

ThoughtWorks®

**TECHNOLOGY  
RADAR** *SUMMIT*

2017技术雷达峰会

---

洞察构建未来的技术和趋势

*5.13@Beijing*

ThoughtWorks®




# BLOCKCHAIN IN ENTERPRISE

刘尚奇

---

# AGENDA

---

-  **CHOOSE YOUR TECH**
-  **BUILD YOUR ARCHITECTURE**
-  **IMPROVE YOUR DEPLOYMENT**

# CHOOSE YOUR TECH

---

Choose your blockchain tech on your business



## APPLICATIONS & SOLUTIONS

<b>Brokerage</b> coinbase, BIT Pagos, Unocoin, BTCC, BITFINEX, CIRCLE, COINJAI, QUADRACX, safello, volobit, coinfloor, coins.ph	<b>Exchanges</b> BTER.com, coinbase, POLONIEX, BITSTAMP, bitcoin.de, GEMINI, meabt, BITSO, CAMP BX, PAYMIUM, Coinfeine, BitOasis, COINPRISM, coinsecure, coinsetter	<b>Soft Wallets</b> BLOCKCHAIN, airBitz, ARMORY, coinbase, xapo, bread wallet, Mycelium, MultiBit HD, coinprism	<b>Hard Wallets</b> TREZOR, Ledger Wallet, cose, keep key	<b>Investments</b> Grayscale, magnr, loanbase, string, Yuanbao, KOIBANK, Bitbond, WeiFund, WEALTHCOIN, lighthouse, BSAVE.IO, dangpu.com, BTCjam, CHROMA FUND
<b>Merchants</b> bitpay, Bitnet, Coinkite, PEY, Coinify, coinSnap, coinbase, CoinSimple, BIT Pagos	<b>Compliance</b> third key solutions, PROTUS, ELLIPTIC, CHAINALYSIS, Sig, BLACKSEER, CryptoCorp, GenityMind, VOGOGO, COINANALYTICS, BLOCKVERIFY, Merkle Tree	<b>Trading Platforms</b> COINIGY, HEDGY, OrderBook, tradewave, COINUT, AltOptions, COINNY, MAKER, BITNOMIAL, TERA EXCHANGE, BitMEX, Mirror, CRYEX, 1 Broker, TABTRADER, dx-markets, AlphaPoint, NOBLE MARKETS, HitFin	<b>Capital Markets</b> Chain, symbiont, NASDAQ Private Market, Digital Asset Holdings, clearmatics, itBit, TradeBlock, t0, R, epiphyte	<b>Money Services</b> CRYPTO PAY, cashila, ABRA, FUEL, tether, OBitwala, coins.ph, BITX, Simplex, BITAS, coinx, R-BIT, uphold, BitPesa, BlinkTrade, COINAPULT, MELOTIC, Glidera, bridge 21
<b>Financial Data</b> bitcoinity, CoinMarketCap, CryptoCoin, BRAVE NEW COIN, BlockJockey, UKFX TRADER, BitcoinWisdom, TradeBlock, CoinGecko, coin hills	<b>Payments</b> Align Commerce, About Payments, GO COIN, BLADE, GAZEBO.IO, GemPay, cuber, SETL.io, safe cash	<b>Payroll &amp; Insurance</b> paybits, bitWAGE, DYNAMIS	<b>ATMs</b> LocalBitcoins.com, Robocoin, bitxatm, bitaccess, Project Skyhook, btcpoint, LAMASSU, GB, SERY, genesiscoin, COINOUTLET, Modenero Concierge	<b>Banks</b> BBVA, UBS, LHV, London Stock Exchange, SECCO, BNY MELLON, BARCLAYS, fidor BANK, citibank, moni
<b>Trade Finance</b> GAZEBO.IO, everledger, CHRONICLED, WAVE, PROVENANCE, thingchain				

## MIDDLEWARE & SERVICES

<b>Services</b> CRYPTONOMEX, B9, CONSENSYS, SolidX, RUBIX	<b>Software Development</b> chainscript, HydraChain, Blackstack.io, PEERNOVA, CREDITS, eris, Manifold, MultiChain, Blockchain	<b>General APIs</b> BitGo, neuroware, coinbase, bitcore, Coinkite	<b>Special APIs</b> TIERION, Open Assets, bitbind.io, factom, colu	<b>Platforms</b> Counterparty, Monetas, blockstack, HYPERLEDGER, Tendermint, Blockchain	<b>Smart Contracts</b> SmartContract, CoinSpark, Tembusu Systems
--	--	--	---	--	---

## INFRASTRUCTURE & BASE PROTOCOLS

<b>Public</b> bitcoin, ethershares, ethereum	<b>Special</b> ripple, stellar	<b>Payment</b> Lightning Network, MONERO	<b>Miners</b> ANTPOOL, Bitfury, 21 INC, BTCC, BITCOIN24
---	-----------------------------------	---	--

