

# STATE OF DECENTRALIZED INFRASTRUCTURE: 2022



**Escape Velocity**  
*Rocket fuel for networks.*

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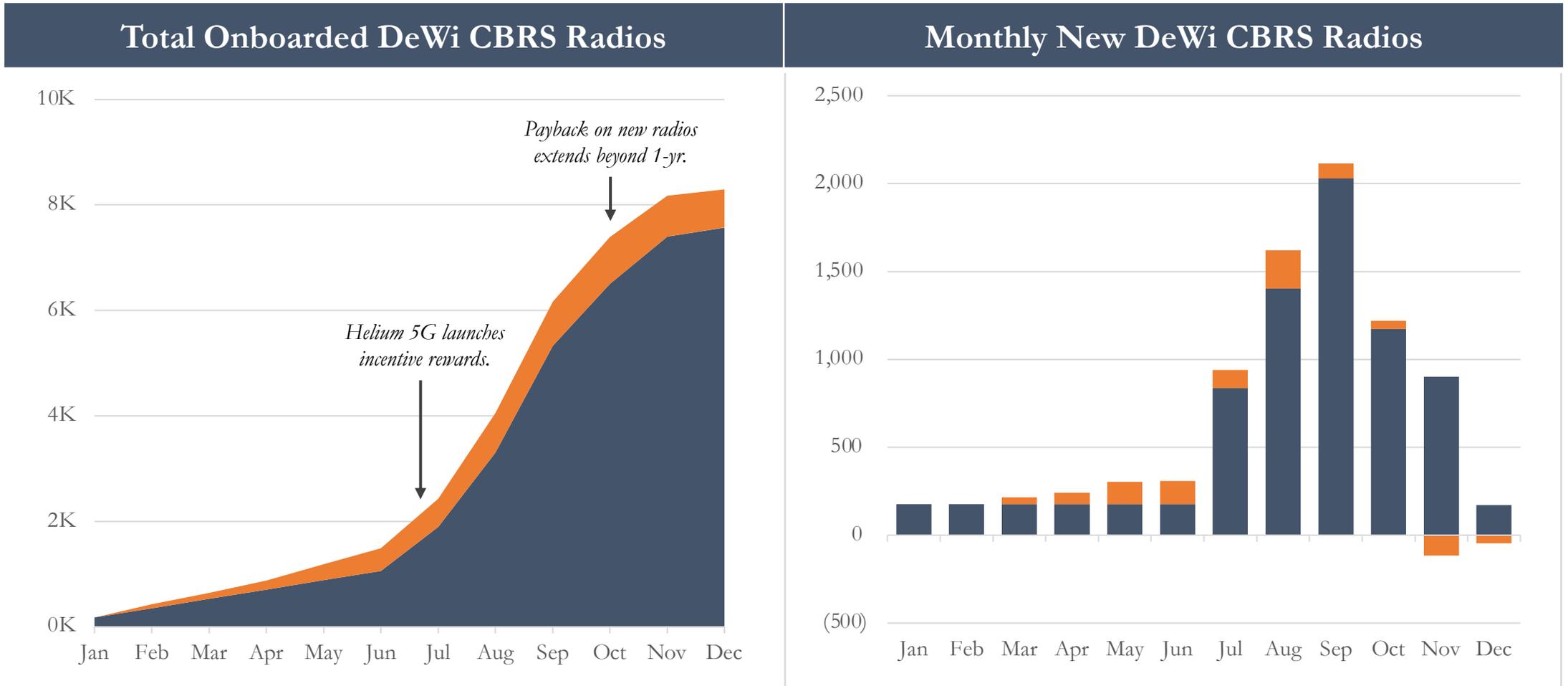


# DeWi = Decentralized Wireless.

Unbundling the telecommunications industry.



# In 2022, DeWi Networks Deployed 8K+ CBRS Radios, Representing \$20M+ Of Miner Investment.



Sources: Helium and Pollen block explorers and APIs, Escape Velocity research; as of 12/16/22.  
 Note: please see disclaimers on final page. Helium data unavailable before Jun'22 (chart assumes straight-line growth from Jan'22).

# DeWi Is Spreading Across Chains & Geographies: Most Major “Economies” Are Home To At Least One Project.

Solana	Polygon	Polkadot	Cosmos
<p><i>\$5B Mkt Cap &amp; \$250M TVL</i></p> <p> <b>Solana Mobile</b></p> <p>Solana Mobile Stack &amp; Android phone (Saga) coming early 2023; will support Helium</p> <p> <b>Mobile</b></p> <p>Chain migration to Solana and MVNO launch coming early 2023</p> <p> <b>POLLEN MOBILE</b></p> <p>Launched on Solana mainnet Q1'22</p>	<p><i>\$7B Mkt Cap &amp; \$1B TVL</i></p> <p> <b>XNET</b></p> <p>Launched on Polygon (Matic) mainnet Q4'22</p>	<p><i>\$5B Mkt Cap &amp; \$250M TVL</i></p> <p> <b>GIANT Protocol</b></p> <p>Launched testnet Q4'22; mainnet coming early 2023</p> <p> <b>Nodle</b></p> <p>Launched Nodle Cash app in 2020; Won parachain auction in Q1'22</p>	<p><i>\$2.5B Mkt Cap &amp; \$1B TVL</i></p> <p> <b>althea</b></p> <p>Launched Althea mainnet Q4'20; Launched Gravity Bridge Q1'22</p>

Canada	Europe	LatAm	Africa	India
 <b>KARRIERONE</b>	 <b>Roam</b>	 <b>WAYRU</b>	 <b>ukama</b>	 <b>AIRBRILS</b>

Sources: Project websites, announcements, and whitepapers, Coinmarketcap, DeFiLlama, Escape Velocity research; as of 12/16/22.  
 Note: please see disclaimers on final page.

