Shogun

Fully On-chain Strategy Game on Taiko based on real-time weather

Motivation

- We wanted to connect real world data with blockchain.
- *Taiko is perfect because it:*
  - Is censorship-resistant, permissionless, secure, Ethereum-equivalent (L1) solution.
  - Has lower transaction fees and faster transaction finality compared to the Ethereum mainnet.
  - Is developer-friendly.
  - Has a large and engaged community.
- <u>Acurast</u> is a potential solution to easily get Web2 API data for weather conditions.

Acurast - What is it?

- Decentralized Serverless Cloud - where old phones are used as processors.
- Deployed NodeJs Scripts run inside Trusted Execution Environment (TEE).
- Processor Owners have no idea what their processor is running, they get cACU tokens. (Same model as Chainlink, but potentially more decentralized).
- API data is forwarded to smart contract with minimal trust overhead.

Acurast Cluster of old phones
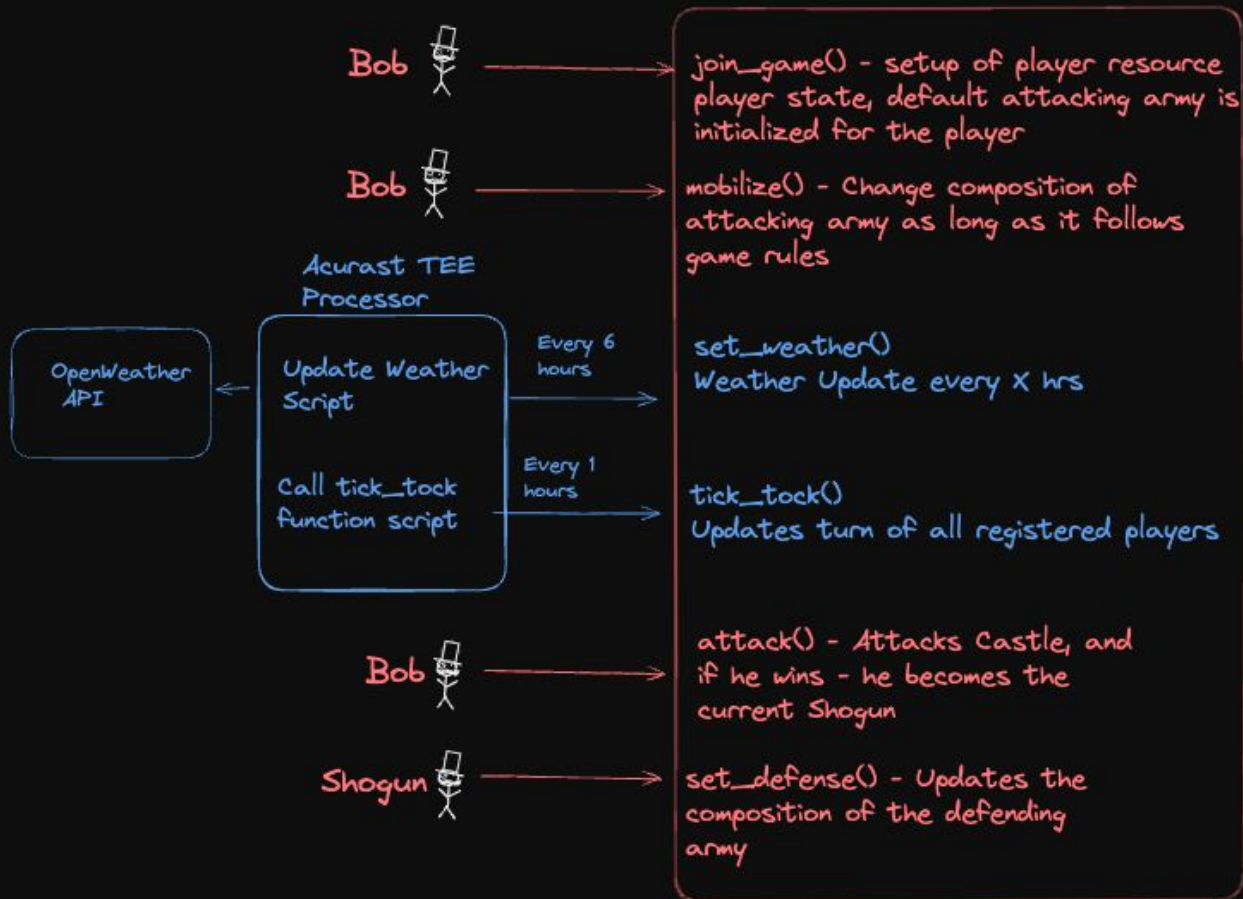

The left one is ours

Contributions of this project:

- We get Weather Data from OpenWeather API using Acurast as <u>Oracle</u>, thereby introducing a new potential oracle solution for the ecosystem.
- We also use Acurast Processors as <u>Keepers</u> (Decentralized Cron Job) - <u>unlocks a new pattern for turn based games</u> and DEFI projects on Taiko.
- We have built an intuitive and user-friendly web interface that streamlines interaction with the game.

Capture Castle Tokyo - There can be only one Shogun

- The goal is to capture the castle, and keep it for as long as you can.
- Everyone attacks the king of the castle (Shogun).
- Attackers can have upto 2000 troops, while defenders can also have up to 2000 troops.
- Troops consists of Archers, Cavalry and Infantry.
- Troops have their advantages and disadvantages based on current weather conditions.
- Attackers have to check weather and change their troop composition to have a better chance of winning.
- Current Shogun can also keep changing defense composition based on Weather.

Warlords/Shogun Module

Bob → join_game() - setup of player resource player state, default attacking army is initialized for the player

Bob → mobilize() - Change composition of attacking army as long as it follows game rules

Acurast TEE Processor

OpenWeather API ← Update Weather Script — Every 6 hours → set_weather() Weather Update every X hrs

Call tick_tock function script — Every 1 hours → tick_tock() Updates turn of all registered players

Bob → attack() - Attacks Castle, and if he wins - he becomes the current Shogun

Shogun → set_defense() - Updates the composition of the defending army

How is Weather affecting battles?

- Weather States - Clear, Cloudy , Snow, Rain, Drizzle, Thunderstorm.
- Cavalry struggles during thunderstorms (-25% bonus) , amazing on a cloudy day (+25% bonus).
- Infantry has advantage in Thunderstorms.
- Archers get boost on a clear day.
- Players get turns every hours, but burns 3 turns to attack, and 1 turn to change troop composition.
- Max 100 turns.

Our Work

- Github - https://github.com/jsmaxi/taiko_shogun_game
- Website - https://taiko-shogun-game.vercel.app/
- Mainnet Address -
  https://taikoscan.io/address/0xA70904c7A115989E543a33a11d34B6EC74B965e7
- Testnet Address -
  https://hekla.taikoscan.io/address/0x9Fc44926b55b04028f50767dbA90F0915599 3b1
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- Detailed Overview, Acurast Oracle and other links can be found in Github Readme

Demo!