Personal notes on things happening on Devconnect 2023

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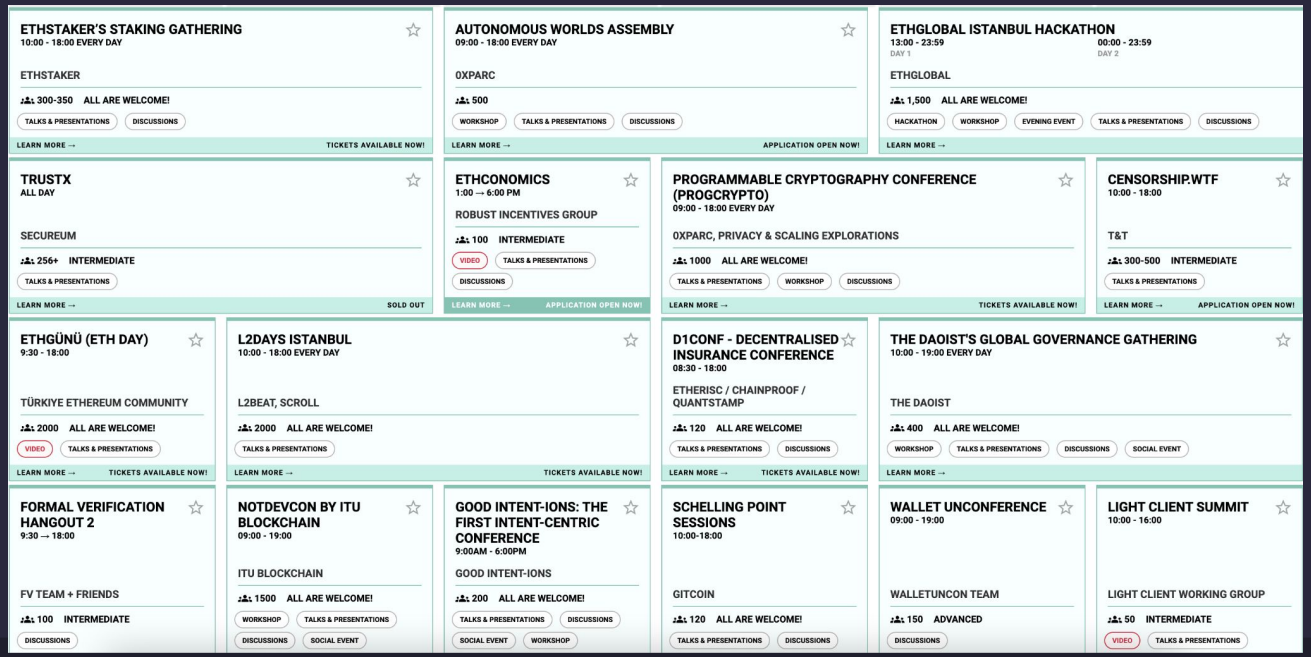
Devconnect

- A decentralized conferenceS



Notable larger events

- ProgCrypto
- L2Days
- TrustX - Security
- D1Conf
- ETHGlobal Pragma
- EVM Summit
- Solidity Summit

Main themes

- L2s
- ZK
- AA/Intent
- Security
- Autonomous World

Main themes

- L2s
  - Secure Development on L2s
  - Data Availability
  - State growth
  - Security models of L2s
  - Rollup on Bitcoin
  - MEV
- ZK
  - Techniques for lowering costs
  - Acceleration
  - Security

Main themes

- AA/Intent
  - Wallet / UX
  - MEV
- Security
  - Tooling
- Autonomous World - on-chain gaming
  - ?????