**But To Fulfill Its  
Potential, DeWi  
Must Overcome  
Three Existential  
Challenges.**

1

**Supply-Side Capital Crunch**

*(End of Zero Interest Rate Era)*

2

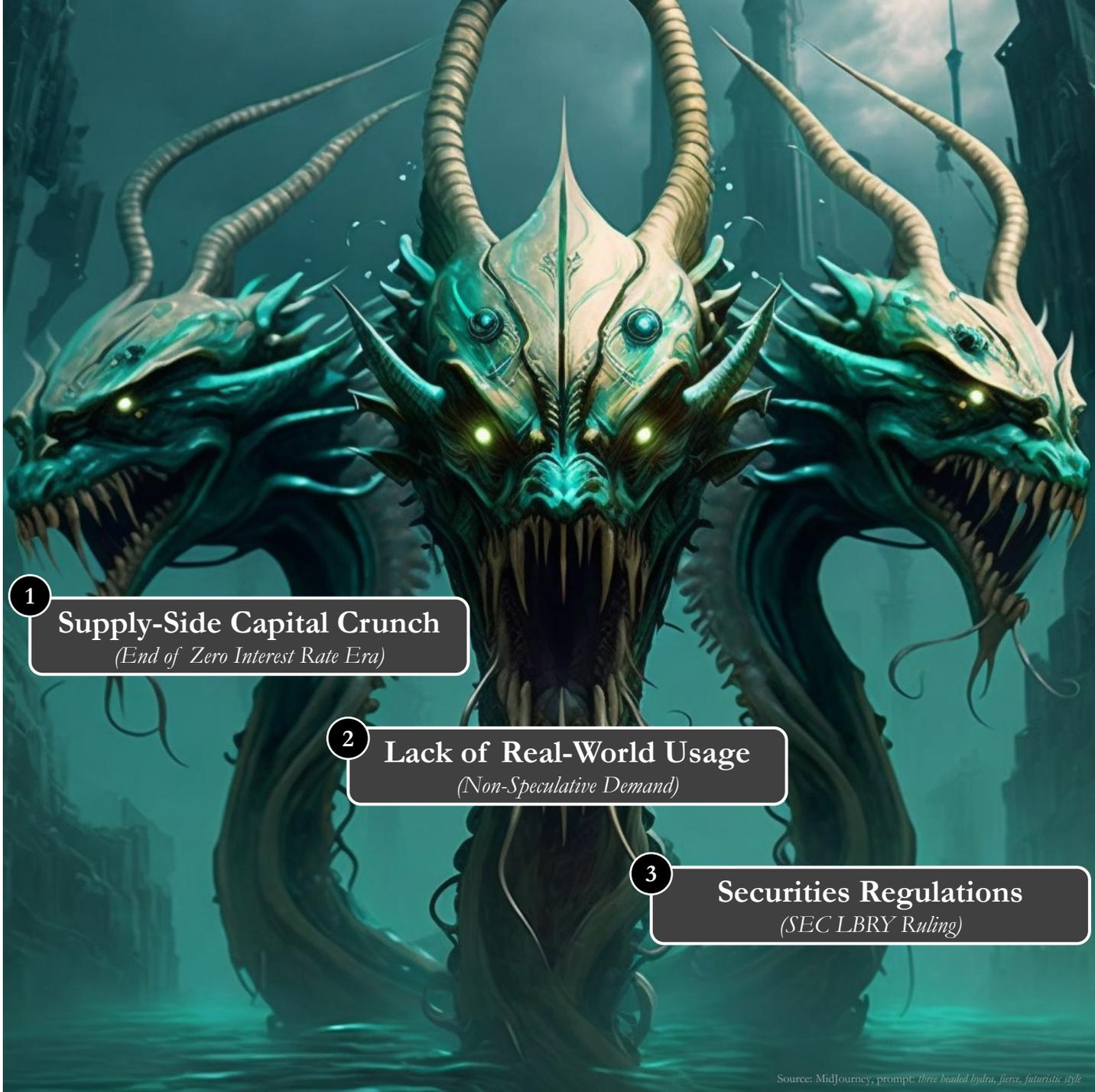
**Lack of Real-World Usage**

*(Non-Speculative Demand)*

3

**Securities Regulations**

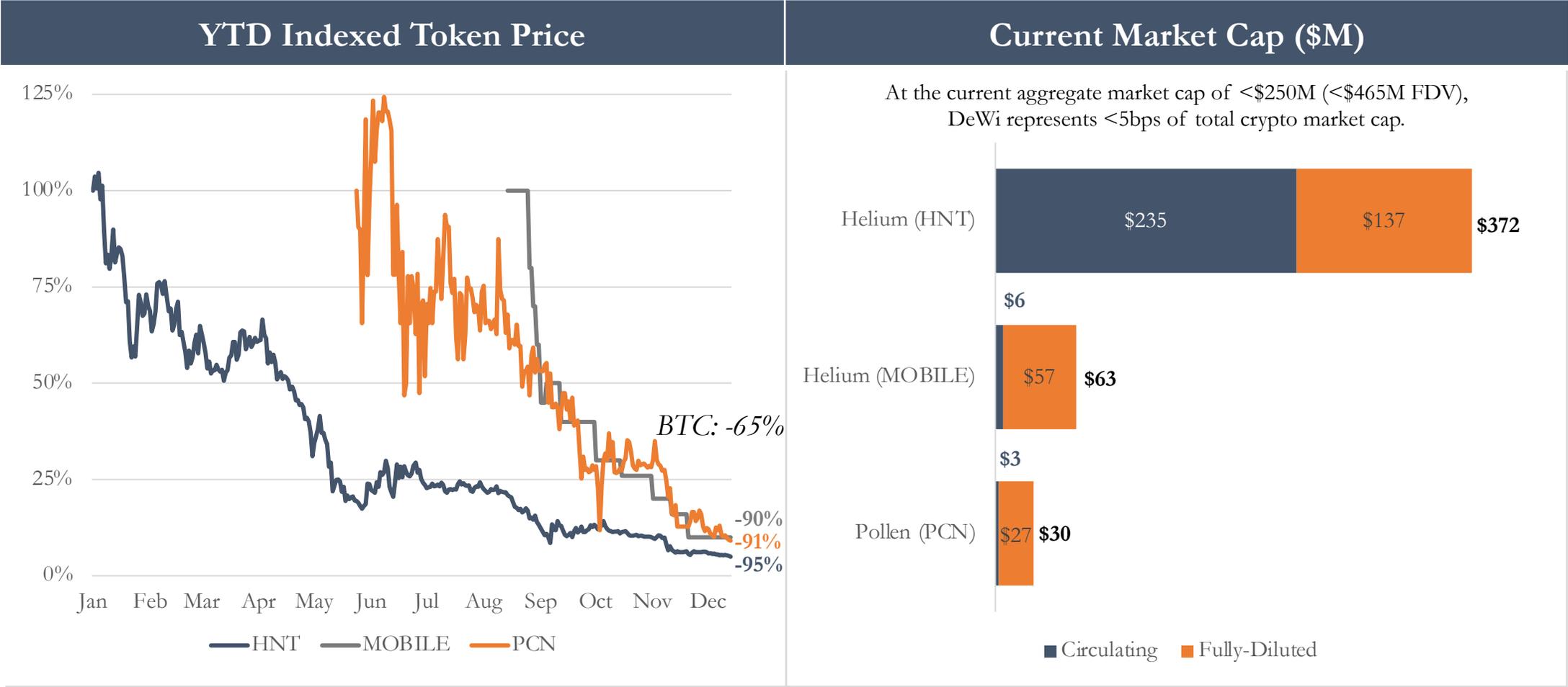
*(SEC LBRY Ruling)*



# Challenge #1: Supply-Side Capital

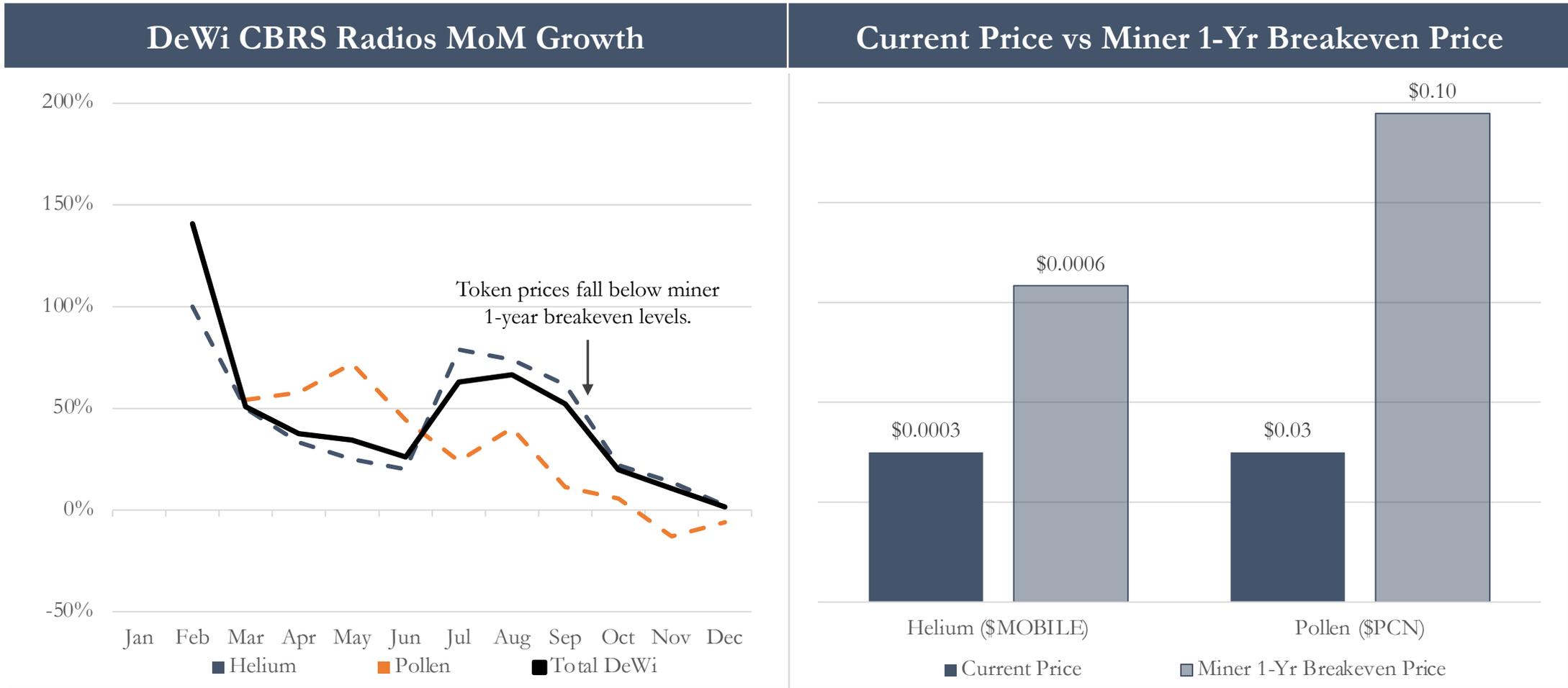


# DeWi Token Prices Fell 90-95% YTD, Creating Attractive Opportunities For Investors But Bleak Returns For Miners.



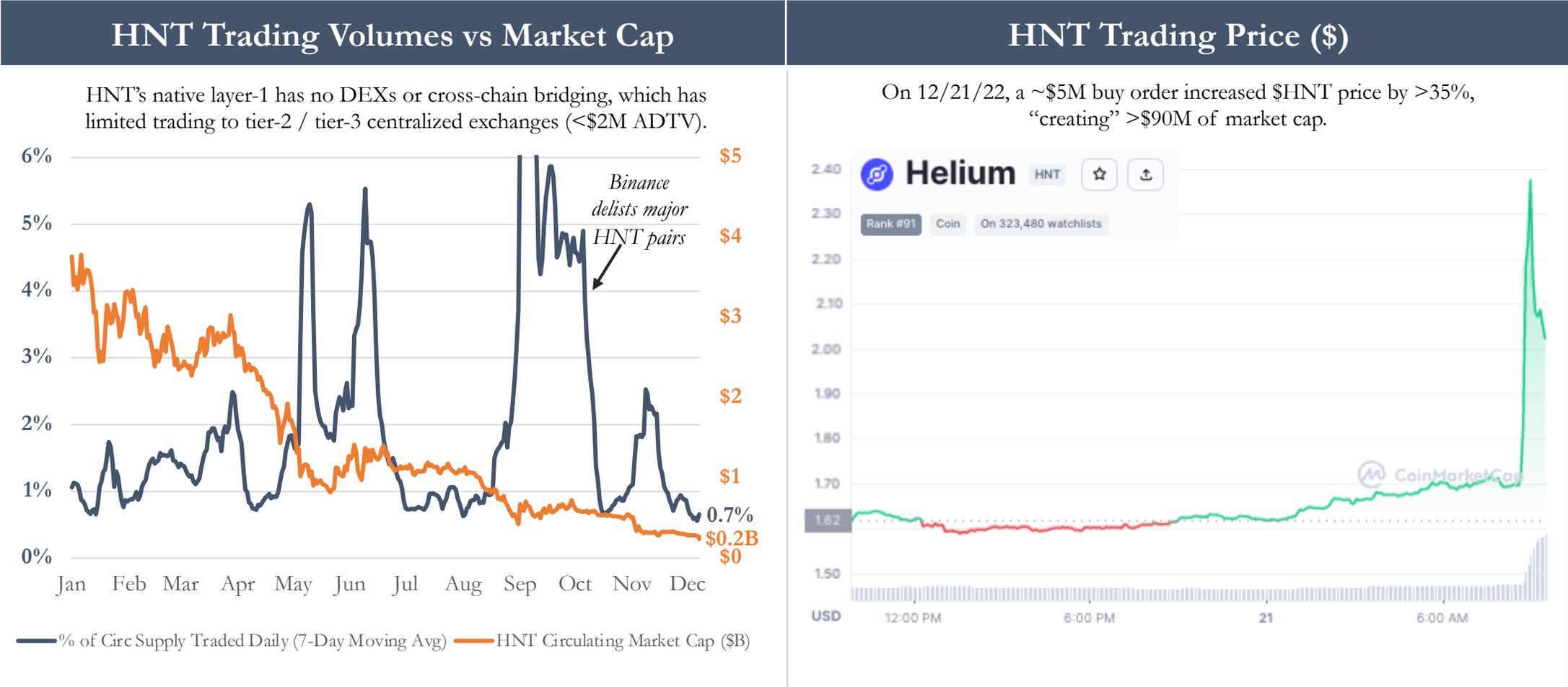
Sources: Coinmarketcap, Helium and Pollen documentation, Helium and Solana block explorers, OTC telegram chats, Escape Velocity research; as of 12/16/22.  
 Note: please see disclaimers on final page.

# In Q4'22, Network Growth Ground To A Halt As Token Prices Fell Below Miners' 1-Year Breakeven Levels.



Sources: Coinmarketcap, Helium and Pollen explorers, Escape Velocity research; as of 12/16/22. Miner 1-year breakeven represents the price needed for miners to reach 1.0x payback based on token rewards in 12 months, assuming zero residual value; expense assumptions are representative of large scale mining operations. Note: please see disclaimers on final page. \$MOBILE price shown at a factor of x100 for purposes of the chart.

# But Current “Prices” Are Based On Extremely Thin Trading Venues With Minimal Liquidity.



Sources: Coinmarketcap, block explorers, Escape Velocity research; as of 12/16/22. Note: please see disclaimers on final page.

