Blockchain for CORS Networks

Geodnet: Global Earth Observation Decentralized Network
https://geodnet.com

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Agenda:

- Why Blockchain for CORS?
- Benefits of a Blockchain CORS Network
- Network Architecture
- Miners / Receivers
- Validators / Service Providers
- Blockchain Operation
- Applications
- How to Get Involved

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Why Blockchain for Geodesy?

When you hear the word blockchain or crypto-currency what do you think?

Bitcoin?	Internet?	Money Transfer?	NFT?	Video Games?	Tax Evasion?

How about a dense global network of multi-band GNSS receivers?

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What has Blockchain Proven Good at?

- **Decentralization:** No one monopolizes benefits
- **Scale:** Large networks
- **Security:** "Trustless" system, Consensus protocols
- **Standards:** Proliferation of Open, Standard Protocols using Open-Source Code
- **Incentives:** Fairly Reward Work towards a Common Goal
- **Community:** Breaking down Geographic, Political, and Language Barriers
- **Growth:** BTC is now a ~$1T asset class, Coinbase has 56M verified accounts

➢ *SHARED DISTRIBUTED INFRASTRUCTURE*

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Similar Project: Helium

Blockchain Powered
LoraWAN Network

Grown to 150K Hotspots

in 120+ Countries

$HNT Market Cap is >$1B

1000’s of compatible devices

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State of CORS Networks Today

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Government Networks

- Intended primarily for land survey end-users and traditional use cases with limited # of simultaneous users
- Often have older GPS+GLO receivers without full constellation support

Proprietary Global Networks

- Tied to Receiver Manufacturers

Survey-Grade VRS Networks

- Regional
- Expensive

IoT-Grade Regional Networks

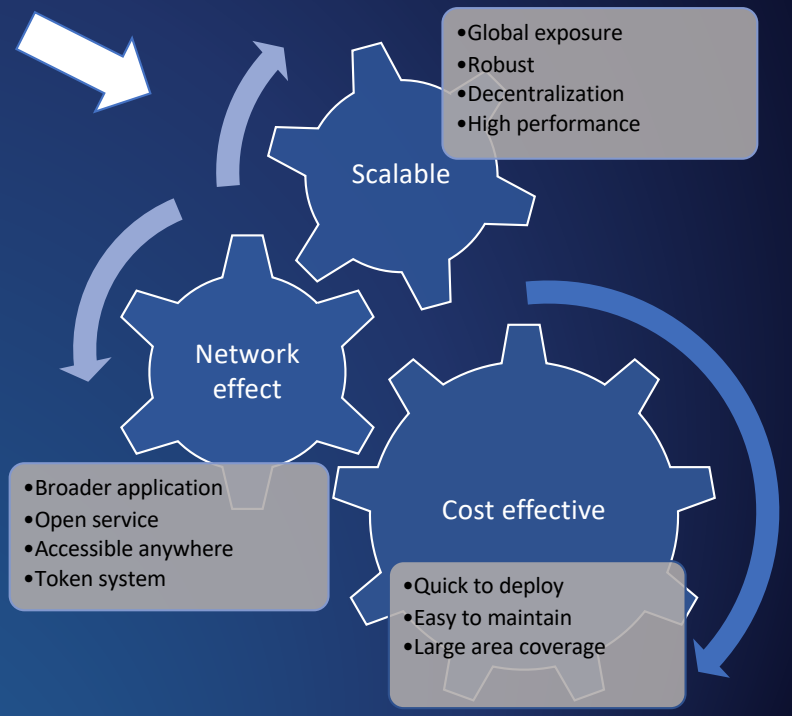
- Accuracy can not meet all applications
- Developing, maybe tied to Cellular Providers

Comparison

Traditional Network

- Decentralization
- Community initiated infrastructure
- Incentive system
- Data valuation mechanism
- Open service system
- Decentralized market