L2s - Gotcha Development on L2s

- EVM Opcode behaviour inconsistencies
  - Origin, Caller (How is it defined?)
  - Number, Timestamp (L1 or L2?)
  - Blockhash (L1 or L2?)
  - Push0
- TL;DR: Everyone is doing things differently

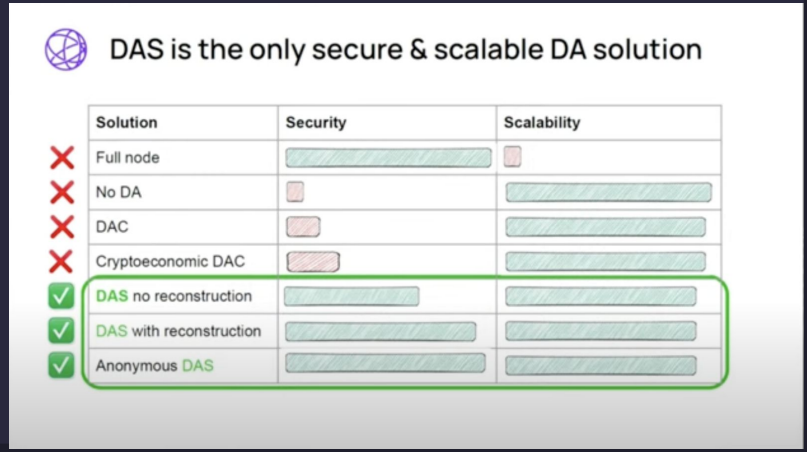
L2s - Data Availability

- DA Solution - Cost is an issue
  - Celo is going to use EigenDA
  - Data Availability Sampling
  - ZK rollups talking about compression
- State explodes

Bandwidth

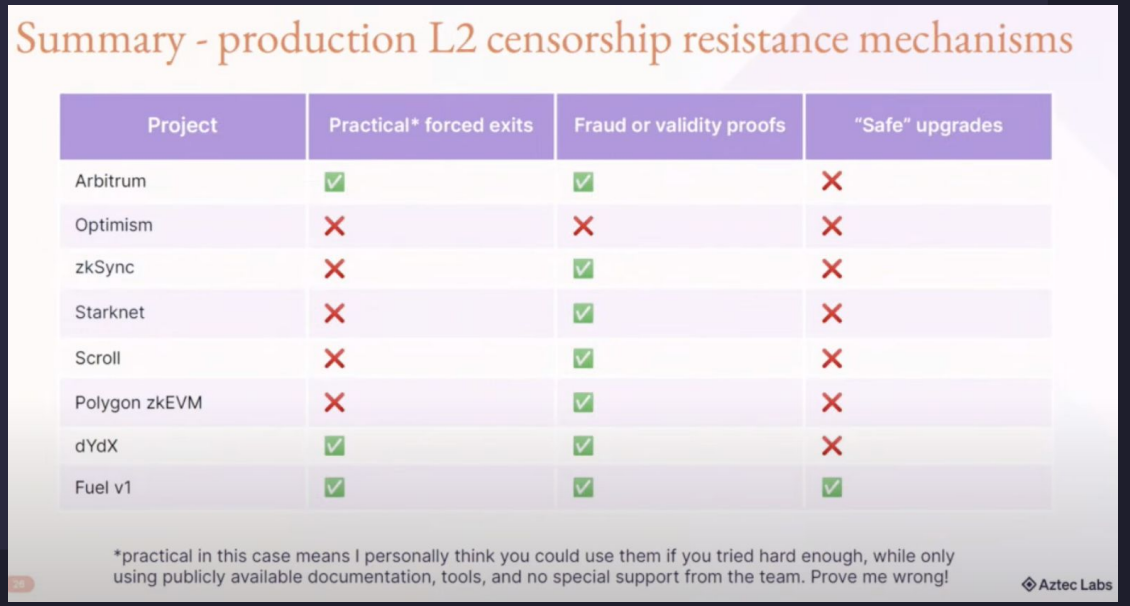
	Proto-Danksharding	Danksharding	EigenDA
Target Bandwidth	32KB/s	1.3 MB/s	3-10MB/s
Network Topology	P2P	P2P	Direct connections
Publishing Duration	14 days*	14 days*	14 days

*"Blob Archive" nodes may store longer



L2s - Security Models

- Censorship Resistant
  - Forced Inclusion
  - Forced Exit
  - Upgrades



L2s - Blockchain Monitoring

- Phylax talk - Blockchain Monitoring is MEV
- Zircuit Launch - Security at the Sequencer Level

Defense in Depth

- While developing Dapp, all of these improves your security stance.
- If one layer fails, then other layers can mitigate the issues.