# For New Token Launches, Bootstrapping Initial Liquidity Is Even Tougher.



- \$PCN Token launched Feb'22 on Solana; first DEX listing May'22
- Original DEX, Serum, compromised by FTX issues Nov'22; new DEX, Raydium, compromised by hackers Dec'22 (PCN pool unaffected)
- Current DEX TVL of \$15K... a \$2K trade moves prices >20%
- OTC markets exist but are also highly illiquid



- Token launched Aug'22 on Helium's native L1; planned migration to Solana in early 2023
- Only exchange listing is on Hotbit, a tier-2 offshore centralized exchange, since Oct'22
- Primarily trades OTC in community-run telegram groups, against both HNT and USD
- Unclear what (if any) premium \$MOBILE should trade to its treasury value of \$HNT



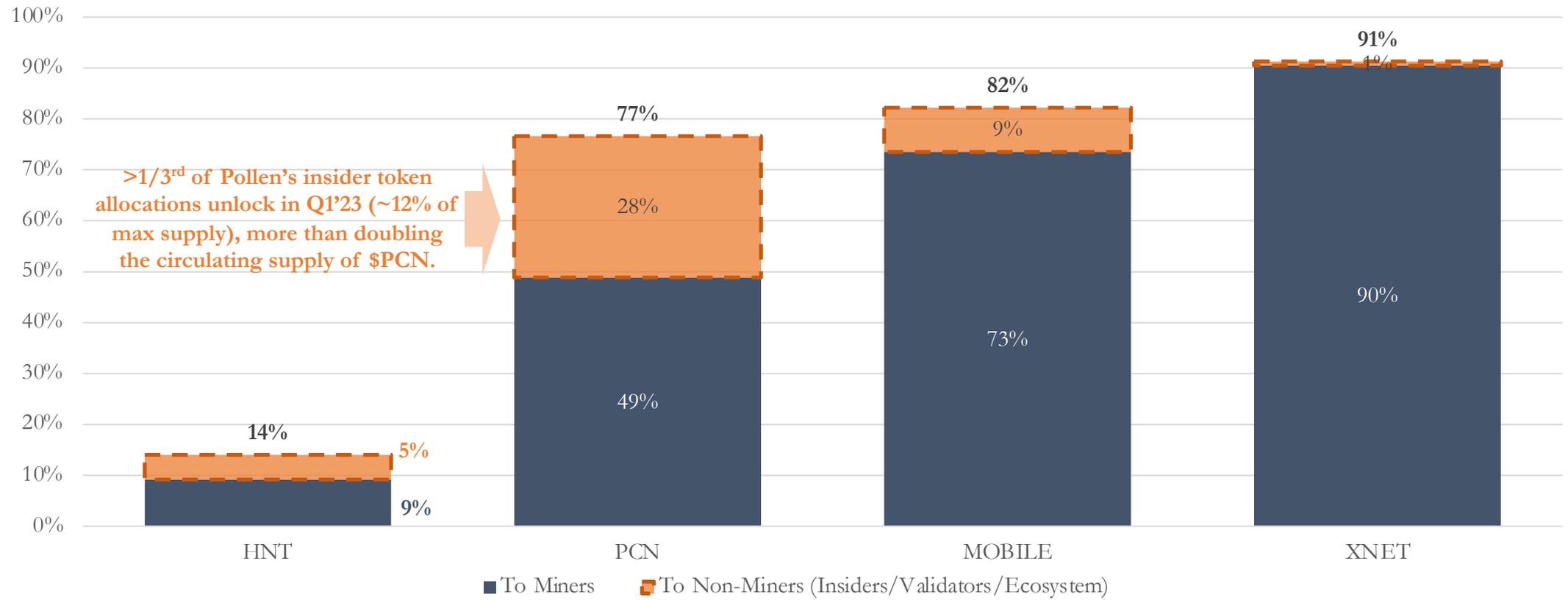
- Token launch and first DEX listing in Dec'22
- Current DEX, Quickswap (Polygon), has TVL below \$5K
- OTC markets still nascent



Sources: Protocol websites and announcements, block explorers, OTC telegram chats, Escape Velocity research; as of 12/16/22. Note: please see disclaimers on final page.

# Insider Token Unlocks Could Further Exacerbate Liquidity Challenges In 2023.

### 2023E Token Dilution



>1/3<sup>rd</sup> of Pollen's insider token allocations unlock in Q1'23 (~12% of max supply), more than doubling the circulating supply of \$PCN.

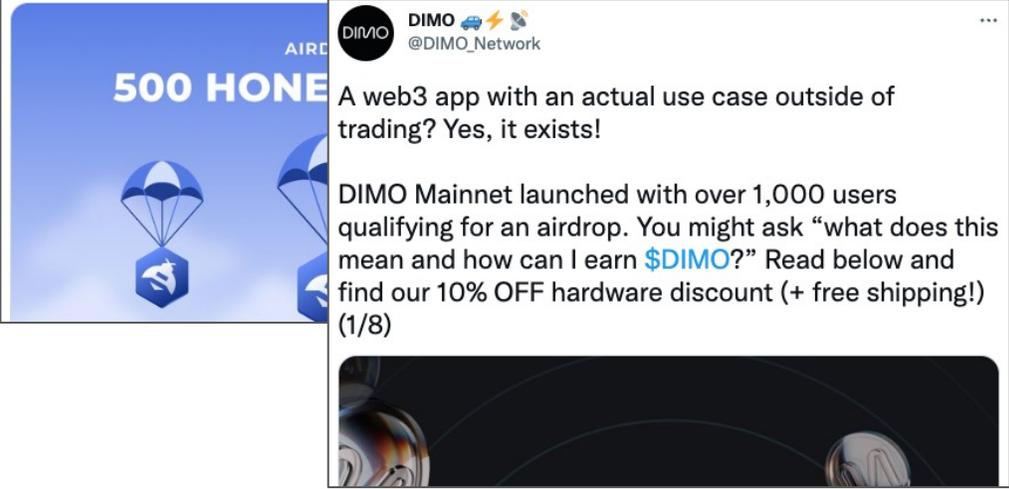
Token launched: Jul'19 (HNT), Feb'22 (PCN), Aug'22 (MOBILE), Dec'22 (XNET)

Sources: Helium, Pollen, and XNET documentation, Escape Velocity research. Note: please see disclaimers on final page.