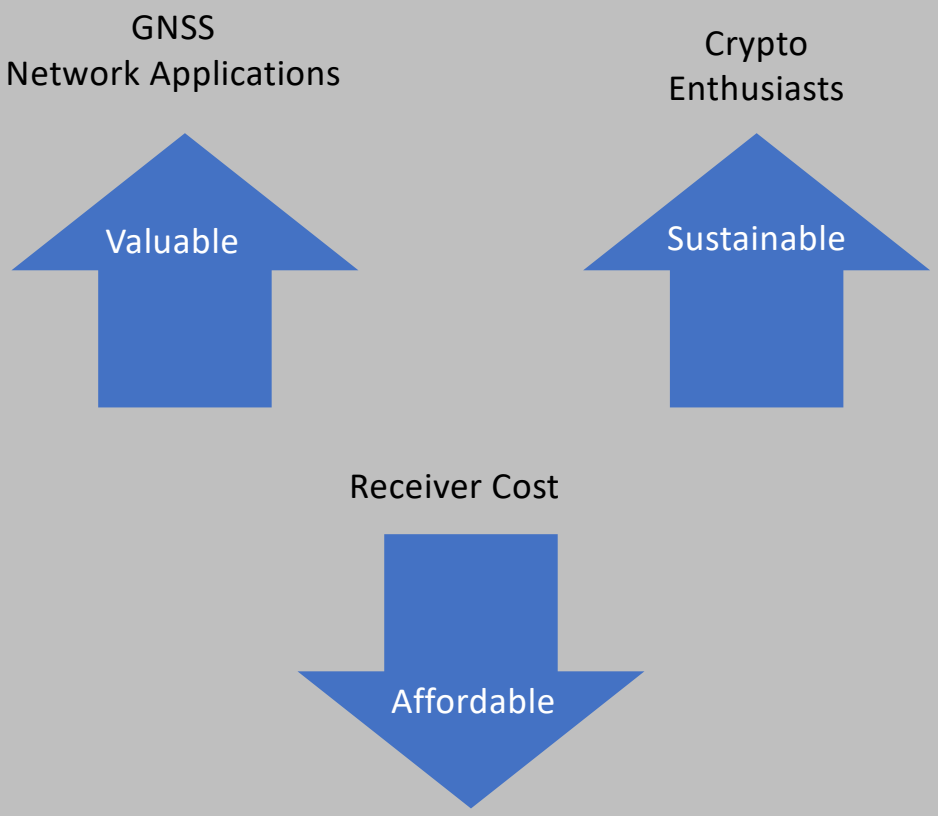
Geodnet



Why Now?

Geospatial Mining of Global GNSS Signal Data is:

- Valuable
- Sustainable
- Affordable



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GEOD Network Architecture

Organization

GitHub

- GitHub Published Charter and White Paper
- Open-Source Core Code for core infrastructure, Blockchain, and tools

Genesis Global Miners

- 100 Global Stations
- Support Precise Orbit and Clock
- Baseline Global Coverage for PPP-AR

Space Weather Station GNSS Miners

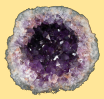
- Protocol: Proof of Accuracy
- Secure and Private
- Full Constellation
- Dual-Band Stations
- Triple Band Stations

Service Providers and Blockchain Validators

- Protocol: Proof of Stake
- Distributed VRS and PPP Service
- Called “Validators” in traditional Blockchain

Applications

- Pay for Service with Data Credits
- Climate Change
- Smart Infrastructure
- Autonomy



Earn $GEOD Token

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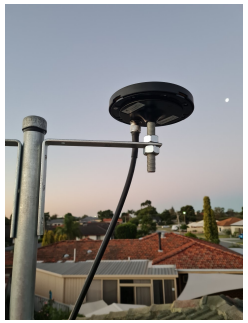
Genesis Global Miners

- Genesis means initial set
- 100 Global Stations
- 800 Channel, Triple Band
- Global coverage for PPP-AR services



