

Magma:

An Open Source Telco Core for the Access Edge

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FACEBOOK
CONNECTIVITY



Network Performance is **At Risk**

3.3 billion people in **developing**
and **emerging** markets are at risk
of degraded network performance
by 2023

Why Facebook and Connectivity?

**Connectivity is good for
industries and companies
of all kinds — including
Facebook**

Being connected opens up new opportunities —
opportunities to make yourself heard; to connect
with the people and communities you care about;
and to build new businesses.

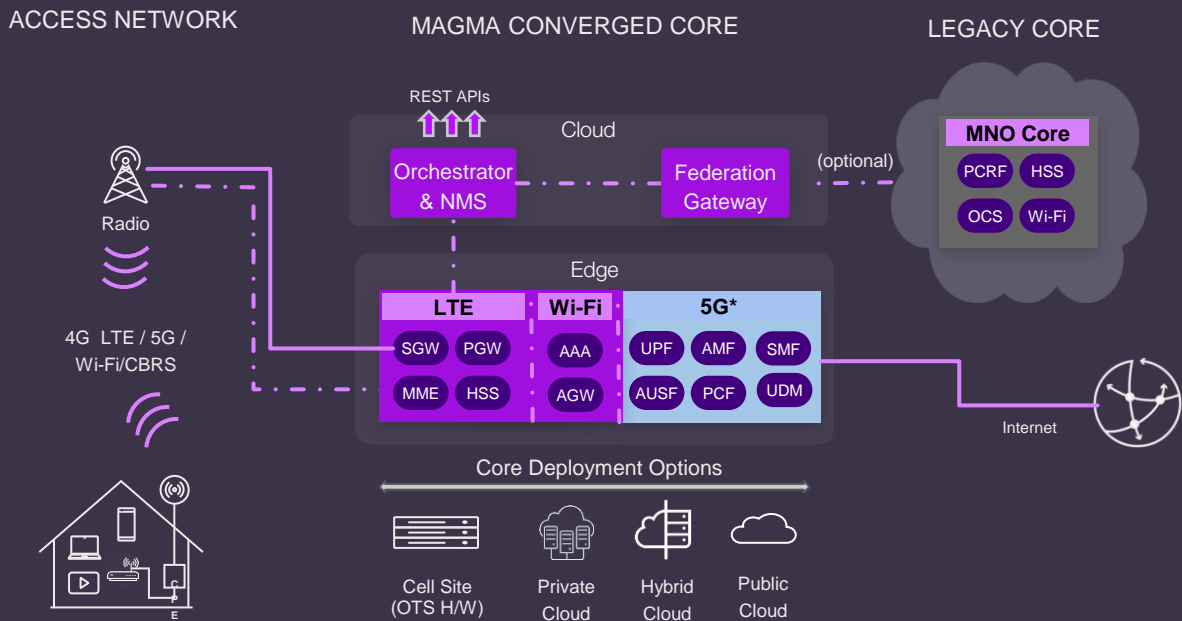
A person wearing a red hoodie is holding a smartphone. The background is a vibrant, abstract mural with various colors like green, blue, orange, and purple, featuring bold black outlines and geometric shapes. The text is overlaid on the image in a white, sans-serif font.

Enable the “Open Source” Telco.
Catalyze an open source 5G
movement.

Dramatically reduce Network TCO

Introducing Magma

- Hyper **Scalable & Distributed Core**
- Able to run on far edge appliances
- Open Source stack & **License Free**
- Cloud Native, CUPS, Containerized
- Vendor / Transport Agnostic
- **Local Break-out** for Internet Traffic
- **MNO Core Integration**
- Remote Configuration & Lifecycle Management using REST APIs
- “All access” Convergence
 - LTE, Wi-Fi, P-LTE, 5G