# DeWi Networks Are Beginning To Put Their Own Spin On 2020-Era DeFi Primitives To Accelerate Growth.

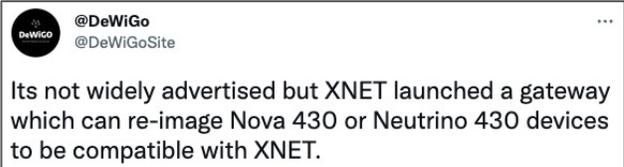
## DeWi Airdrops

Hivemapper (\$HONEY) and Dimo (\$DIMO) airdrops rewarded >4K wallets in the first three weeks.



## DeWi Vampire Attacks

For only \$1K, XNET’s Marconi Gateway turns any Helium/Pollen radio into an XNET radio, earning \$XNET instead of \$HNT/\$PCN.



Yes, radios from \*any\* other DeWi project can become XNET devices.



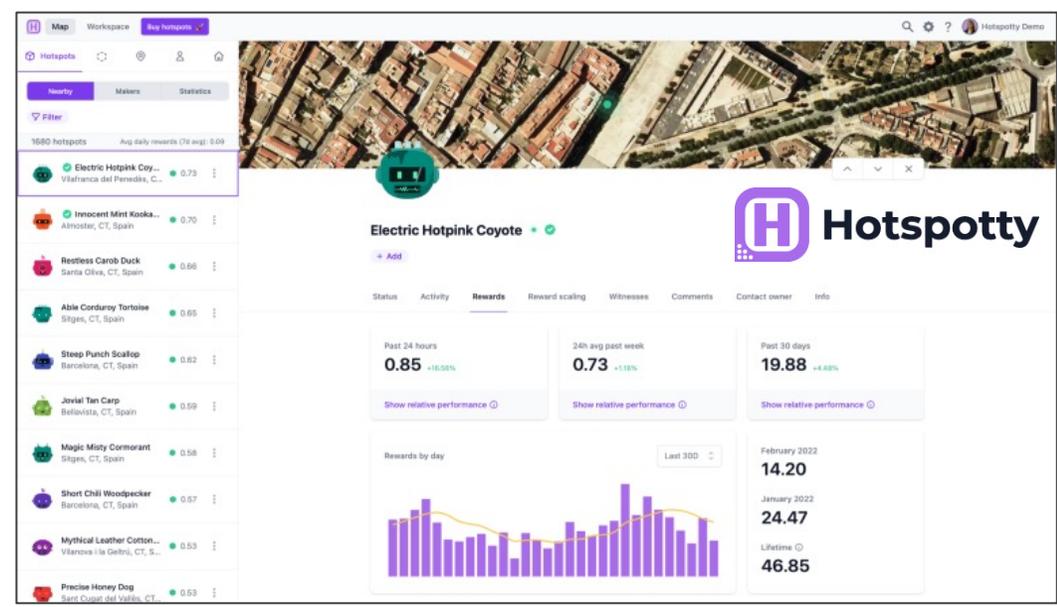
shop.xnet.company  
**XG1 Marconi**  
Introducing Marconi. Put your Baicells Nova 430 or Neutrino 430 radio to work on the XNET network. This package includes: One (1) XG1 Marconi Gateway ...

In 2023, we expect to see high-end “multi-homing” deployments capable of mining several DeWi tokens simultaneously.

Sources: Protocol websites and announcements, Twitter, DeWiGo, Escape Velocity research.  
Note: please see disclaimers on final page.

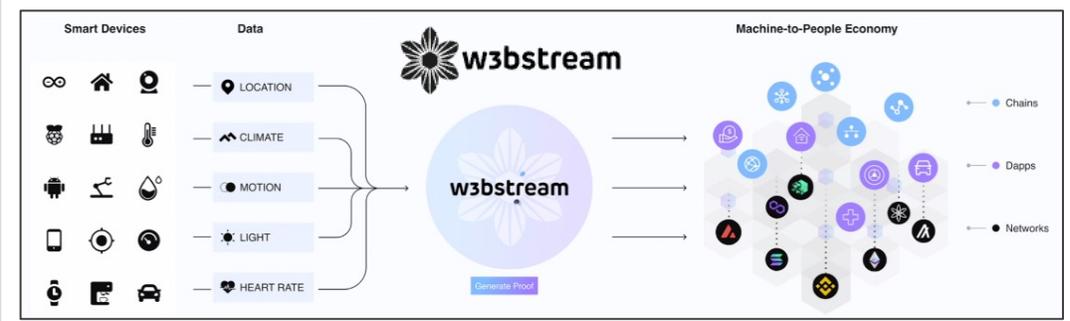
# DeWi Software Platforms Reduce Friction For Miners, Increasing The Efficiency Of Supply-Side Capital.

## VC-Backed DeWi Miner SaaS Platforms



## Crypto x IoT Software Platforms

W3bstream: decentralized infra for connecting smart devices to smart contracts

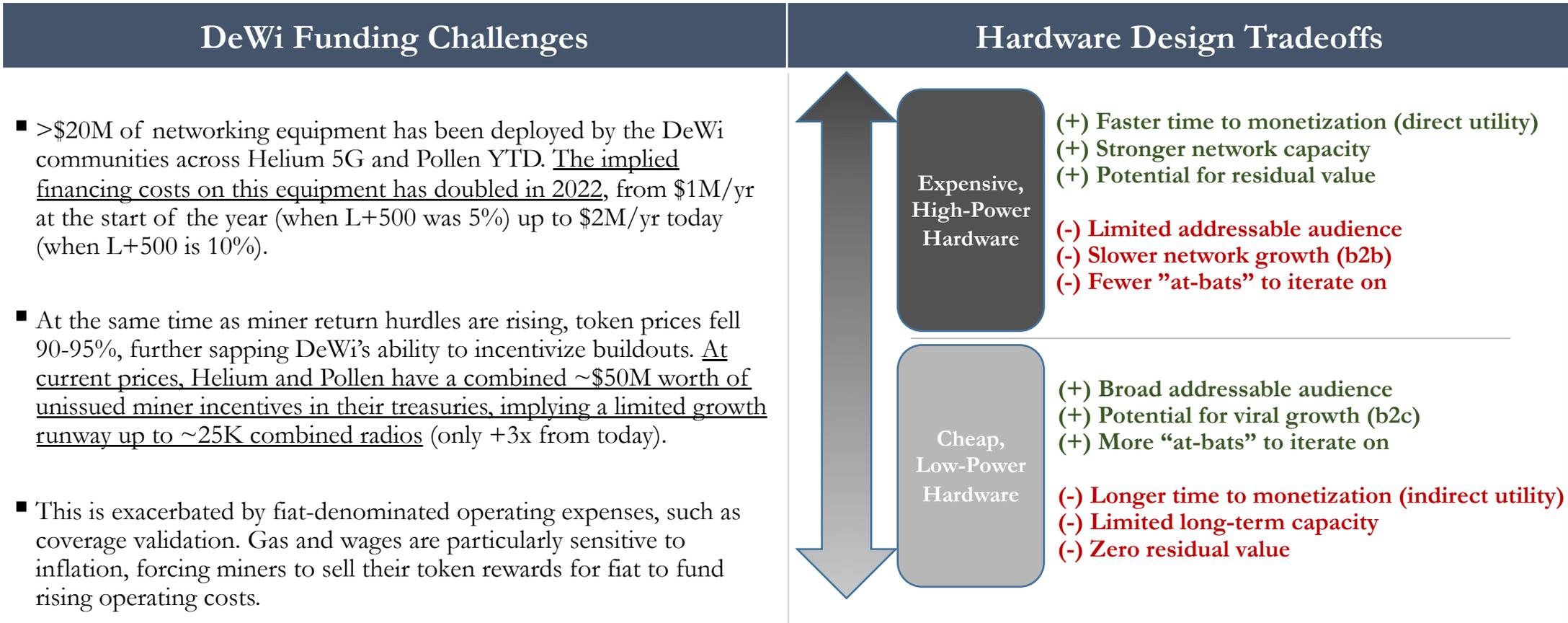


Trackpac: enterprise-grade asset tracking built on top of Helium's LoRa network.

The image shows the Trackpac product page. It features two main products: 'Tab', a small white tracker, and 'Oyster3', a rugged black case. Below each product is a 'Buy' button. To the right, there's a screenshot of the Trackpac mobile app, which displays a map and a list of tracked devices with their names, locations, and battery levels.

Sources: Protocol websites and announcements, Twitter, DeWiGo, Escape Velocity research. Note: please see disclaimers on final page.

# The Challenge: Incentivizing Community-Owned Infrastructure In A Post-ZIRP (Zero Interest Rate Policy) World.



While Both Strategies Can Work, High-Powered Deployments Will Be More Resilient In Crypto Bear Markets.

