LUKASZ MUSIAL

SCALA-FRIENDLY BLOCKCHAIN DEVELOPMENT

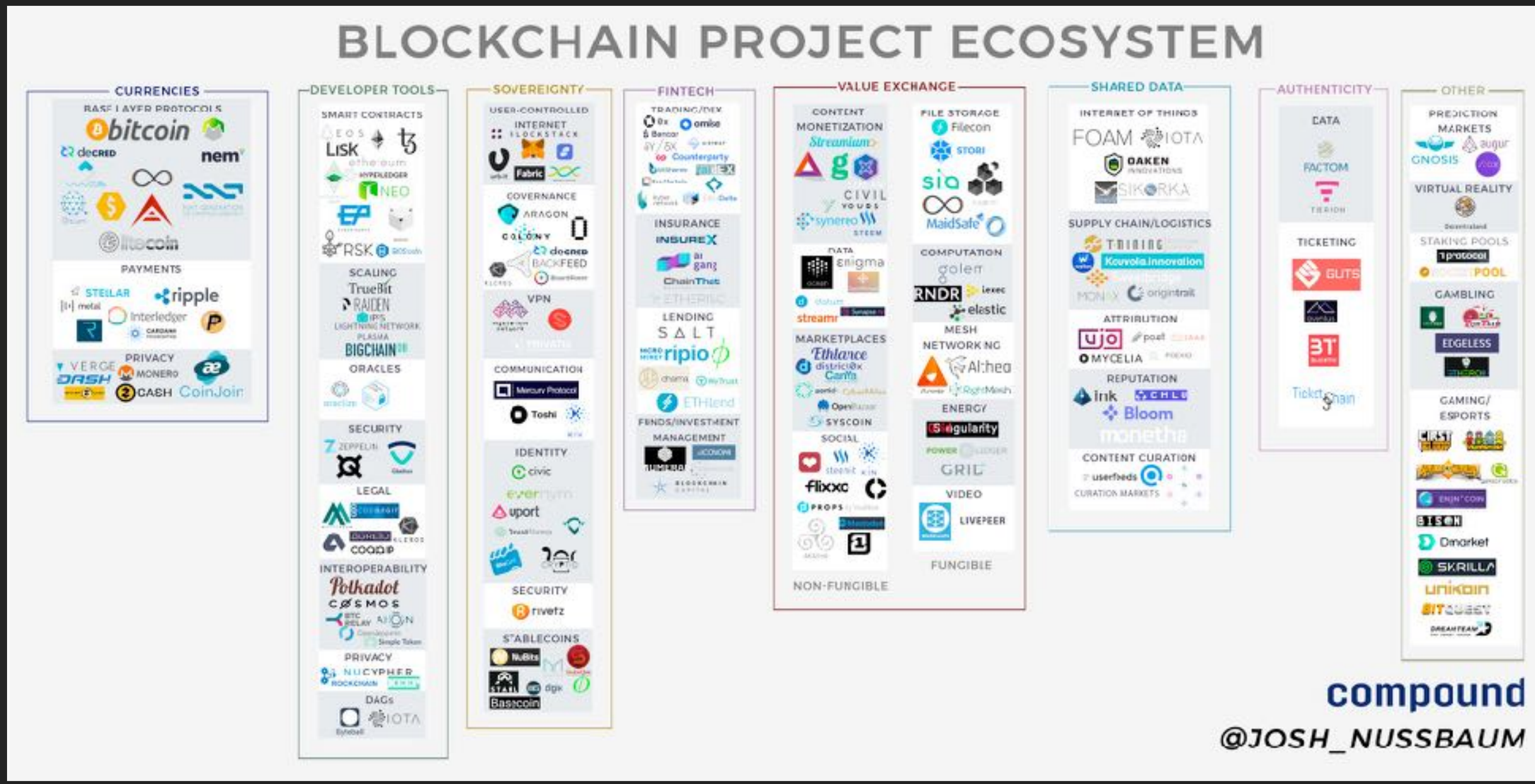
SO, WHO ARE YOU?

