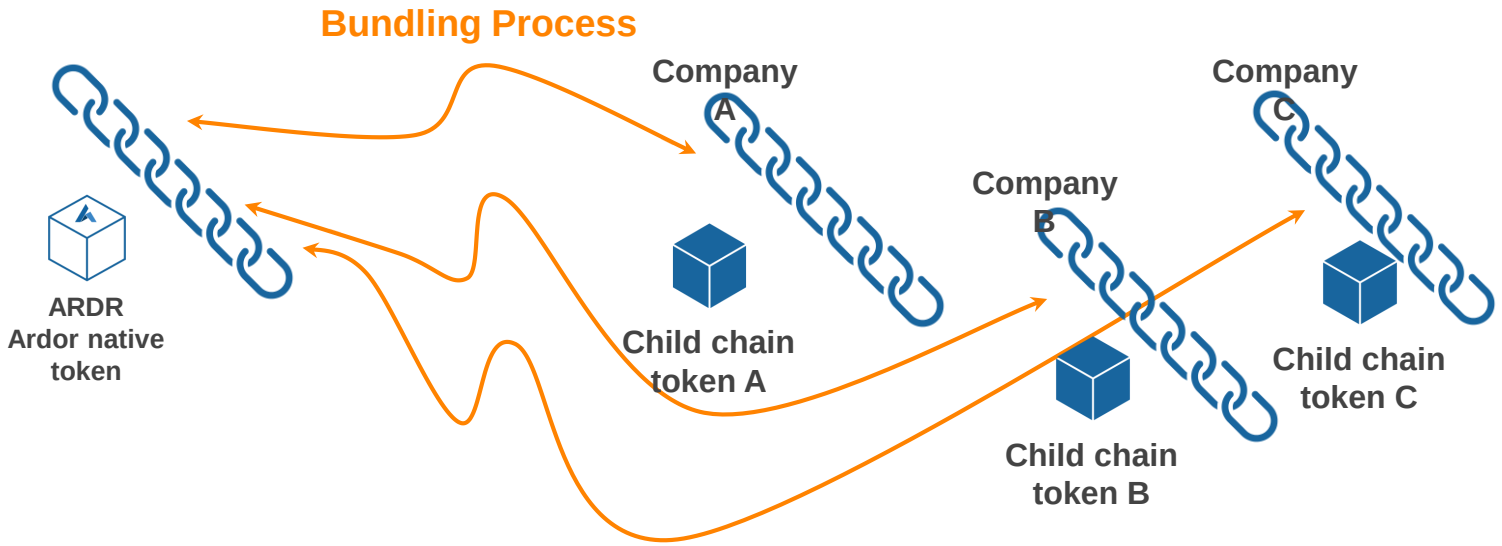
ARDOR PARENT CHAIN

ARDOR CHILD CHAINS
Companies building DAPPS



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ARDOR BUNDLING ALLOWS CHILD CHAINS TO ACCESS PoS CONSENSUS

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bundling

/ˈbʌnd(ə)lɪŋ/

noun

1. the selling of different items, typically of hardware or software, together as a package.
   "the bundling of the browser and the operating system"

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ARDOR BUNDLING ALLOWS SCALABILITY

YES

PROOF OF STAKE CONSENSUS

1 TX

This packaging process is called “bundling”.

100 TX

NO

PROOF OF STAKE CONSENSUS

Company

ARDOR PARENT CHAIN

ARDOR CHILD CHAIN

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ARDOR PRUNING KEEPS THE DATABASE SMALL

Pruning is a feature that **enables the removal of transactions** while maintaining the network security and the cryptographic proof that these transactions existed in the past.