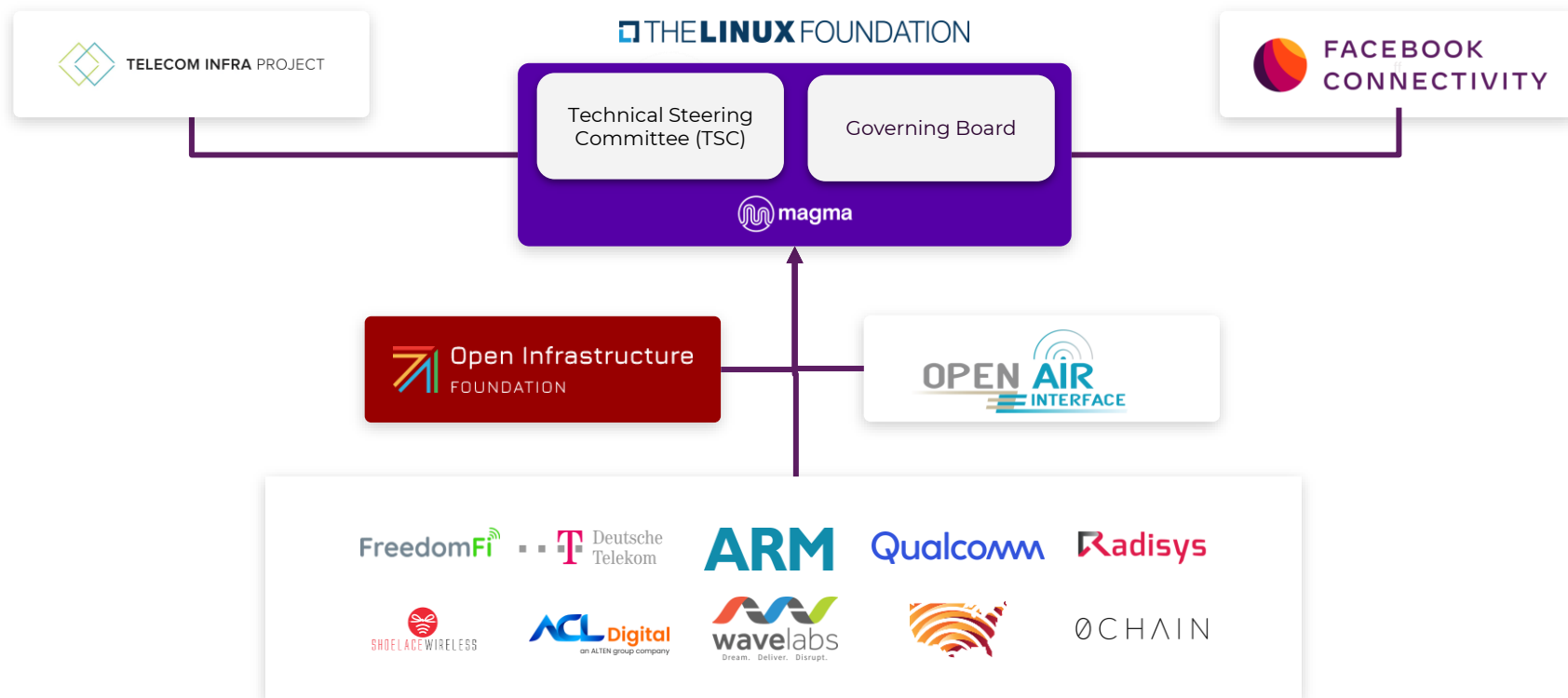


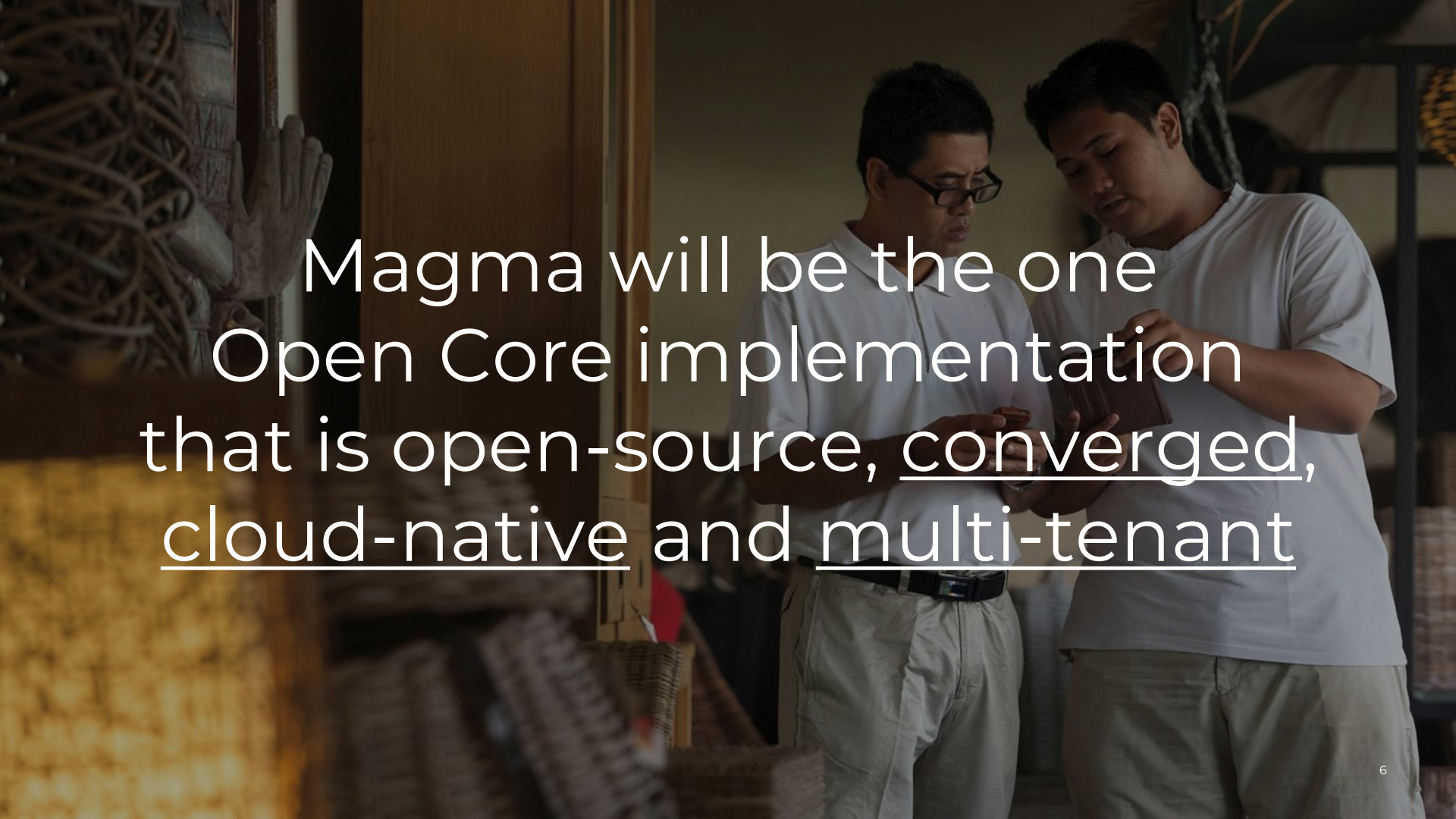
*5G Convergence
is Alpha maturity



2021: Magma Core Foundation is founded

Emerging as the “de-facto” Open-source Network Core



A photograph of two men in white shirts looking at a smartphone. The man on the left wears glasses and has his hand on a wooden structure. The man on the right is holding the phone. They are in a room with traditional wooden carvings and a warm, dimly lit background.