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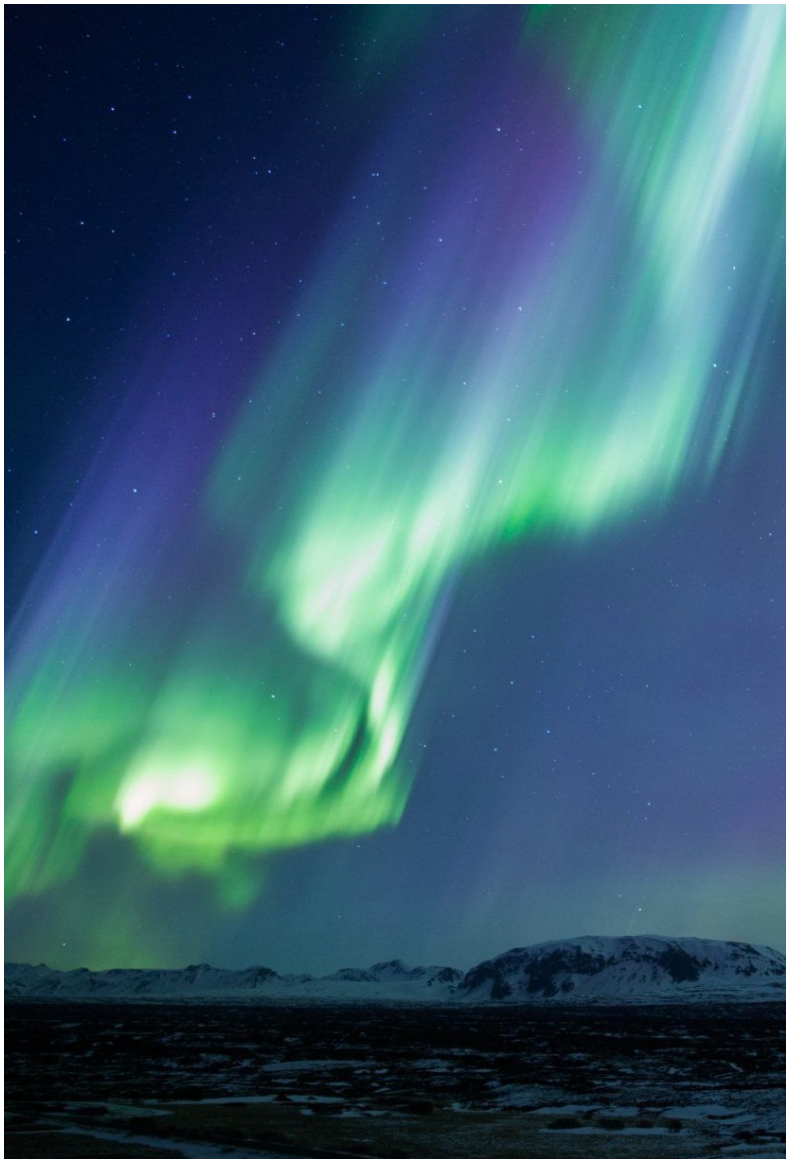

Space Weather Stations
GNSS Miners

- **Consumer Ready:** Simple to set up like a weather station
- **Deployment Friendly:** No restriction on location
- **Incentivized Quality:** *Token Rewards* proportional to signal quality, # of signals, uptime, and location – i.e., Proof of Accuracy Protocol
- **Secure and Private:** Data-stream is encrypted
- **Consistent:** Approvable Hardware Designs Published by Community

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Consumer Station

- Suggested Retail Price <$500
  - Receiver
  - Antennae
  - Mounting Kit
- Proposed Chipsets
  - Ublox F9P
  - ST Teseo V (STM8100)
  - Aihora AVG3335
- 1-Day Battery Back up
- Standardized WebUI for Setup

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Professional Station

- Suggested Retail Price <$1500
  - Receiver
  - Antennae
  - Mounting Kit
- Proposed OEM Boards
  - Tersus
  - Hemisphere
  - Septentrio
- 1-Day Battery Back up
- Standardized WebUI for Setup