Source: Mougayar, 2015



---

# WHAT NEED TO CONSIDER WITH CHOOSING BLOCKCHAIN TECH

---





## **Confusing a limited, foundation-level protocol with a complete business solution**

——<Gartner: Top 10 Mistakes in Enterprise Blockchain Projects>







# FIND YOUR BUSINESS PROBLEM FIRST

## 商业接触点

在典型用户的整体体验中有哪些点和商业模式产生交互？

## 体验心情地图

在典型用户的整体体验中的可定义目标是什么？为了达到这个目标现在体验者做了哪些事，经历了哪些心情变化？哪些地方可以改进？

## 设计挑战

哪些改进是需要被设计的？它们的优先级是怎样的？



---

# KEY BIZ INDICATOR

---



*Tx Throughput*



*Tx Confirmation Time*

---

# HOW ABOUT BLOCKCHAIN RELATED?

---



~~Crypto Algorithms~~



~~P2P Communicating~~



~~Interoperability~~



---

# HOW ABOUT BLOCKCHAIN RELATED?

---



Consensus Algorithms



UTXO vs Account model



Smart Contract

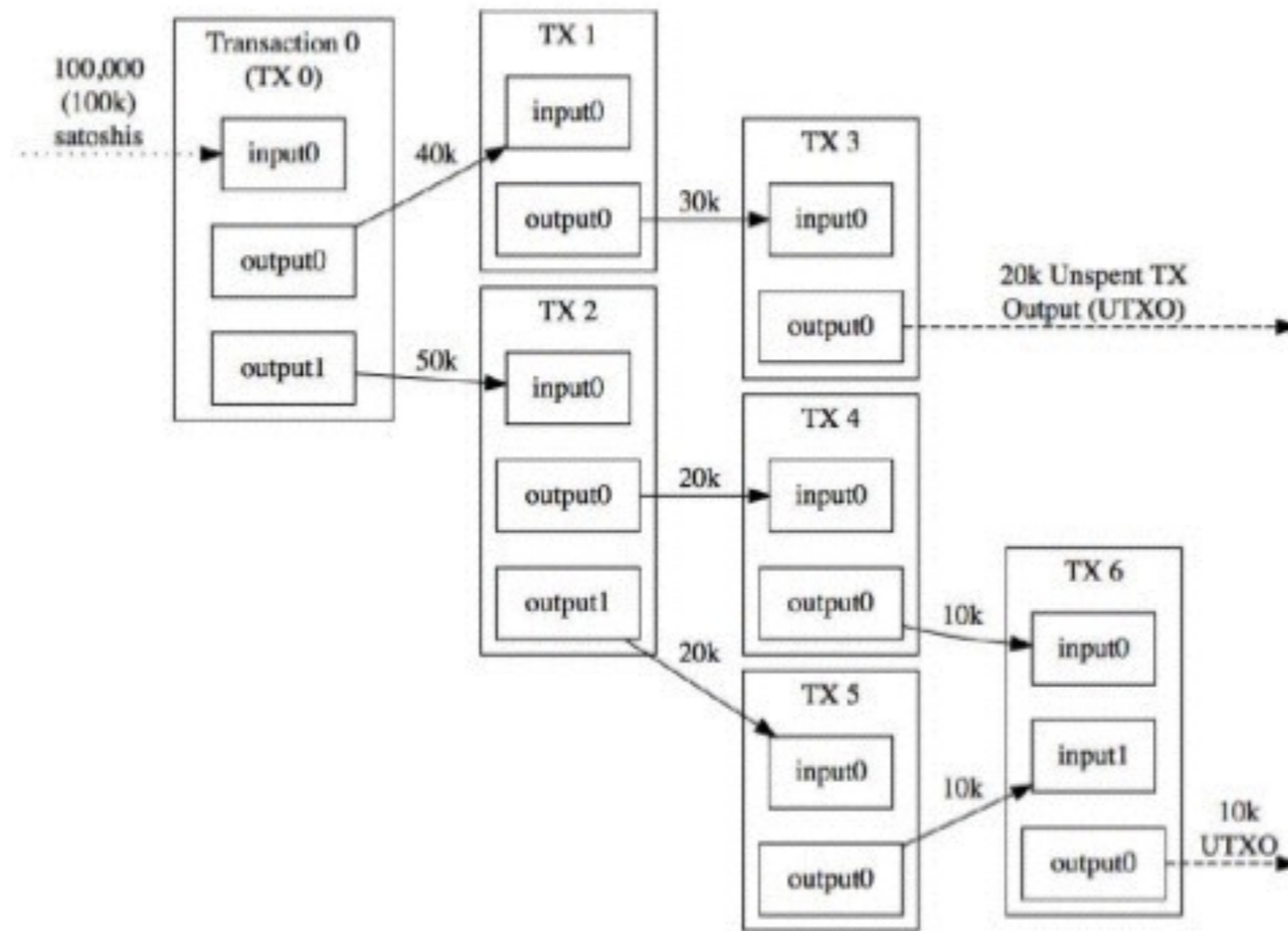
# DISTRIBUTED CONSENSUS

A.K.A. What do we eat for lunch?

mechanism	decentralized control	low latency	flexible trust	asymptotic security
proof of work	✓			
proof of stake	✓	maybe		maybe
Byzantine agreement		✓	✓	✓
Tendermint	✓	✓		✓
SCP (this work)	✓	✓	✓	✓

