WTF is this researchathon?

An immersive research-engineering event that is designed to focus on prototyping or red-teaming particular designs in response to open research challenges. The event format resembles both research workshops as well as hackathons in terms of open challenge, team formation, and time constraints. The goal is to accelerate the collaborative r&d process across different teams within the ecosystem.

Our previous two experiments of researchathons (seeEthDenver '23 MEV [Re]search-athon, and ETHcc '23 MEV Salons such as the PBS.salon) had leaned towards salon-style unconferences, with a breakout session towards the end.

This time we are backrunning our favorite applied blockchain research conference SBC with something more hands-on: a cross-team research-engineering collaboration, with the target outcome being specs and prototypes, which can further inspire collaboration on research papers, blogposts, and open-source tooling, etc. after the in-person researchathon.

(image from crypto twitter)

I. When is it?

Pre-gaming

→ Research Jam

14:30-17:30

Wednesday, Aug 30, 2023

*Pre-game the researchathon on the Day 3 (final) afternoon of SBC '23 conference. Based on your research interests, skillz and commitment, our navigators may invite you to join their crew and whiteboard at the MEV Pi-rate Ship. *

Roasting

→ Spec BBQ

18:00-21:00

Thursday, Aug 31, 2023

Spice up the researchathon peer review at a real BBQ, where the steak and the spec are roasted. The navigators will present the research problem and their solution design or framework for feedback.

Hacking

→ Shipping Prototypes

10:00 - 18:00

Friday (All Day - Optional), Sep 1, 2023

You've heard enough galaxy brain research ideas this week at SBC and MEV workshops. If you are still around in the Bay Area, it's time to build.

II. What are the R&D challenges for this researchathon?

If you would like to propose your own R&D challenge and volunteer to be a navigator, please respond to this thread or fill out the last question when you apply https://lu.ma/sbc.research-athon.

Harden the MEV-Boost Band-aid: SGX-reth Relay

- Navigators: @socrates1024 @gakonst @ralexstokes

One of the thorniest problem with today's PBS ecosystem is the dependencies on the trusted relays to not break the guarantees of MEV-Boost. Can we spec out and improve on relay trust assumptions with privacy-preserving techniques without sacrificing high degrees of efficiency?

Design a Sealed-bid Auction for PBS

- Navigators: @Quintus @MaxR @phil + Dan Robinson

- Tarun Chitra

Currently, PBS runs only with open bids and only on Ethereum. This has several downsides like heightened traffic and undesirable impact on block building market structure. Is it possible to run a PBS block auction with private bids for Ethereum which operates within the desired latency and does not impose additional liveness or trust assumptions on the ecosystem? What about non-Ethereum settings such as L2s with single sequencers? (Learn more here: collective.flashbots.net/t/private-bidding-in-pbs-cryptography/2031)

Survey the Censorship Resistance (CR) Design Space

- Navigator(s): @fradamt

There have been numerous proposals to improve CR in today's PBS designs. What are the trade-offs across them? What frameworks and methodologies should we use to evaluate them? (See Censorship Resistance In PBS (Heterogeneity, BFT))

Co-create a Transaction Supply Map: orderflow.pics

- Navigator(s): @angelfish @sui414 @Nerolation

Inspired by mevboost.pics, let's visualize the complex and dynamically evolving transaction supply map, and create a dashboard that analyses the dynamic impact of order flow on the PBS market structure.

Sharded Inclusion Lists / Heterogenous DA

Navigator(s): @Dmarz @_sw

How to provide different censorship resistance guarantees for different types of order flow?

III. What are the bounties?

PBS Guild (proposal), which will start out as an ecosystem research grants program, is setting aside 50%+ of its pilot phase funding towards many of such PBS R&D initiatives.

Grant recipients may present at DevConnect MEV Day &cenorship.wtf in November 2023.

APPLY HERE: lu.ma/sbc.research-athon