Security - Tools Development

- Certik - LLM for auditing
    - 30% accuracy on function based
- EVM Radar
    - Database of function bytecode on every contract
    - Idea: scan vulnerabilities with Database
- Slither now supports vyper
- ToB - RoundMe: checking division and rounding issues

Security - Auditing

- Methodology
  - ZK bugs / how to audit circuits
  - Web2 stack in the Web3 space

- Assessments
  - Severity of bugs
  - Audit Quality assessments between firms
  - Centralization - value controlled by a group of users

ZK

- Security
  - zkEVM exploits
  - ZK Security Research
- RLN
- Tools for Devs
  - Open source Library
  - Framework for building zkVM
- Applications
  - DID (Taiwan!)
  - Voting
  - ZuPass

AA - Cryptography on top of AA

- MPC
  - Pros
    - Off-chain recovery
    - Truly Cross-chain (can support Bitcoin)
    - No gas overhead
    - No modification needed from Dapps
  - Cons
    - No mature library (cutting edge research)
    - Immutable authentication rules, no timelocks, limited to Multisig
    - Currently incompatible with Trezor/Ledger

AA - Cryptography on top of AA

- MPC
  - Forget password functionality - reshare operation
  - Anomalous behaviour blocking / censorship (not signing)
  - Cannot: reimburse gas, complex logic on fund logic, ..
- AA
  - Key management costs on-chain txs.
- MPC + AA
  - Off-chain key recovery / change
  - On-chain fund logic management

AA - Cryptography on top of AA

- Schnorr
- Unclear: what happens if a key is lost?

	Schnorr + AA	MPC + AA	MPC	AA
multi-sigs	✅	✅	✅	✅
Gas abstraction	✅	✅		✅
No fancy math/setup	✅			✅
Can rotate keys	✅	✅		✅
Truly cross-chain (eg BTC)			✅	
Cheap (gas)	✅ *	✅ *	✅ ✅ (zero overhead)	
Private	✅	✅	✅	
Txn batching	✅	✅		✅

Schnorrkel.js: Schnorr signatures for Ethereum

- **https://github.com/borislav-itskov/schnorrkel.js/**
- TypeScript library to produce MuSig2 Schnorr multi-signatures
- Arbitrarily aggregatable public keys; you can pre-calculate the "address" of any combination of signers
- **Cheap verification: 3k gas! Thanks to ecrecover() magic**
- Integrated with Ambire contracts, Safe contracts WIP
- Rust port is WIP

AMBIRE

Problems with MPC wallets, solved by Schnorrr

- ✅ No bleeding edge cryptography required, Schnorr signatures are very established
- ✅ More key rotation options, but generally not required cause it's combined with AA
- ❌ Cannot be used currently with Trezor/Ledger until they implement it

Intent

- CowSwap - Defi Trading App
- Brink - Intent Infrastructure protocol
- Essential - Intent Infrastructure
- Squid Router - Defi Trading App, crosschain, on Axelar
- Enso - Unified Defi API, crosschain defi
- Uniswap - Defi Trading App
- Blocto - Wallet
- Propeller Heads - MEV minimizing infrastructurte
- Tokka Labs - Market Maker
- Anoma - Generic Intent protocol

Intent

Follow-up research:

(1) Compare the “intent infrastructure protocol” Brink, Essential, and Anoma.

(2) Compare Cross-chain Defi focused

MEV

- MEV-burn
  - Validators being over compensated by MEV atm
  - How to distribute MEV to base protocol Ethereum?

UTXO based smart contract systems

- PLASSSSMMMAAA IS BACK BABY
- Fuel
- Aleo / Mina iirc

Taiwanese@Devconnect!

Zircuit Launch

- Research: Security at the Sequencer Level
- Current status of monitoring / incident response
- The two bets & the one new design area
  - Technology
  - Social norm

https://twitter.com/ZircuitL2

Defense in Depth

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Zircuit Launch

https://twitter.com/ZircuitL2

/THAT'S A WRAP!  (mic drop)