# UTXO VS ACCOUNT MODEL

## Transactions





# SMART CONTRACT



# BLOCKCHAIN IN TECH RADAR

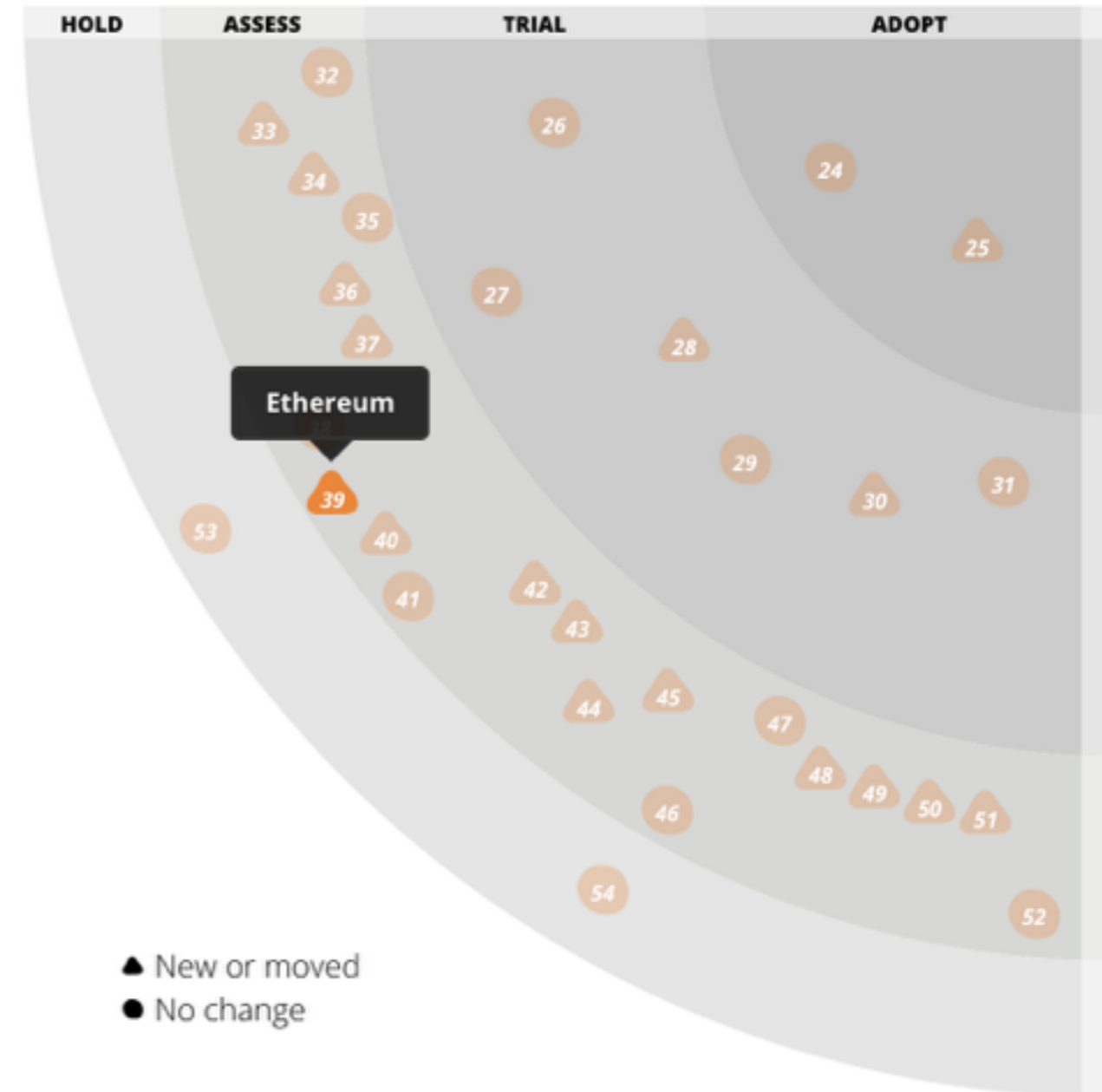
## 37. DataStax Enterprise Graph new

## 38. Electron

## 39. Ethereum

The hype seems to have peaked for blockchains and cryptocurrencies, as evidenced by the slowdown of previous firehose-scale announcements in this area, and we expect some of the more speculative efforts to die out over time. One of the blockchains, [Ethereum](#), while not universally popular among diehard blockchain aficionados, appears in increasing numbers in new initiatives. Ethereum is a public blockchain with a built-in programming language allowing developers to build "smart contracts", which are algorithmic movements of ether (the Ethereum cryptocurrency) in response to activity happening on the blockchain. R3CEV, the consortium building blockchain tech for banks, built its first proofs of concept on Ethereum. Ethereum has been used to build a distributed autonomous organization (DAO)—one of the first "algorithmic corporations"—although a recent heist of [\\$150 million in the ether](#) demonstrates that the blockchains and cryptocurrencies are still the Wild West of the technology world.

[History](#)



Unable to find something you expected to see? Your item may have been on a [previous radar](#) »

# BLOCKCHAIN IN TECH RADAR

## 40. Hyperledger new

**Hyperledger** is a platform built around blockchain technologies. It consists of a blockchain implementation named Fabric and other associated tools. Disregarding the hype surrounding blockchain, our teams have found it easy to get started with these tools. The fact that it is an open source platform supported by the Linux Foundation also adds to our excitement about Hyperledger.