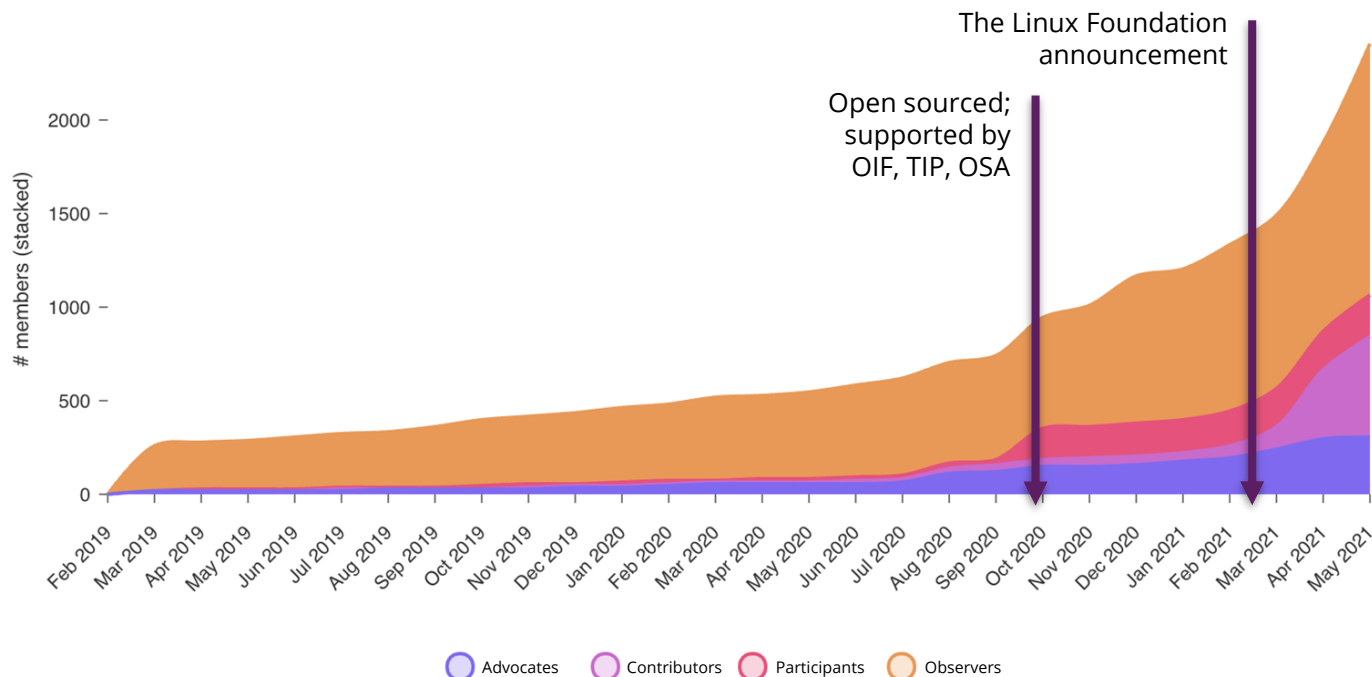
Magma will be the one
Open Core implementation
that is open-source, converged,
cloud-native and multi-tenant



Project-Community Fit: from Facebook to Community

Strong community with accelerated growth since moving to LF

Members by Orbit Level Feb 25, 2019 - May 14, 2021





YouTube

Search

Private 4G/5G on AWS

REMOTE SITE

aws

AWS Systems Manager AWS Config Amazon CloudWatch AWS Auto Scaling AWS CloudFormation AWS CloudTrail Amazon S3

VPC CBRS SAS Provisioning & Subscriber Enterprise Applications Mobile Core – Control Plane

Private Venue (e.g. Warehouse)

Outdoor radio network

Indoor radio network

SGI (opt)

Mobile Core User Plane

4.5 lbs. (2.1 kg). 8.94 inches long, 5.85 inches wide, and 3.25 inches tall



aws

16:00 / 52:07

Magma Cloud Deployment on AWS



YouTube Search



Burn Electricity.
Mine Bitcoins.

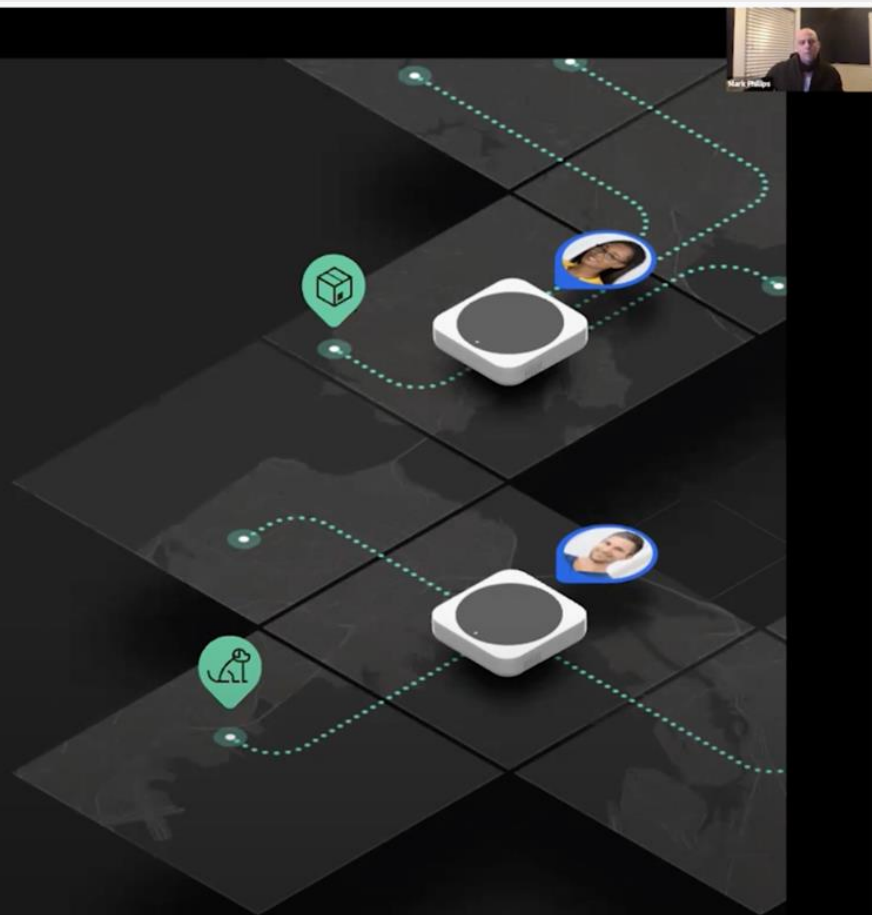
Connect the Unconnected.
Mine Helium.