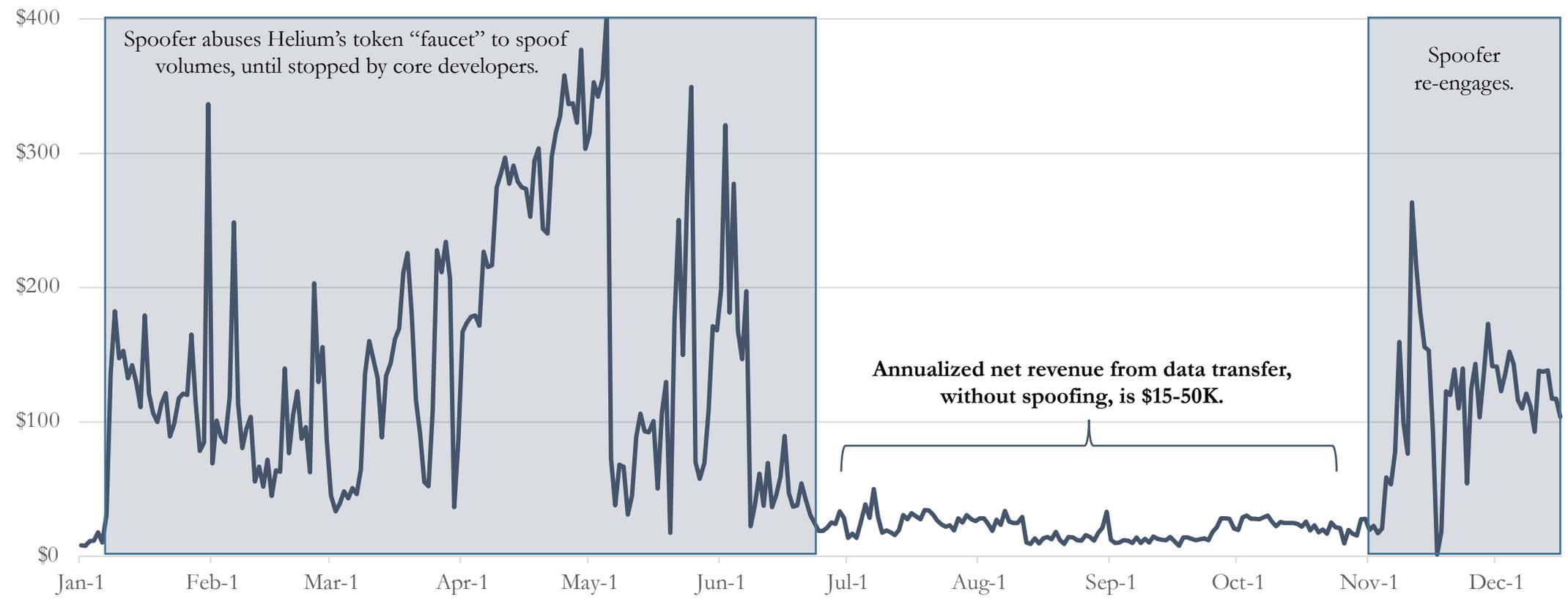
Sources: Helium and Pollen block explorers and APIs, Escape Velocity research; as of 12/16/22.  
 Note: please see disclaimers on final page.

# Challenge #2: Real-World Usage



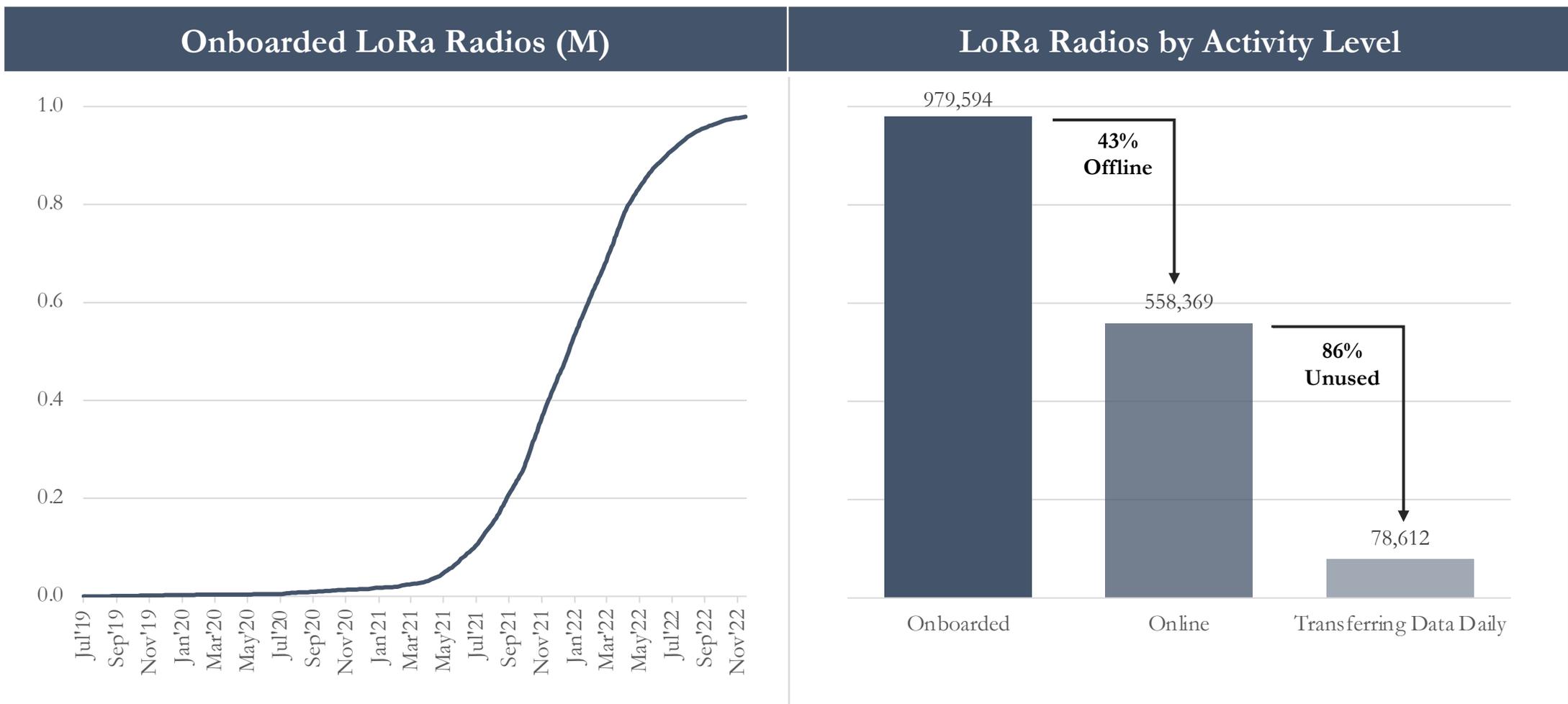
# Organic Demand For DeWi Tokens Has Proved Elusive: Helium's LoRa Network Generates <\$50K/Yr in Net Revenues.

### Helium LoRa: Annualized Data Transfer Net Revenue (\$K)



Sources: Helium ETL and Discord announcements, Escape Velocity research.  
Note: please see disclaimers on final page.

# In Fact, Only ~8% of Helium's 1M LoRa Hotspots Transfer Data On Any Given Day.



Sources: Helium EIT, Escape Velocity research.  
Note: please see disclaimers on final page.

# There Are Some Signs – Like Rewards Gaming – That Suggest DeWi Will Face Similar Challenges In CBRS As In LoRa.

## Miners Gaming \$MOBILE Rewards

Helium \$MOBILE miners providing redundant coverage.



## Mappers Gaming \$PCN Rewards

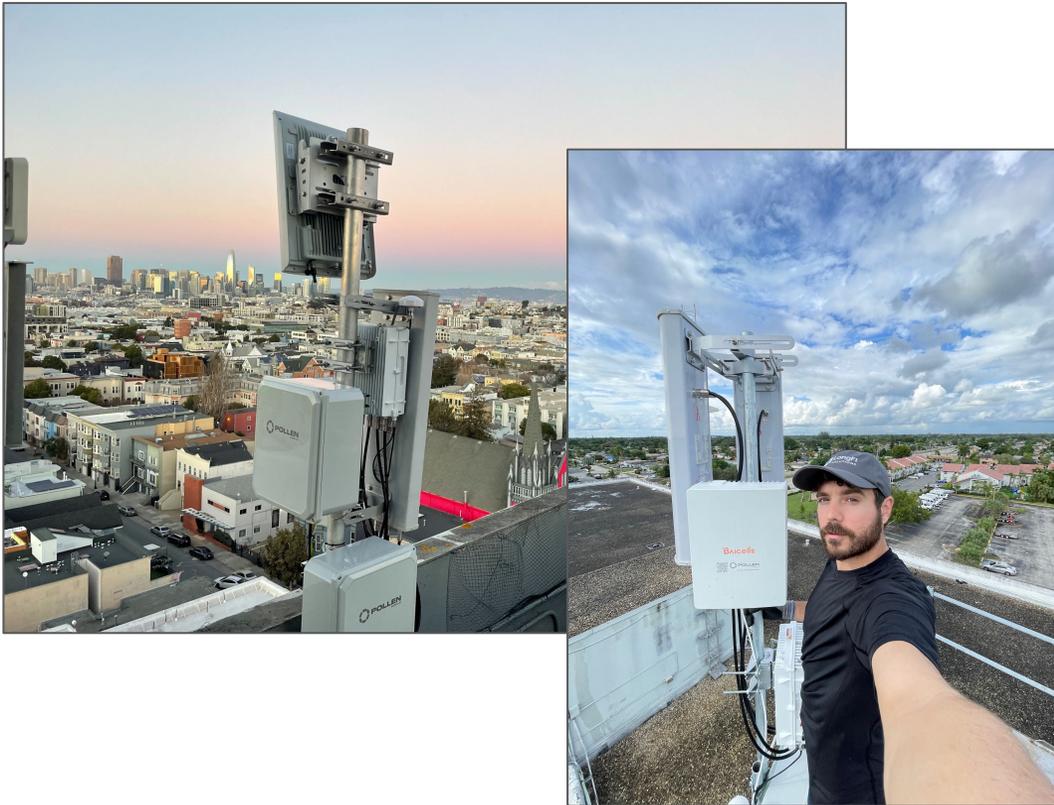


Pollen \$PCN validators (“bumblebees”) stacked on top of each other to maximize rewards — also known as swarming.