REMOVING DATA

CRYPTOGRAPHIC PROOF
THAT THE DATA EXISTED

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PRE-PROGRAMMED SMART CONTRACTS ALLOWS LAUNCHING dAPPs WITHOUT BEING A BLOCKCHAIN DEVELOPPER

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Built-in Features

MESSAGING

ACCOUNT PROPERTIES

DATA CLOUD

PHASED TRANSACTIONS

ACCOUNT CONTROL

Built-in Smart Contracts

ASSET EXCHANGE

VOTING SYSTEM

TOKENS

MARKETPLACE

PRIVACY

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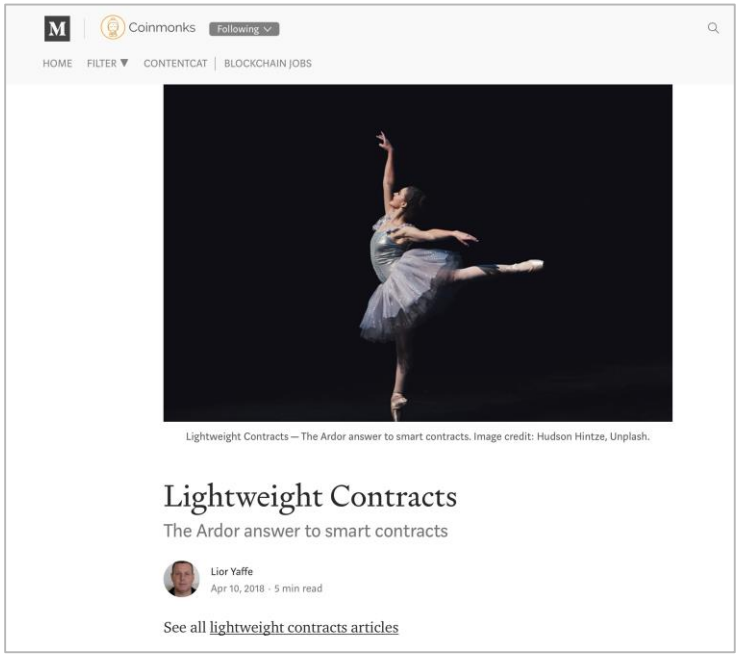
LIGHTWEIGHT SMART CONTRACTS GIVE YOU THE POWER OF TURING COMPLETE dAPPs

- Code is stored in the blockchain
- Processed only by some nodes
- Stateless
- Written in Java
- Turing-complete



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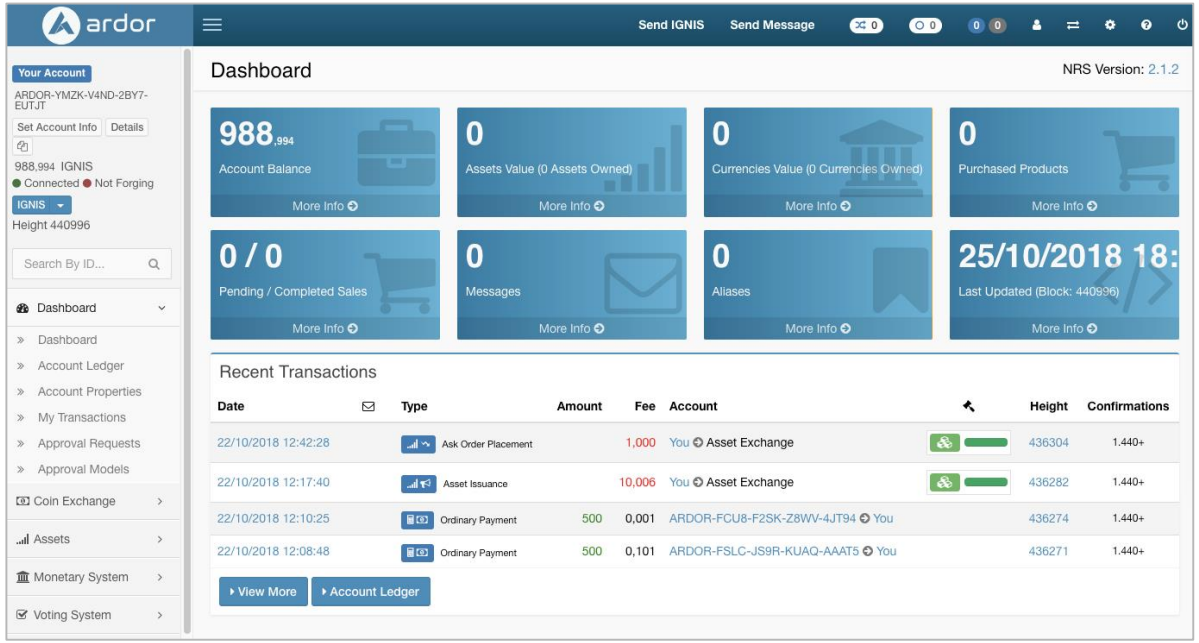
Ardor has a complete software client (wallet)