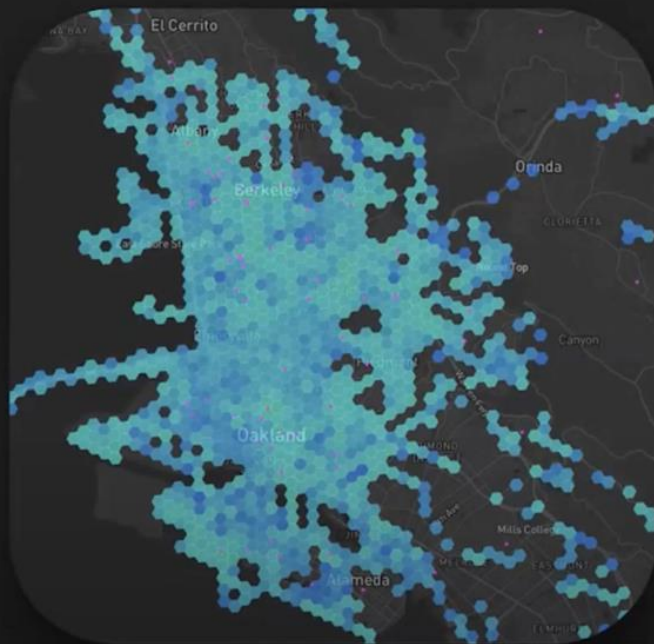
Using Magma and Helium Blockchain to Build The World's First People's Neutral Host Network



People-Powered Networks

A new blockchain with a native token built for incentivising the creation of decentralized wireless networks.