### [History](#)

## 41. IndiaStack

## 42. Kafka Streams new

## 43. Keycloak new

## 44. Mesosphere DCOS

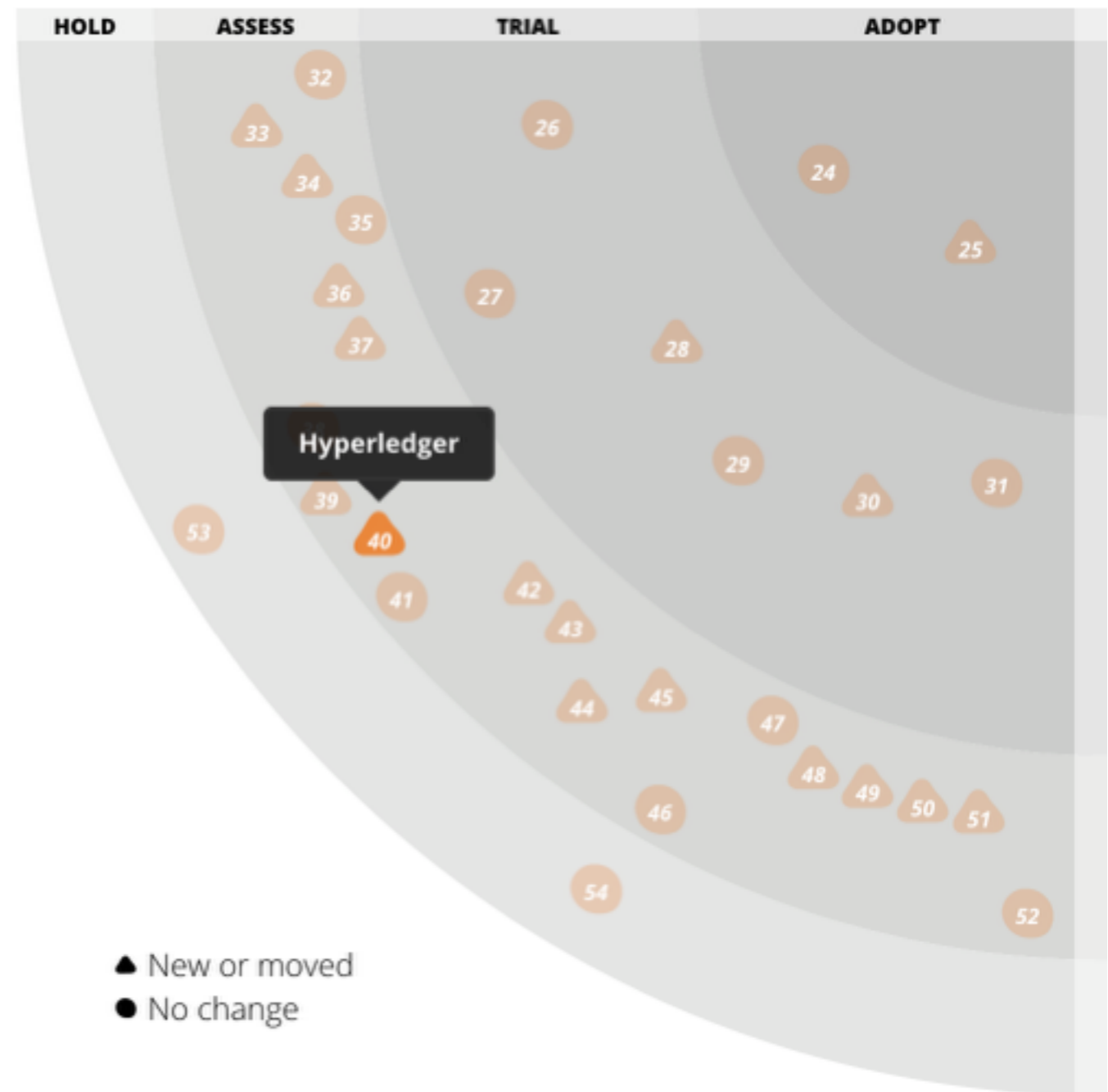
## 45. Mosquitto new

## 46. Nuance Mix

## 47. OpenVR

## 48. PlatformIO new

## 49. Tango new



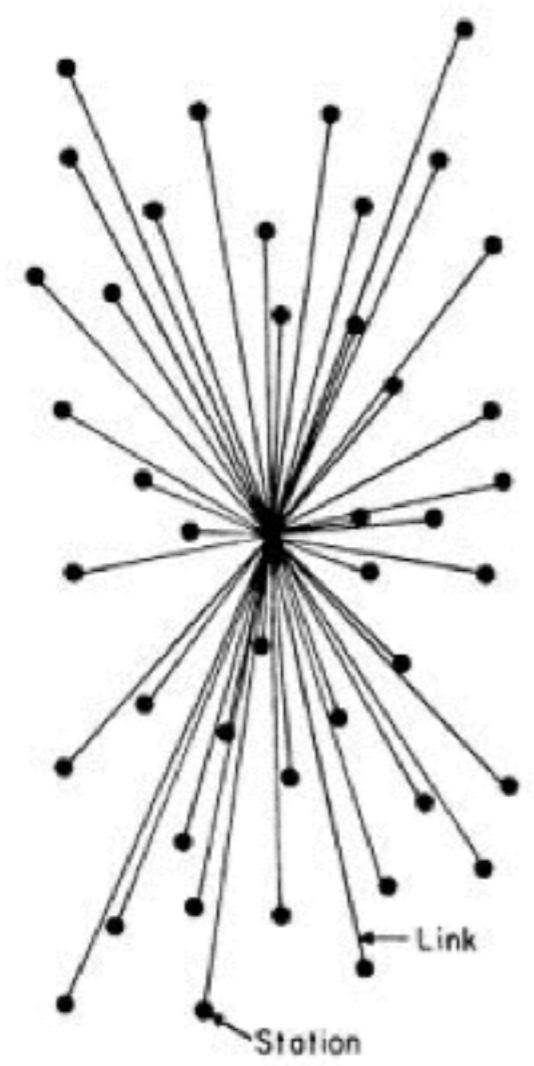