Sources: Helium & Hivemapper Discords, Max Gold, Escape Velocity research.  
Note: please see disclaimers on final page.

# While On-Chain Data Can Be Spoofed, We See DeWi Providing Valuable Coverage With Our Own Eyes.

## Pollen Deployments



## XNET Deployments



# One Path To Real-World Usage Involves Moving “Up The Stack”, Serving Consumer Directly For The First Time.



- Open-source mobile stack built on Android with integrated Solana wallet
- Phone pre-orders available in 33 countries since Jun'22; shipping “early 2023”
- Partnership with Helium Mobile



- Data-only MVNO with plans as low as \$5/mo (for 1GB/mo)
- Helium rents wholesale capacity from T-Mobile outside Helium coverage
- Shipping “early 2023”

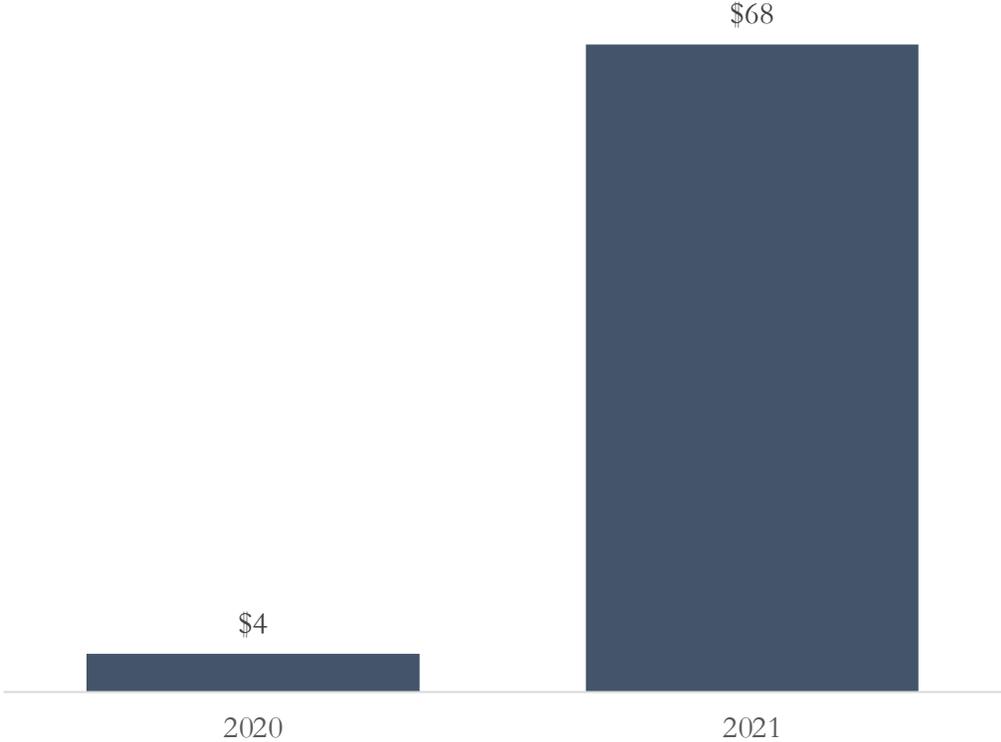


- Mobile app where users earn rewards for validating coverage on the Pollen network
- Live coverage from third-party deployments (i.e., miners)... including the 2022 ALDS in Houston
- >1 TB/day of live data transfer

Sources: Project websites and announcements, Escape Velocity research.  
Note: please see disclaimers on final page.

# Emerging Threats, Like SIM-Swaps, Create Opportunities For New Crypto-Native Mobile Brands.

## Reported Losses From SIM-Swap Hacks (\$M)



## Security-Centric Challenger MVNOs

**cloaked** Wireless **3 Levels of security**



Cloaked Wireless subscribers can choose from 3 levels of security depending on their security needs and preferences.

- Level One** Subscribers use a traditional username and password plus a one time code generated by an app (like Authy or Google Authenticator).
- Level Two** Subscribers use U2F devices to create and access their account.
- Level Three** Subscribers create and access their account by signing messages using their chosen Bitcoin key.

**Protection Against SIM Swaps** 

Safeguard your email, crypto, bank, and proprietary data with the **SAFE Plan™ - World's Most Secure Mobile Service.**

SAFE Plan™ comes with \$5M of insurance and 60-day 100% money-back guarantee.

**PROTECT MY PHONE FROM SIM SWAPS**

**Don't leave your Digital Portfolio vulnerable.**

Protect yourself against Sim Swap Fraud

[LEARN MORE](#)



Sources: Federal Bureau of Investigation, company websites, Escape Velocity research. 2020 figure represents average reported SIM swap losses over 2018-2020. Note: please see disclaimers on final page.

# DeWi Aggregators Use Tokens To Drive Value To Customers In New Ways, Strengthening Their Own Network Effects.

## REALLY

### BEST PHONE PLANS IN COCKEYSVILLE, MD

Compare and switch to the Best phone & data plans in Cockeysville, MD

Showing 80 out of 388 plans that match your criteria.

Cheapest Free (\$0/mo) Best Value Free (\$0/mo) Best Overall \$5/mo

Pricing

Free \$200+

Contract  
 No Contract  
 Prepaid

1 Line

Location

Cockeysville, Maryland

Edit

Data Plans

Plan Summary	Features	Customer Rating	Monthly Price
<p>Our Pick</p> <p><b>tello</b></p> <p>Unlimited Text And Talk</p> <p>No Data</p>	<p>EG Coverage</p>	★★★★★	\$8
<p>Our Pick</p> <p><b>PureTalk</b></p> <p>2GB Data</p> <p>Unlimited Talk + Text</p>	<p>EG Coverage</p> <p>Visual Voicemail</p>	★★★★☆	\$10
<p>Our Pick</p> <p><b>tello</b></p> <p>500 Mins + 1GB Data</p> <p>Unlimited Text</p>	<p>EG Coverage</p>	★★★★★	\$9

- Phone plan aggregator/comparison site across hundreds of MNOs and MVNOs
- Users enter their zip code and see eligible plans; monetized via referral links
- DeWi plans coming early 2023

## GIANT Protocol

We support 209 countries

Choose your country	Popular: United States	India	Europe
5GB Europe	5GB Global	5GB USA	
<p>Validity 30 Days</p> <p>* Provider GIANT</p> <p>Pay \$31.75 Earn \$12.70 (40% back)</p> <p>Buy Gift</p>	<p>Validity 30 Days</p> <p>* Provider GIANT</p> <p>Pay \$33.00 Earn \$13.20 (40% back)</p> <p>Buy Gift</p>	<p>Validity 30 Days</p> <p>* Provider GIANT</p> <p>Pay \$31.25 Earn \$12.50 (40% back)</p> <p>Buy Gift</p>	
Europe	Global	United States	
Afghanistan	Africa	Albania	
Algeria	Andorra	Aneulla	

- Global pool of connectivity providers, where users can buy airtime privately via their crypto wallet
- Early users earn up to 40% back in tokens
- Mainnet coming early 2023