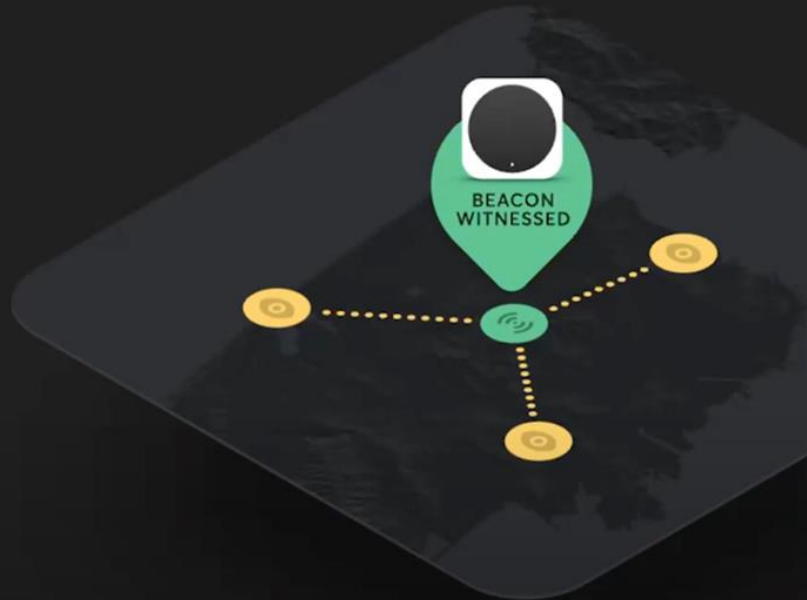




Proof of Coverage

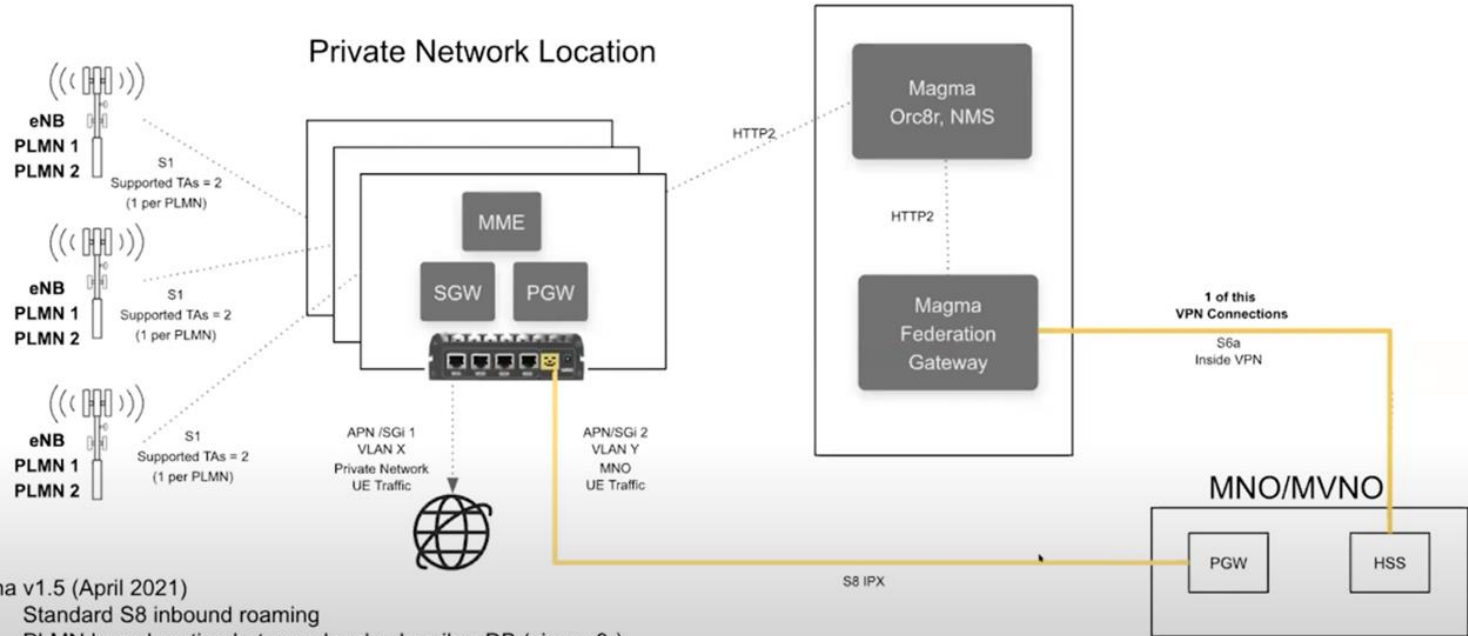
Though Helium started with LoRaWAN, the blockchain/\$HNT is fundamentally decoupled from the wireless network.

It can be applied to any connectivity layer.