# BUILD YOUR ARCHITECTURE

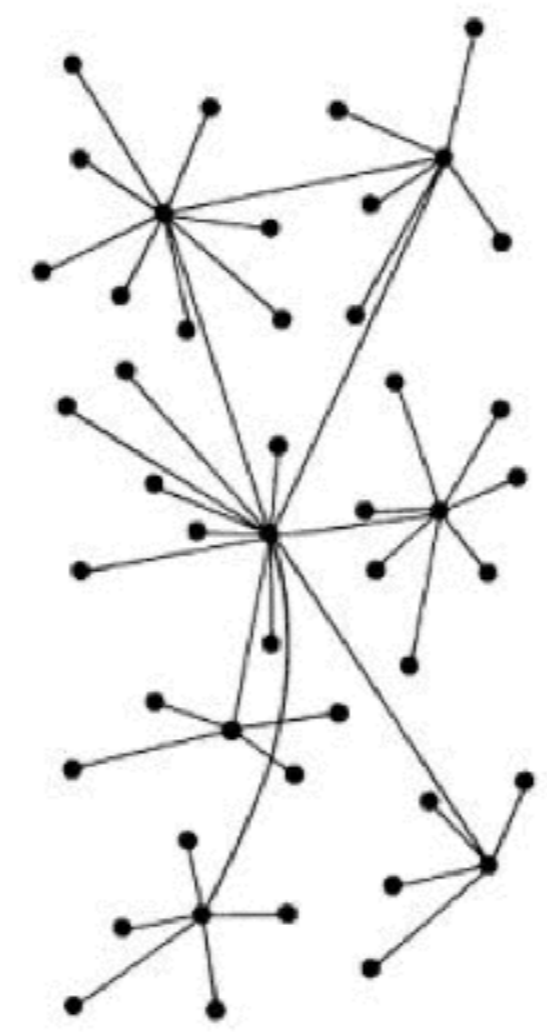
---

Build your DApp on top of independent services

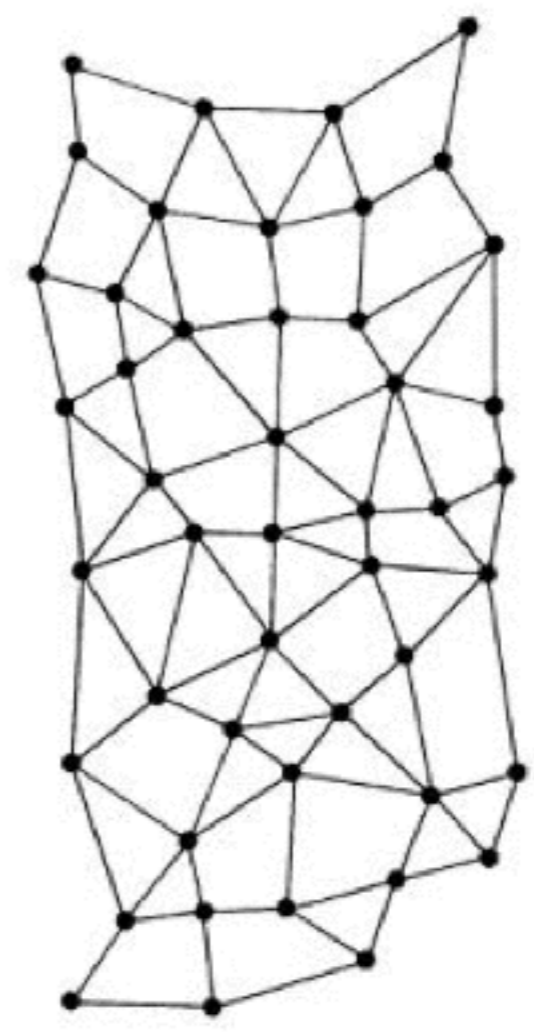
# DECENTRALISED APPLICATION ?



CENTRALIZED  
(A)

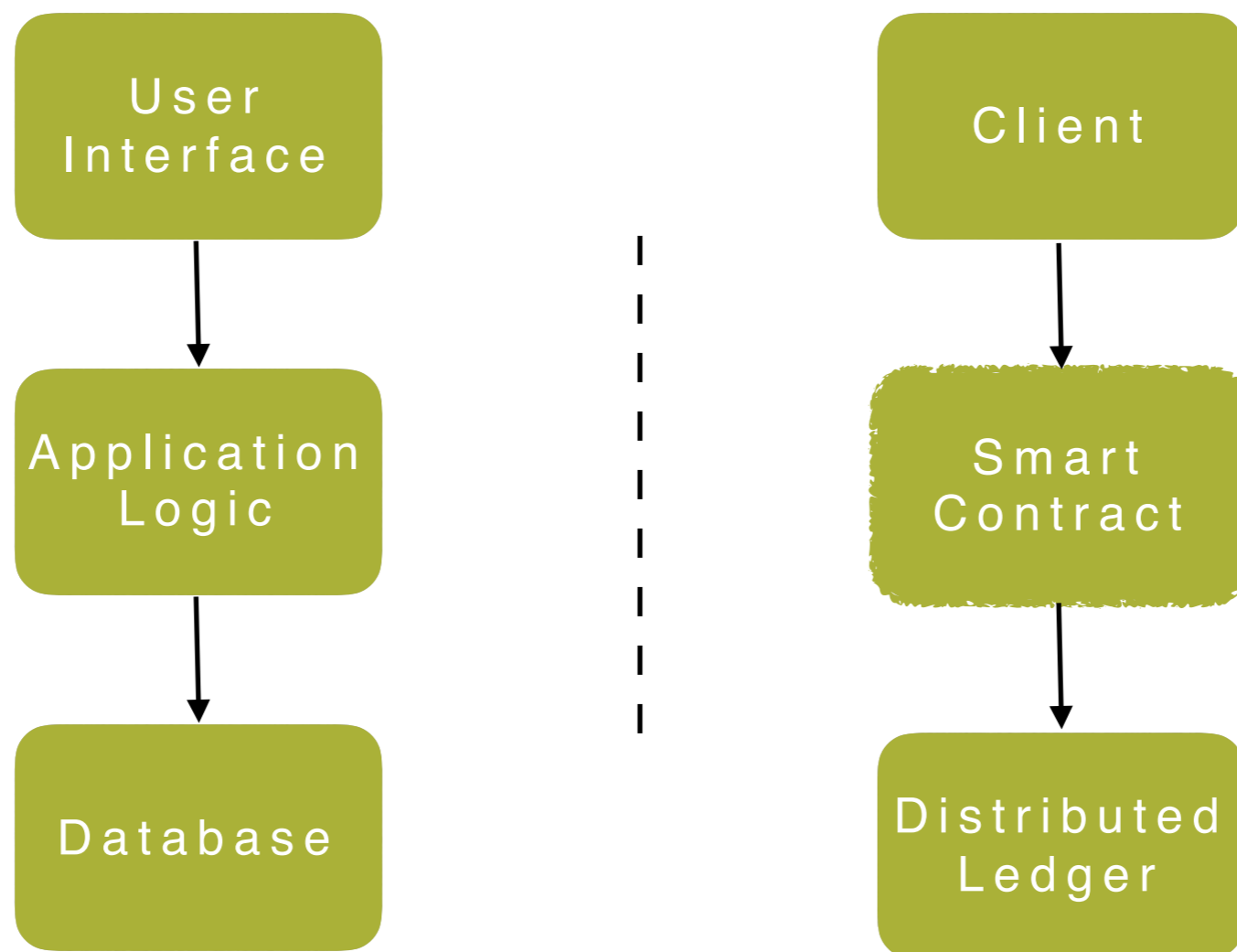


DECENTRALIZED  
(B)