- Scala developer in investment banks for 6 years
- Solidity developer - project awarded in a Hackathon
- Finalist of Blockchain competition in Cryptowalley (Zug)
- Advising startups on blockchain strategy

WHAT DOES IT MEAN – DEVELOPING ON BLOCKCHAIN?

- Developing clients
  - Interact with the network from a ‘traditional’ medium
- Developing nodes
  - Become part of network, expand functionality to directly support your needs, help research protocols
- Developing contracts
  - Use the global VM to create your revolutionary distributed applications (see: Cryptokitties)
  - contract + client = DApp

WORLD OF BLOCKCHAINS



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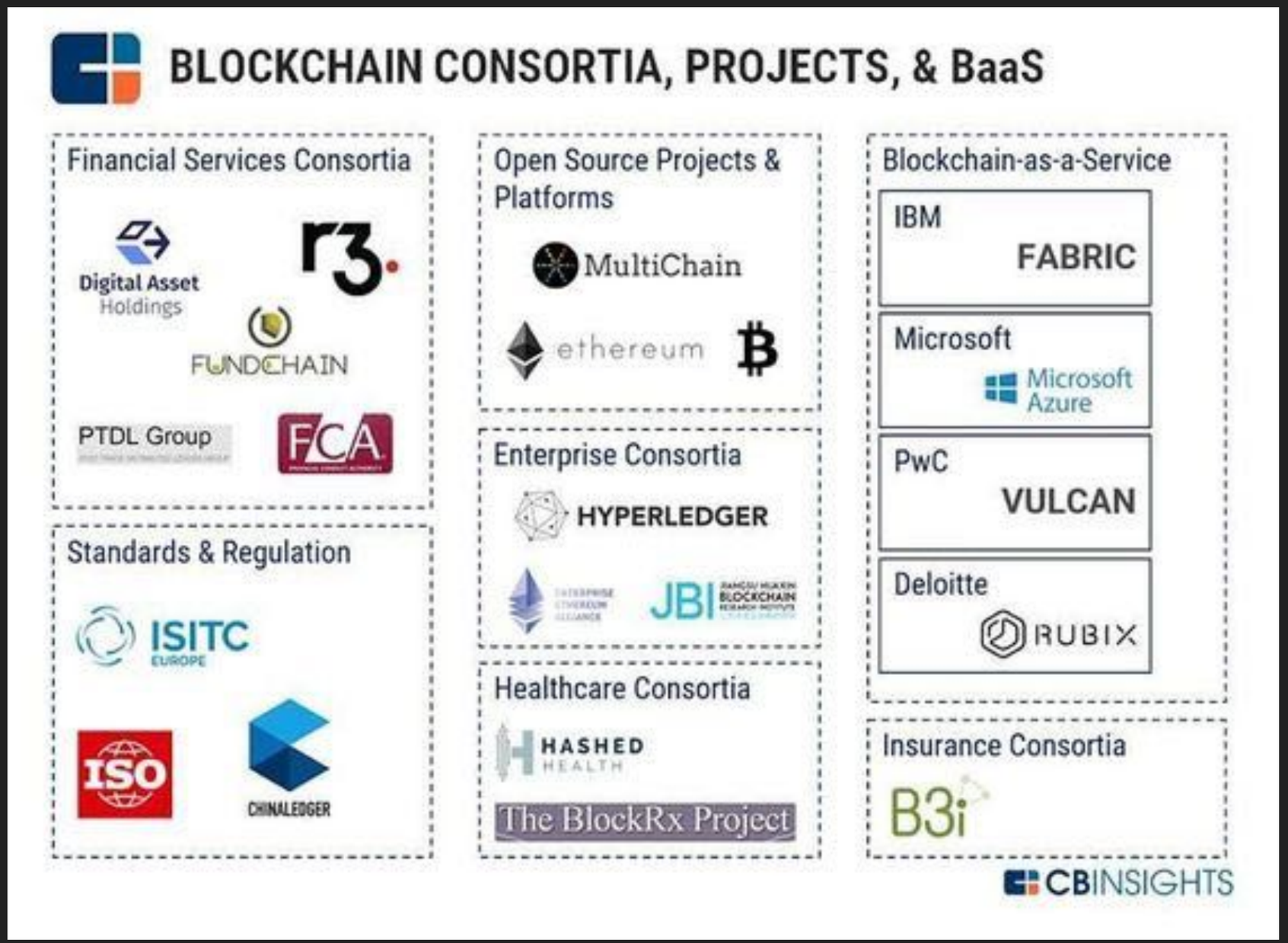