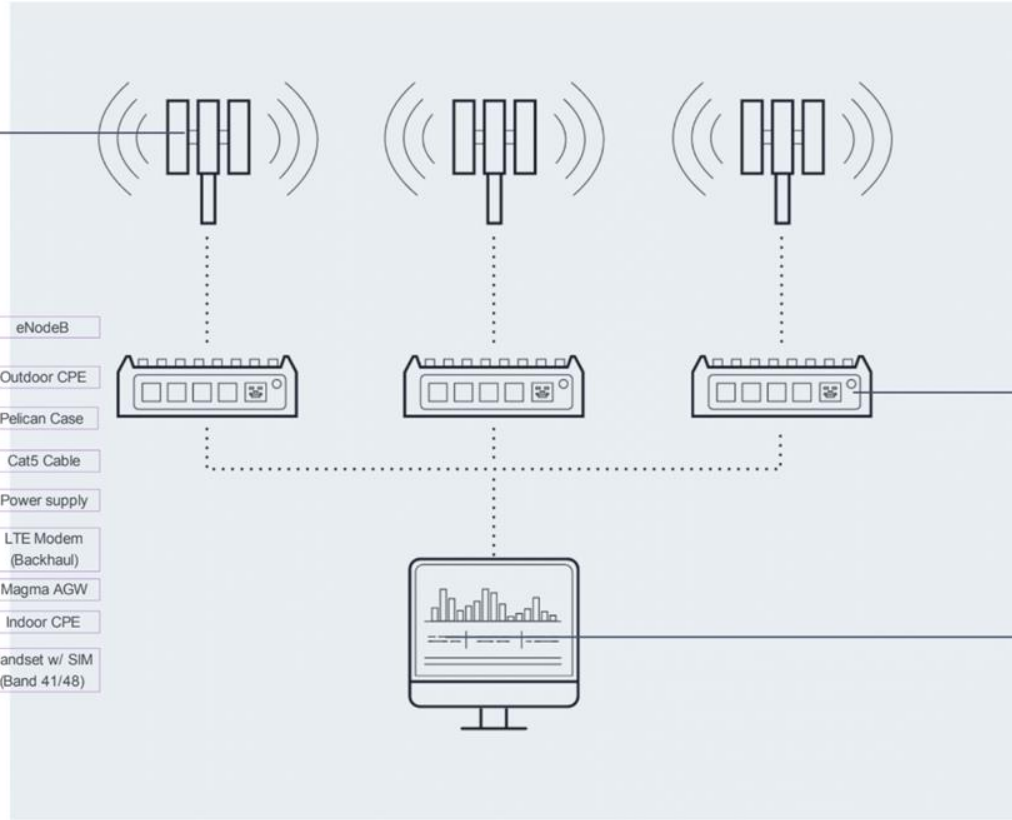
Architecture



Magma v1.5 (April 2021)

- Standard S8 inbound roaming
- PLMN based routing between local subscriber DB (via orc8r) and MNO/MVNO HSS (via FeGW)


Any Small Cell



Hardened code running on
pre-tested, secure AGW
appliance



Open Source Software
mamacore.org
Hosted & Managed by
Magma Foundation

A woman with dark hair tied back, wearing a dark blue dress, is sitting on a concrete ledge. Next to her, a young girl in a bright red dress is also sitting on the ledge, looking at a smartphone held by the woman. They are both smiling. The background is dark and out of focus, showing some hanging items and a yellow object. The text is overlaid in white, with some words underlined.

Join and build your
Connectivity, SaaS, Enterprise or
Consumer business faster with
Magma and ride the 5G wave
with us!

How will Magma work with - Industry Groups?

1. Magma is the “de-facto” open-source network core project for your group
2. You bring developer scale and evangelize Magma to the users in your community
3. We support and drive adoption of Magma use cases with vendors and operators in your community

Magma has aligned itself with four leading industry groups

- OpenAirInterface Software Alliance
- Telecom Infra Project
- Open Infrastructure Foundation
- Linux Foundation



Why do you care - Operators and Service Providers?

1. Take control of your 5G vision and destiny and say bye to “vendor lock in”
2. Gain full visibility into your production networks right from the code level
3. Explore emerging business and revenue opportunities with new network use cases (post-COVID world)

Bust the “open-source myths”

- Lack of professional support
- Challenges in system integration
- Lack of in-house expertise
- Security and switching cost concerns

Embrace “open-source 5G”

- Lower network TCO
- Technology flexibility and extensibility
- Code quality and development agility
- Reliable support and services

How will Magma work with - Academia and Public Domains?

1. Leverage Magma stack for your academic research and R&D projects
2. Unlock future use cases, experiment, incubate and support Magma stack evolution
3. Collaborate for advancing open-source telco and 5G+ movement, e.g., “Future G”

We support several universities

- UC Berkeley
- U of Washington
- Rice University
- University of Michigan
- Carnegie Mellon University
- Northeastern

Public sector opportunities:

- DARPA OPS-5G
- ESA ALIX / satis5

Thank you

Web: www.magmacore.org

Github: github.com/magma

Slack: magmacore.slack.com

Magma Open-source Team:

Phillip Ritter, Community Evangelist

Michael Cheng, Governing Board Member

Amar Padmanabhan, TAC Chair

Brian Barritt, Engineering Manager

Shah Rahman, Engineering Manager



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