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Proof of Accuracy Protocol

- Number of Signals
- Quality of Signals
- Location of Station
- Up Time

$GEOD Token Reward

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Service Providers / Validators

- Proof of Stake Protocol
- Backbone of the blockchain
- Receives data from global stations
- Receives data from regional miners
- Issues Public keys for local miners to sign data
- Accepts user service requests
- Produce Data Products
  - VRS
  - Precise clock and orbits

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Data Products are Generated by Validators

Collect	Collect inbound miner streams
Process	Process to classic and new data products (VRS,SSR, Precise Orbit/Clock)
Transact	Transact Data Credit (fixed price credit system for users)
Distribute	Distribute CORS streams to users, rovers, and other applications
Earn	Earn $GEOD token rewards

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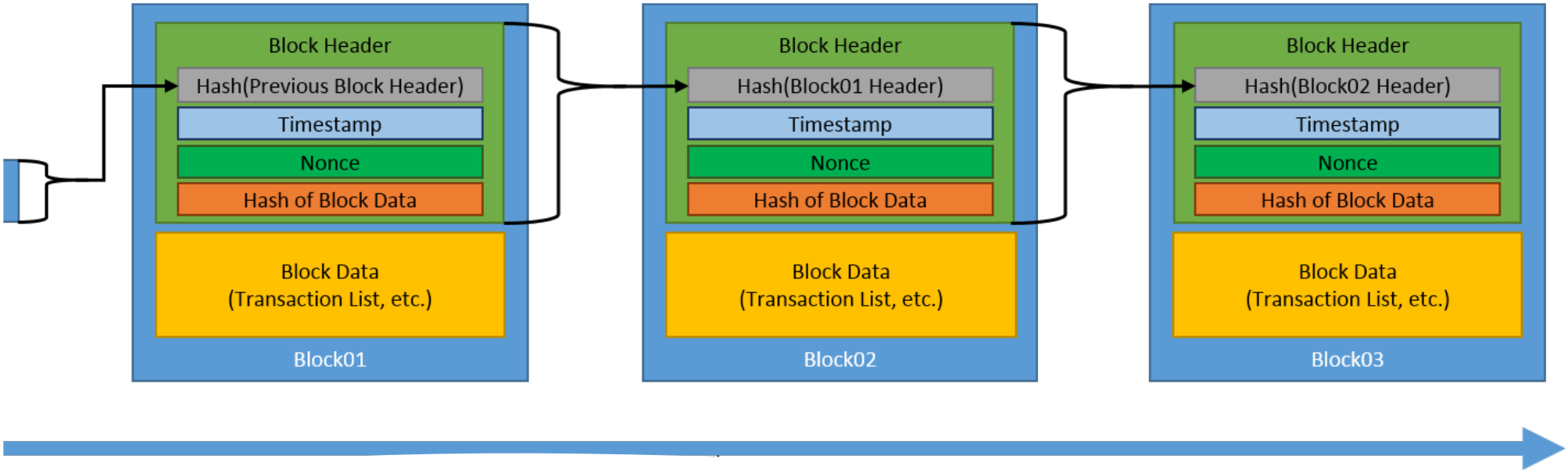

Geodnet Blockchain Transactions

- Genesis Mining Stations (Global Network)
- Mining Station Joins
- Proof of Accuracy Request
- Proof of Stake Receipts
- Payment
- Reward

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Data Credits

- Simple Data Credit to use Geodnet service
- 1 Data Credit is $0.00001 (Fixed)
- 1 second of connection costs 1 Data Credit
- 1 hr of **Continuous** Usage is $0.036, 1yr is $315
- $GEOD Token Can be Exchanged for Data Credits

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Applications

Climate Change	Smart Infra	HD Mapping
Timing	Security	Autonomy
Machine Control	Survey	IoT