WHAT CAN A SCALA DEVELOPER DO?

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ETHEREUM

- Cryptocurrency
- Distributed Virtual Machine
- Enterprise forks (e.g. Quorum)
- Major nodes written in GO (geth) or C++ (Parity)
- Implementations available in Java (EthereumJ) and C# (Nethereum)
- Main client library in Javascript (web3), but has wrappers in Java (web3j) and Scala (web3j-scala)
- Mantis, written in Scala, for Ethereum Classic
- Smart contracts written in Solidity (or Serpent, Viper, LLL)

CORDA

- DLT, not a cryptocurrency
- Purely enterprise (private) distributed ledger (not a blockchain in a strict sense)
- Java/Kotlin client
- Kotlin node
- Java/Kotlin smart contracts

ETHEREUM–CORDA DIFFERENCES

- Contracts on Ethereum are deployed to every node in the network and run on every node. Corda contracts run on dedicated nodes.
- Everyone can deploy to Ethereum. Corda requires explicit authorisation on the node.
- Blocks are generated using PoW on Ethereum and all nodes compete for a prize. Corda has just dedicated Notaries.
- Consensus validation is confirmed by the whole Ethereum network. On Corda only by parties directly involved.
- Ethereum 15 TPS, Corda 170 TPS

WEB3J-SCALA EXAMPLE

- Generating account
- Transferring Ether between accounts
- Writing and deploying a contract
- Interacting with a contract

ETHEREUM DEVELOPMENT GOTCHAS

- You will see Revert and Out of Gas - a lot
- Debugging smart contracts is still a dark art
- Watch out for rookie mistakes - and ways contracts can be exploited: https://medium.com/@weka/announcing-the-winners-of-the-first-underhanded-solidity-coding-contest-282563a87079
- Data and format conversions can be dangerous (overflows!)
- Consensus algo has an impact on data reliability - your local or even shared test network might use a different one than mainnet

CORDA EXAMPLE

- Setting up nodes
- Corda contracts (Java, Kotlin)
- Connecting to node from Java, Scala(ish)

USEFUL LINKS

- https://github.com/mslinn/web3j-scala Web3j-Scala
- https://github.com/web3j/web3j Web3j
- https://github.com/ethereum/ethereumj EthereumJ
- http://truffleframework.com/ Truffle suite for DApps development (Javascript-friendly)
- https://github.com/trufflesuite/ganache-cli Simple test node
- https://github.com/ethereum/go-ethereum/wiki/geth (with Puppeth)
- https://remix.ethereum.org/ Online Solidity Compiler
- https://plugins.jetbrains.com/plugin/9475-intellij-solidity Intellij plugin for Solidity
- https://metamask.io/ Browser plugin for using your Ethereum account with DApps
- https://masterthecrypto.com/ethereum-what-is-gas-gas-limit-gas-price/
- https://ethereum.stackexchange.com/questions/11228/what-is-an-event
- https://docs.corda.net/clientrpc.html Corda Client API
- https://github.com/bitcoin-s/bitcoin-s-core Bitcoin node in Scala
- https://github.com/ACINQ/eclair Lightning network node in Scala

QUESTIONS – AND STAY IN TOUCH

Q&A

Thanks for listening!

- https://www.linkedin.com/in/lukaszmusial/
- https://github.com/docent666/scala-friendly-blockchain