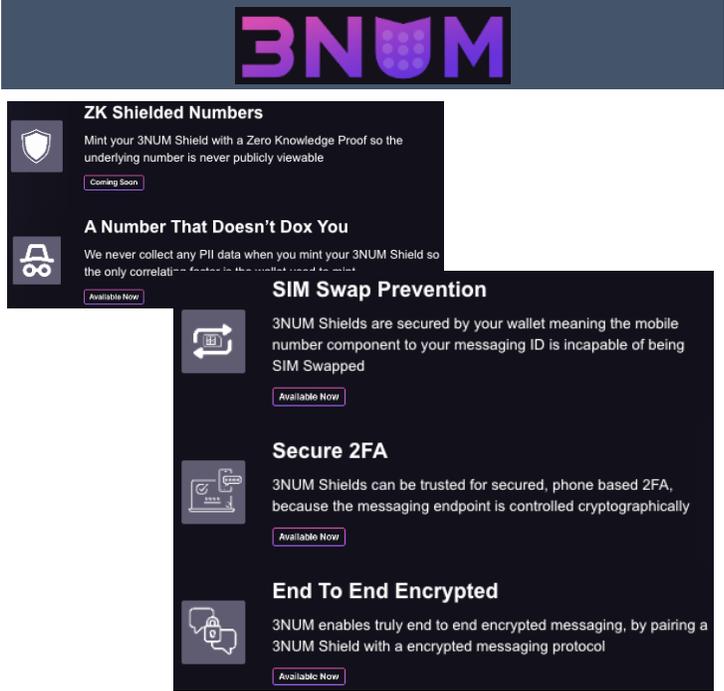
## airalo

Local eSIMs Regional eSIMs Global eSIM

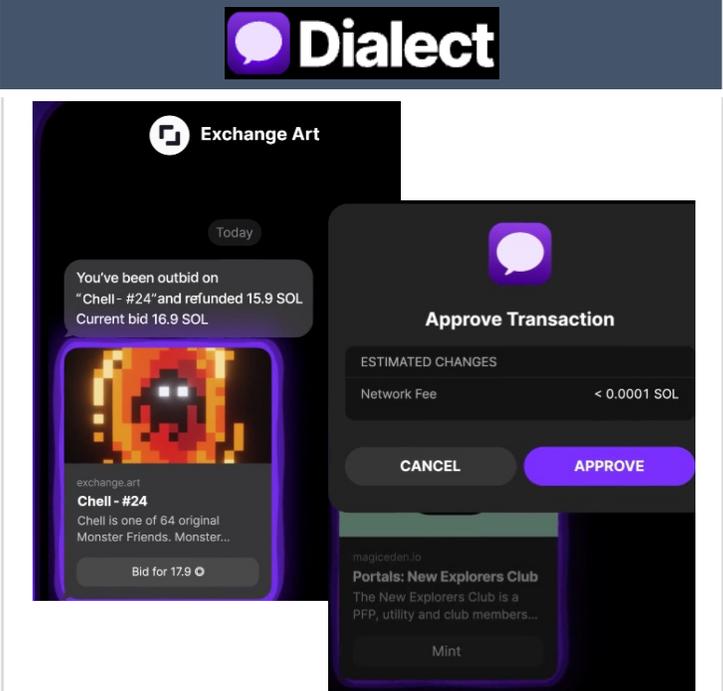
Download the app Choose your destination and package Install your eSIM Activate your eSIM

- eSIM aggregator for travelers, providing coverage in 190+ countries
- Announced partnership with GIANT protocol in Oct'22
- 1M+ users (>3x growth in 2022)

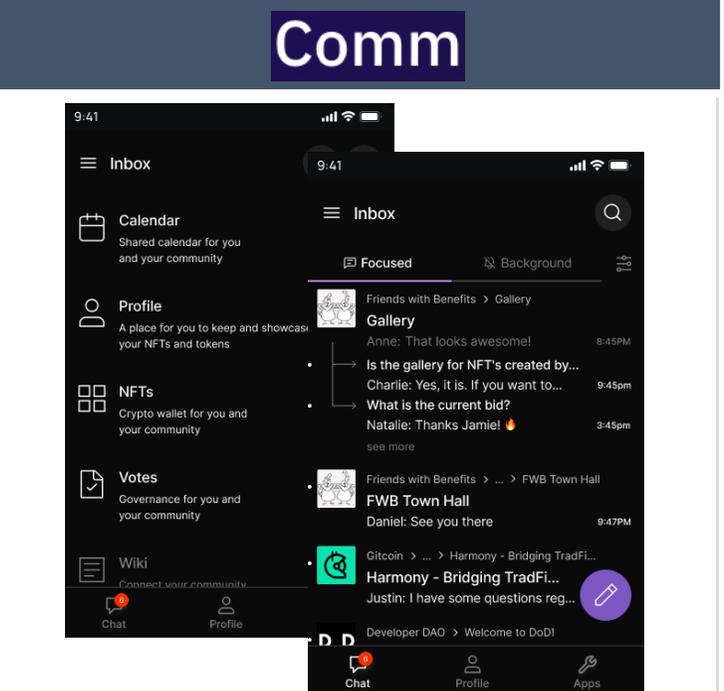
# Messaging Apps Bridge The Gap Between Connectivity, Identity, & Social.



- Privacy-preserving, pseudonymous phone numbers powered by zero-knowledge encryption
- Open-source, fully-encrypted wallet-to-wallet messaging infrastructure built on top of Signal



- Interactive mobile messaging and notifications protocol built on Solana
- Users can mint NFTs, vote on DAO proposals, trade tokens, etc with the tap of a notification
- Compatible with Solana Saga phone



- Crypto-native messaging app based on federated key servers (“a private, decentralized Discord”)
- Initially focused on solving Discord’s noise vs signal problem
- Built on Ethereum

Sources: Company websites and announcements, Escape Velocity research.  
 Note: please see disclaimers on final page.

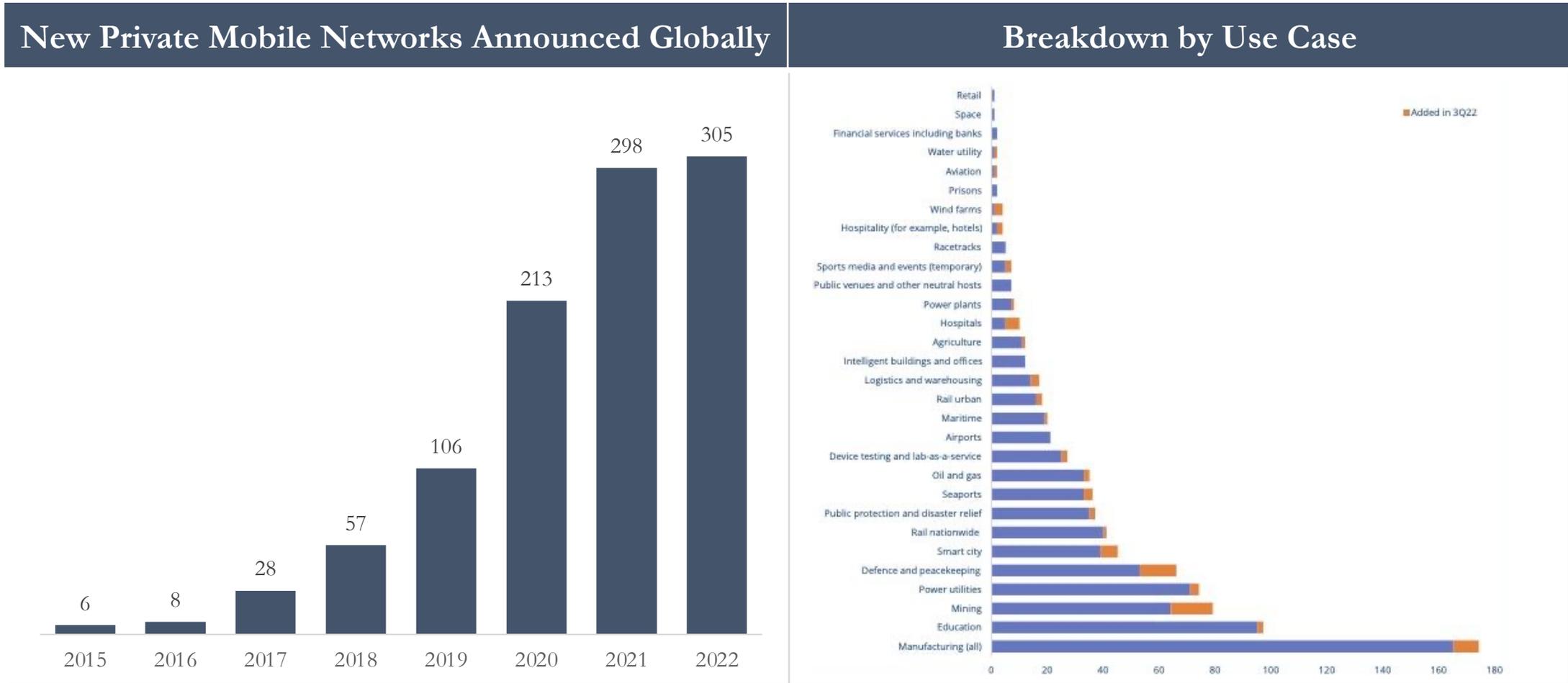
# DeWi For Fixed/Home Internet – Another Viable Path To Data Transfer – Will Come Onto The Scene In 2023.

Fixed vs Mobile Internet Comparison		Challenger Fixed Wireless ISPs	
	Mobile	Fixed	
Connection Type	Person-to-Person	Place-to-Place	
Number of Connections in the US	300M+	125M+	
(x) Monthly Revenue Per-Connection	\$85	\$50	
Annual Revenue TAM	\$300B	\$75B	
(%) Monthly Usage Per Connection	15 GB	500 GB	
Implied Revenue per GB	\$5.50	\$0.10	
Customer Churn	Low	Super Low	

*Fixed Internet requires different distribution models, given customers pay 50x less per-GB than in mobile.*

Sources: Company websites and announcements, Escape Velocity research. Note: please see disclaimers on final page. Helium data unavailable before June 2022 (chart assumes straight-line growth until then).

# Private Cellular Networks – The Focus Of Pollen Mobile’s GTM – Are Growing Rapidly Across A Stunning Range Of Use Cases.



Sources: GSA Private Mobile Networks report Dec'22, Escape Velocity research.  
 Note: please see disclaimers on final page.