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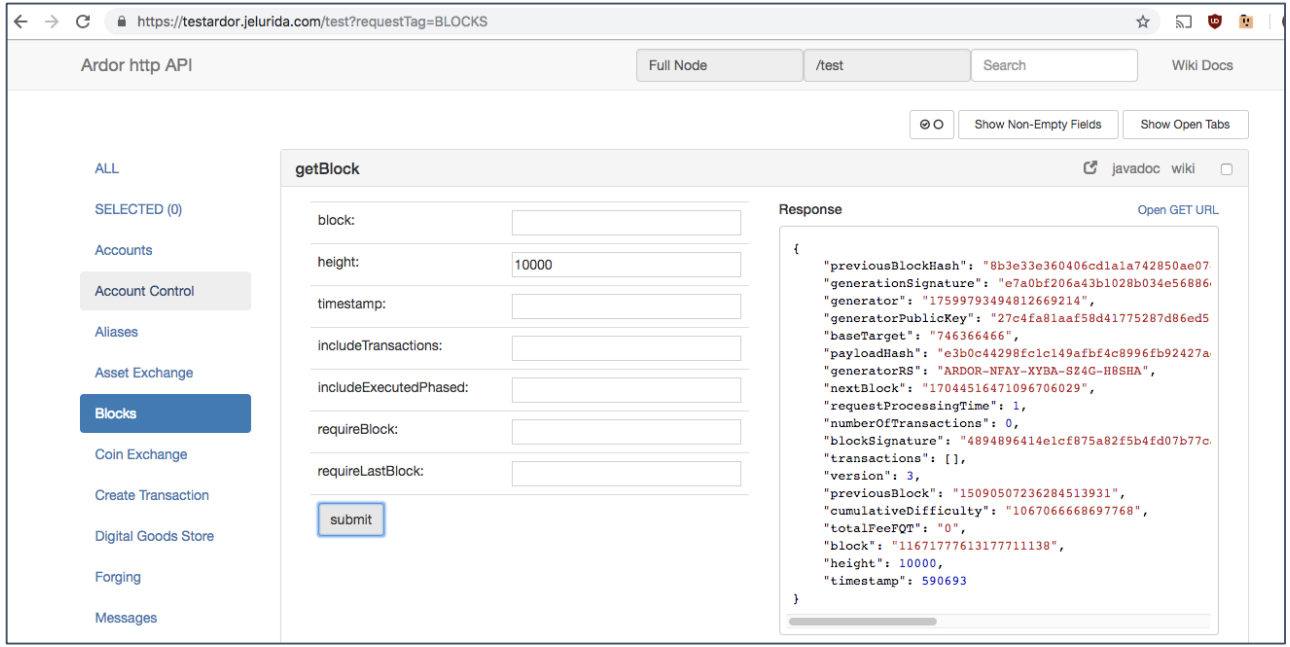
Ardor has a complete API for rapid integration



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INTEROPERABILITY

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SOLUTION TO INTEROPERABILITY
Intra chain solutions

-Pre-code dozens of template smart contracts that mirror common business processes and build them into the core of the platform and make available with simple APIs