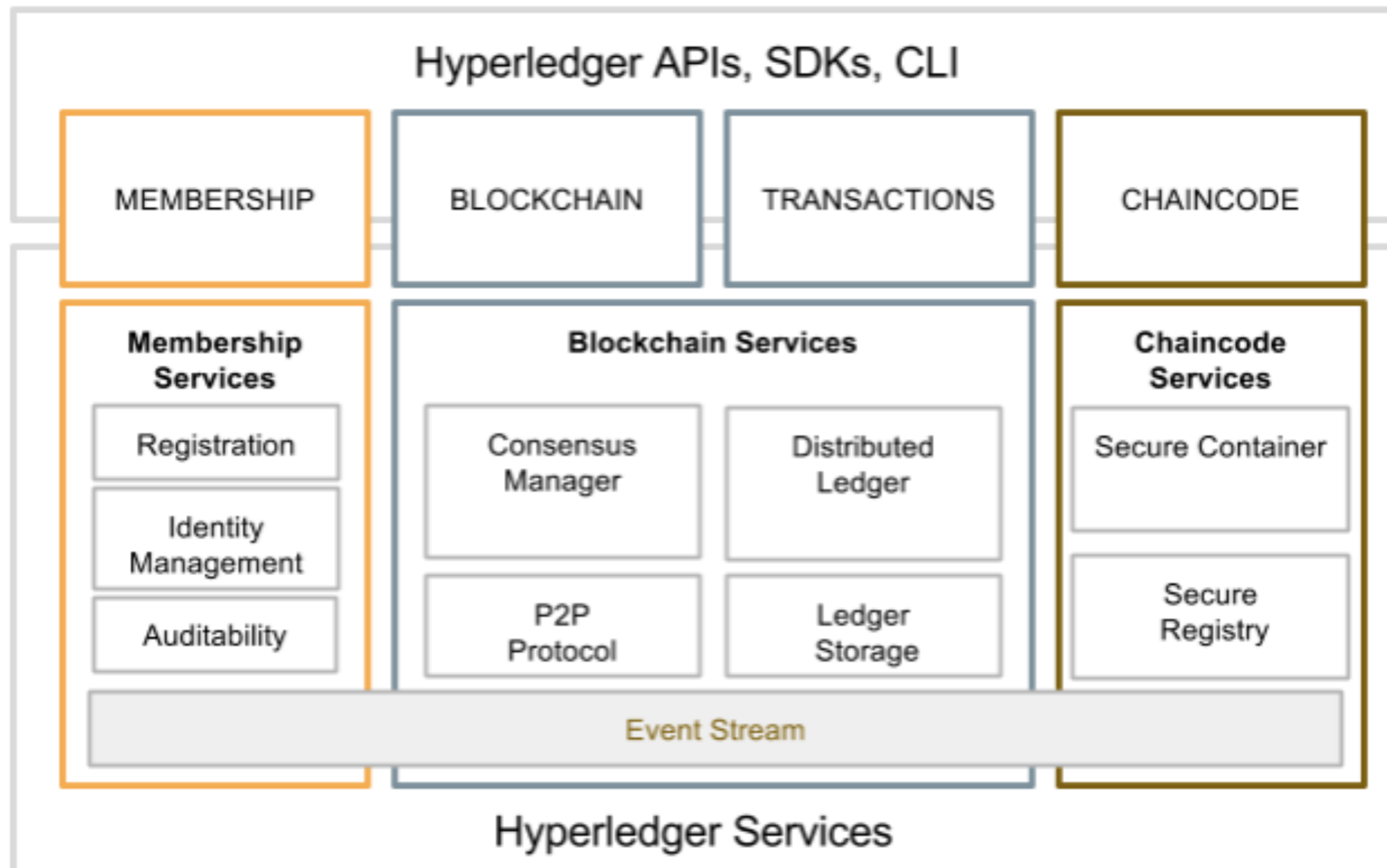


DISTRIBUTED  
(C)