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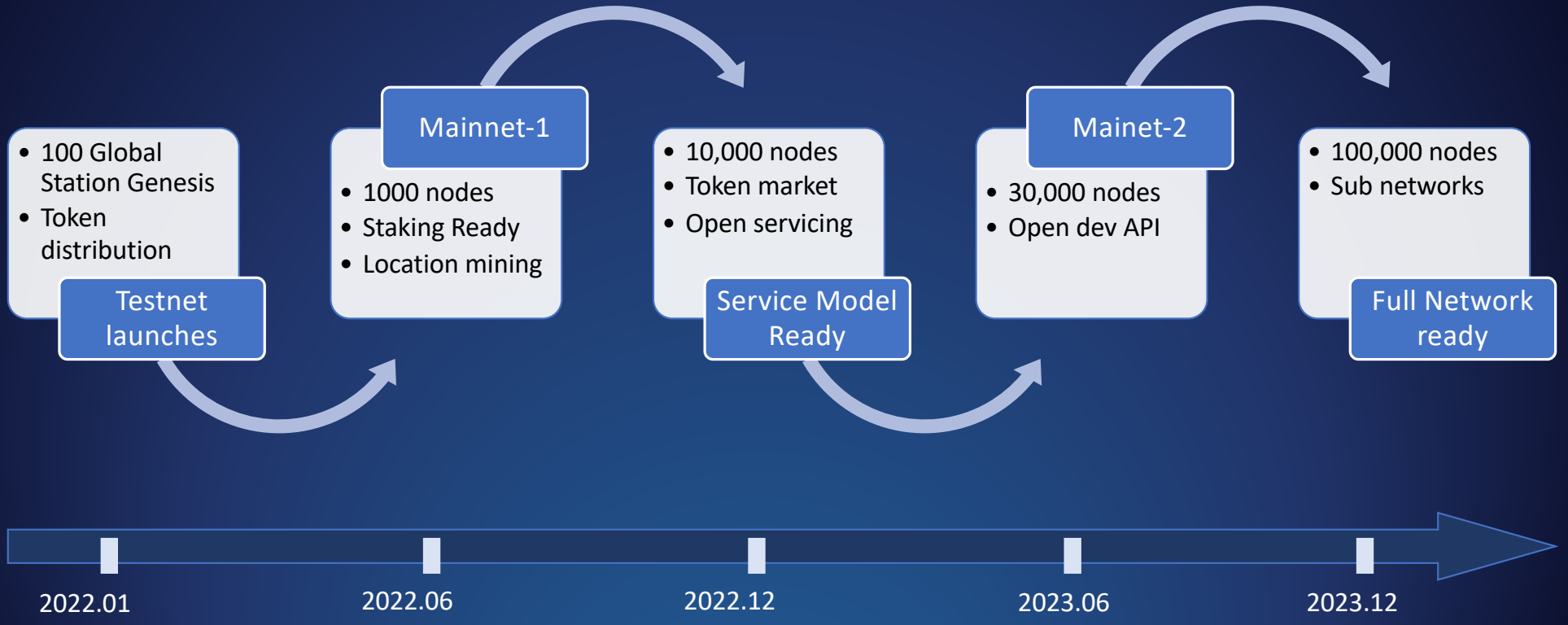
Roadmap


• 100 Global Station Genesis
• Token distribution
Testnet launches
Mainnet-1
• 1000 nodes
• Staking Ready
• Location mining
• 10,000 nodes
• Token market
• Open servicing
Service Model Ready
Mainet-2
• 30,000 nodes
• Open dev API
• 100,000 nodes
• Sub networks
Full Network ready
2022.01
2022.06
2022.12
2023.06
2023.12

Get Involved, Sign-Up

- Open Call for Interest and Improvement Proposals
- Build World Largest Open CORS Network Together
- Invest in the crypto-economy in a meaningful important way
- Promote the benefits of Precise Satellite Navigation Applications

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