-Allow users to code their own lightweight smart contracts as a stateless automation layer on top of the APIs

-All underlying polls, assets, monetary systems, messaging applications, etc are inherently compatible but can be permissioned or permissionless as desired

-The result is an ecosystem of child chains and digital assets that can interact with one another seamlessly without any custom coding

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INTEROPERABILITY

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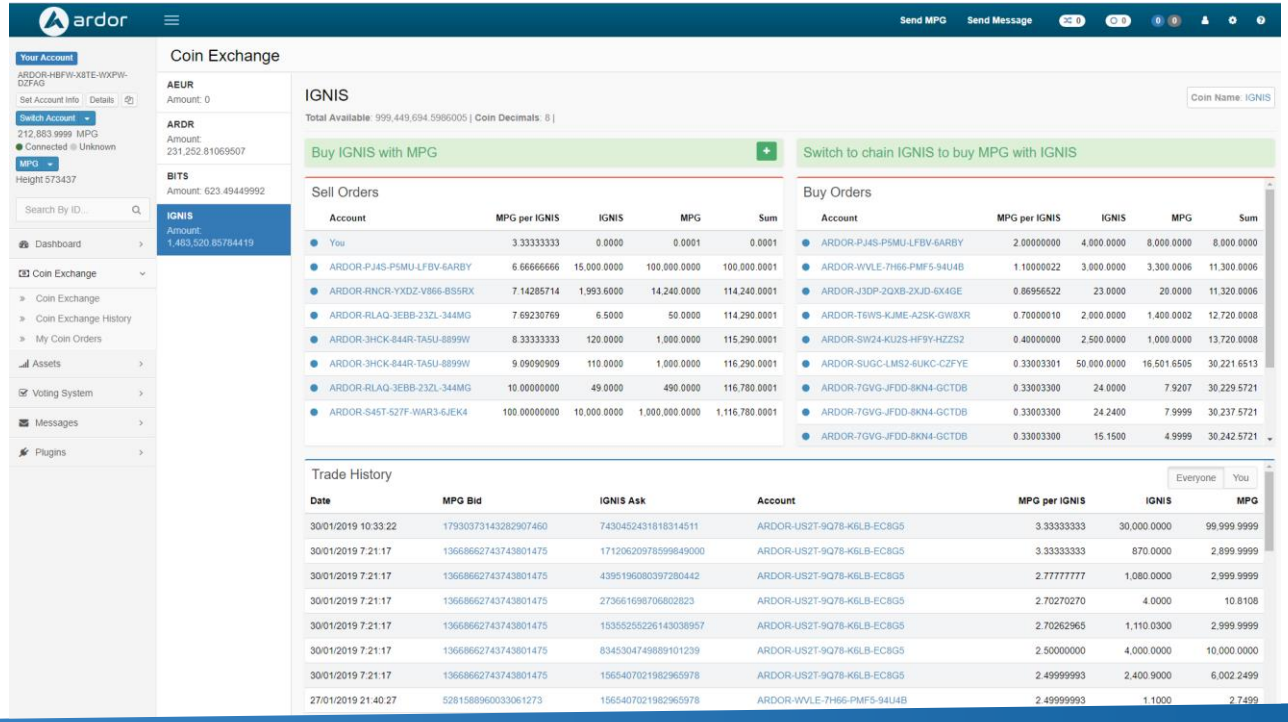
Built-in decentralized coin exchange



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SOLUTION TO INTEROPERABILITY
Inter chain solutions

-Lightweight Smart Contracts execute in the Java Virtual Machine of the desired nodes, they do not participate in the consensus.

-This allows the use of existing libraries to interact with external oracles or other blockchain platforms.

-Deploying a blockchain connector for generating new addresses and token atomic swaps as a java add-on is quite simple.

-Each blockchain connector could be deployed in a different child-chain

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LET'S TALK!

Francisco Sarrias (fs@jelurida.com)
@fsarrias