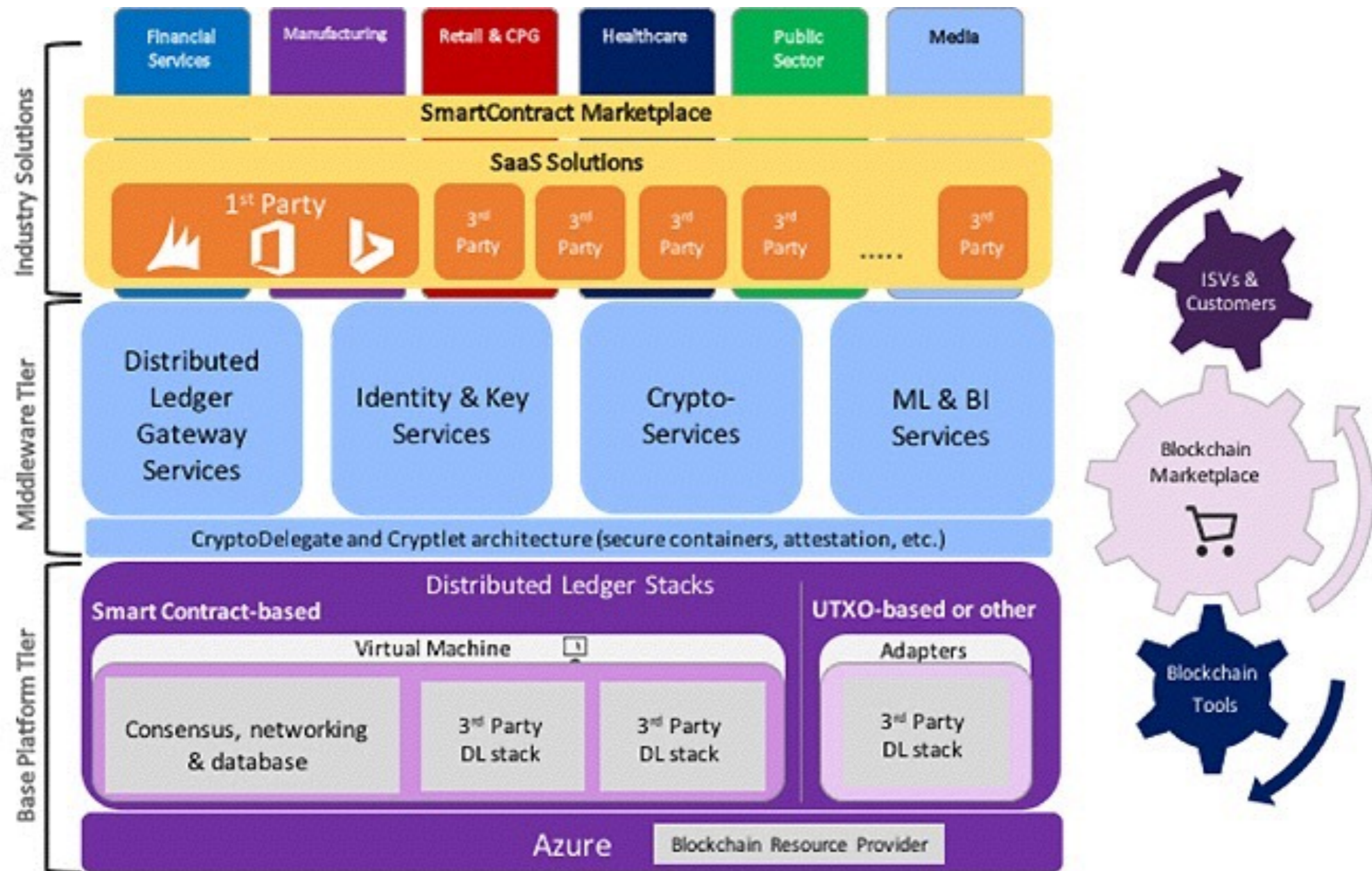
# DAPP IS JUST APP



# MODULAR ARCHITECTURE



# SERVICE BASED ARCHITECTURE





# IMPROVE YOUR DEPLOYMENT

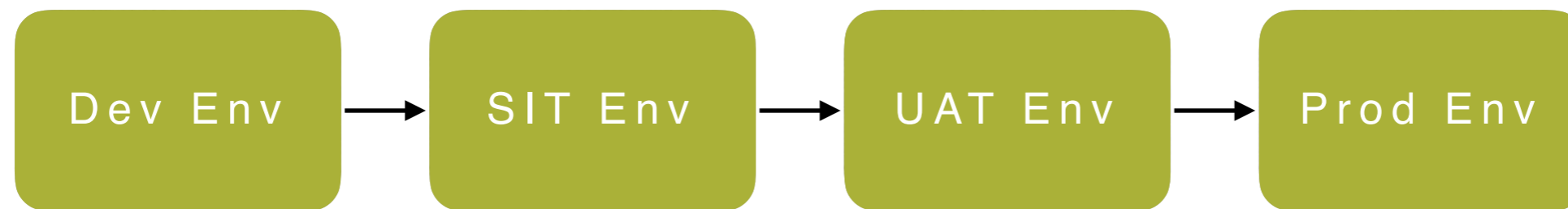
---

Dockerize your DApp

---

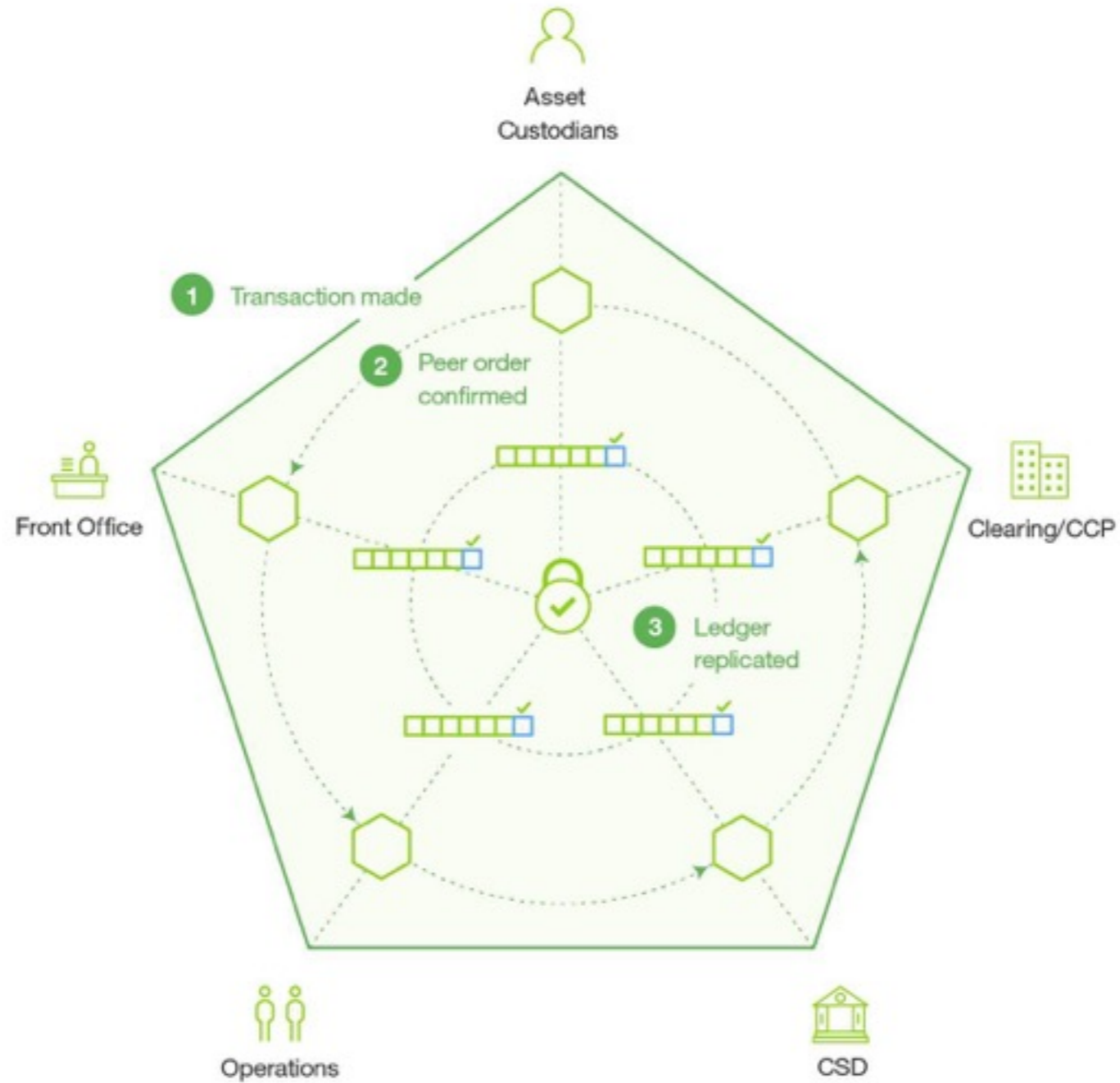
# ENV MANAGEMENT

---



Test your dapp before publish it!

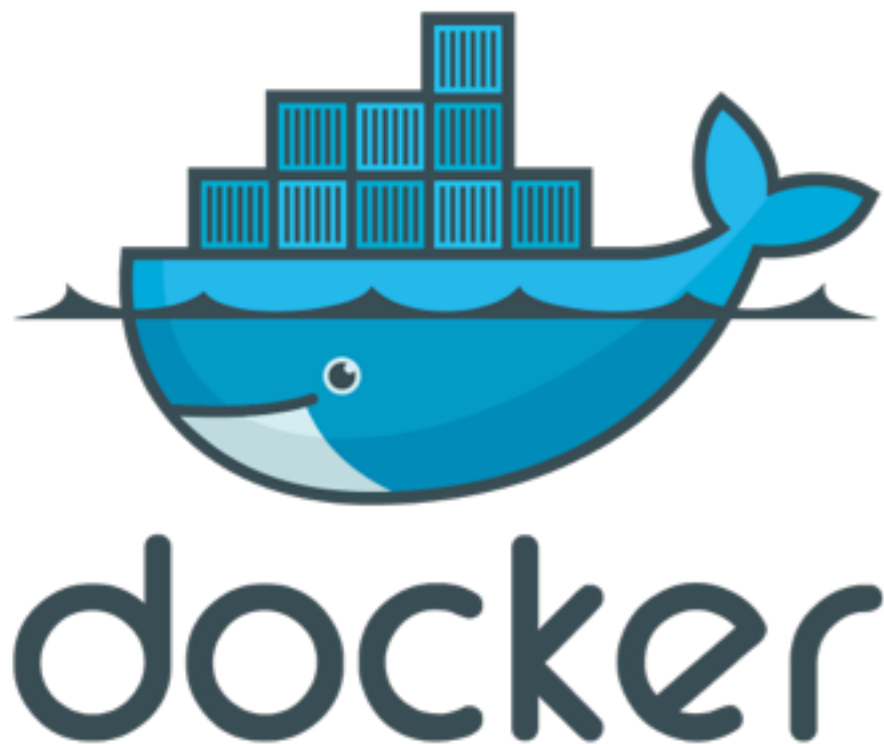
# DECENTRALISED DEPLOYMENT



# DOCKERIZE YOUR DATA

ThoughtWorks®

IT大咖说  
知识分享平台



```
1 mongo:
2   image: mongo
3   ports:
4     - "27017:27017"
5 application:
6   build: .
7   command: node --debug=5858 app.js --color=always
8   env_file:
9     - .env
10  ports:
11    - "3001:3001"
12    - "5858:5858"
13  links:
14    - mongo
15    - blockchain
16 blockchain:
17   image: lgallinaro/private-docker-ethereum
18   command: geth --datadir=/root/tmp --networkid=1234 --port 30304 --rpc --ipcapi='admin,db,eth,debug,
19   volumes:
20     - ~/.ethash:/root/.ethash:rw
21     - ./config/genesis/dev_genesis.json:/root/dev_genesis.json:ro
22     - ./config/keystore:/root/tmp/keystore:rw
23  ports:
24    - "30304:30304"
25    - "8545:8545"
```

<https://www.thoughtworks.com/insights/blog/blockchain-practice-tamper-proof-read-receipts>

# TAKE AWAY

---



---

# TAKE AWAY

---

- 1 *Choose your Blockchain tech on your business*
- 2 *Build your DApp on top of independent services*
- 3 *Dockerize your DApp*

# THANKS

---

刘尚奇

---

ThoughtWorks®