# The Challenge: Unlocking Real-World Use Cases That Drive Organic (Non-Speculative) Protocol Revenue.

		
<p style="text-align: center;"><i>Hybrid MVNO</i></p> <ul style="list-style-type: none"> <li>▪ Helium acquires and serves customers directly, acting as their mobile carrier</li> <li>▪ Customers use Helium’s proprietary network whenever available, and T-Mobile’s elsewhere</li> </ul> <p>(+) <b>Direct customer relationships can be expanded into profitable new products.</b></p> <p>(-) <b>Acquiring mobile customers is a prohibitively expensive way to scale.</b></p> <p>(-) <b>Helium pays expensive wholesale rates to T-Mobile during the bootstrapping phase.</b></p>	<p style="text-align: center;"><i>Private Networks</i></p> <ul style="list-style-type: none"> <li>▪ Independent operators deploy private cellular networks for their own purposes</li> <li>▪ Individual deployments can, but don’t necessarily, interoperate with national telcos</li> </ul> <p>(+) <b>Tailwinds from the rapid growth and diversification of private cellular networks.</b></p> <p>(-) <b>TAM is much smaller and more fragmented than mobile.</b></p> <p>(-) <b>Customers can operate private networks without paying a “toll” to DeWi.</b></p>	<p style="text-align: center;"><i>Carrier Offload/Roaming</i></p> <ul style="list-style-type: none"> <li>▪ Independent operators deploy networks in areas with known telco network deficiencies</li> <li>▪ End-users automatically offload data traffic when in range, via wholesale agreements</li> </ul> <p>(+) <b>Multi-billion \$ revenue market with highly-motivated buyers on day one.</b></p> <p>(-) <b>Telcos’ service requirements necessitate a higher level of protocol centralization.</b></p> <p>(-) <b>Intermediated relationships with users limits long-term pricing power.</b></p>

We Believe Carrier Offload/Roaming Will Be The First To Generate \$1M+ of Data Transfer ARR in 2023.

Sources: Company websites and announcements, Escape Velocity research.  
 Note: please see disclaimers on final page.

Challenge #3:  
Securities  
Regulations



# In November, US District Courts Supported An SEC Judgement Ruling Classifying \$LBC Token As Unregistered Securities.

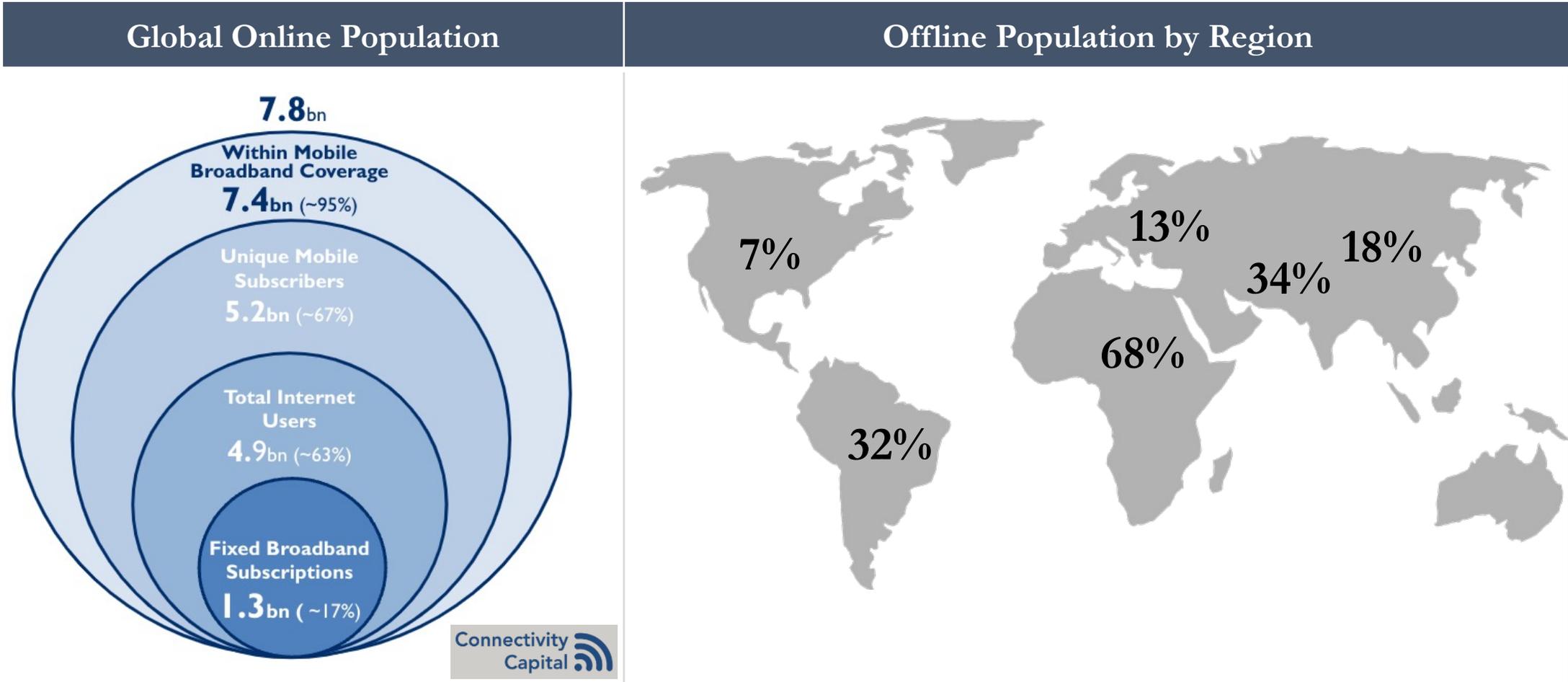
## LBRY Case Ruling

- LBRY is a decentralized video-sharing platform founded in 2015.
- Unlike most 2015-era projects, LBRY did not raise funds in an ICO (initial coin offering). Instead, tokens were sold to institutional investors and distributed to miners in exchange for useful work (e.g., hosting videos) — in other words, largely the same setup used by DeWi networks today.
- In November, Judge Paul J. Barbadoro of the U.S. District Court for New Hampshire granted an SEC summary judgement supporting that LBRY offered and sold unregistered securities in violation of the 1933 Securities Act, despite never doing an ICO.
- The case rested on prong 3 of the Howey Test: whether a reasonable purchaser of tokens would expect to earn profits derived from the efforts of the company. Despite them marketing tokens for consumptive purposes, rather than investment purposes, the court ruled that LBRY's pre-mined insider allocation of tokens is enough to trigger the Howey Test.

Similar SEC Classification Could Potentially Apply To All Unregistered DeWi/PoPW Utility Tokens.

# So, Why Build/Invest In DeWi?

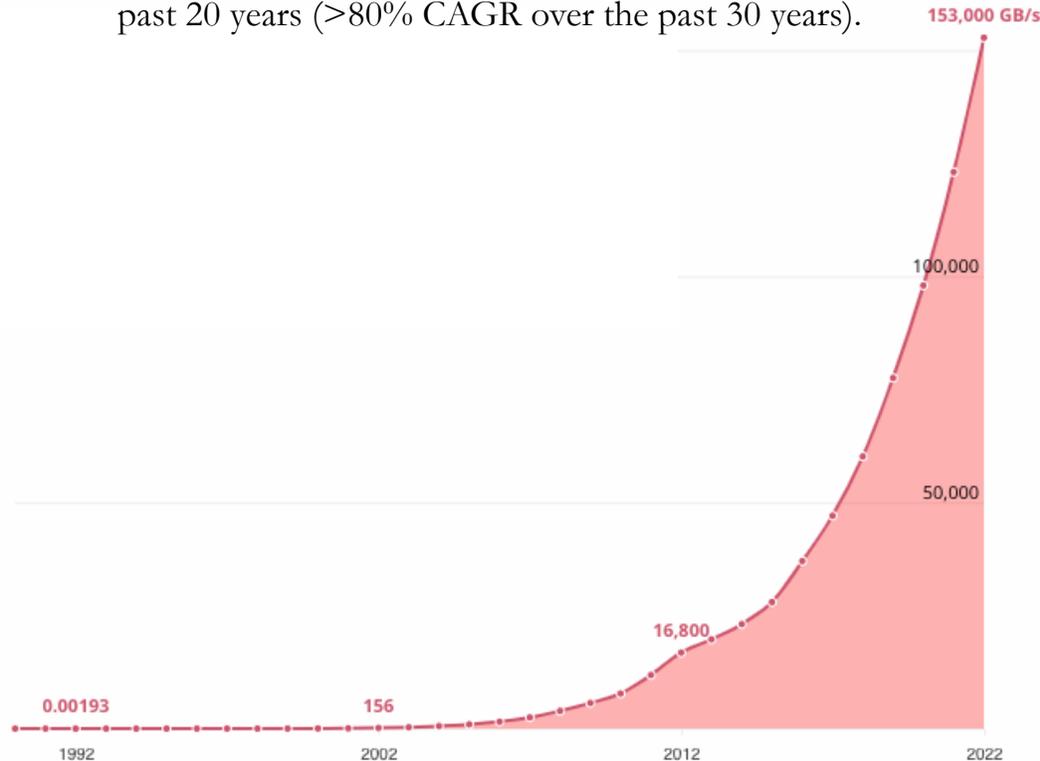
# The Problem Is Massive: Telecom Infrastructure Fails To Serve >1/3rd Of The Global Population With Dependable Internet.



# The Problem Is Growing: Per-Capita Internet Traffic Is Compounding At >25% YoY Everywhere Around The World.

## Global Internet Traffic (GB/s)

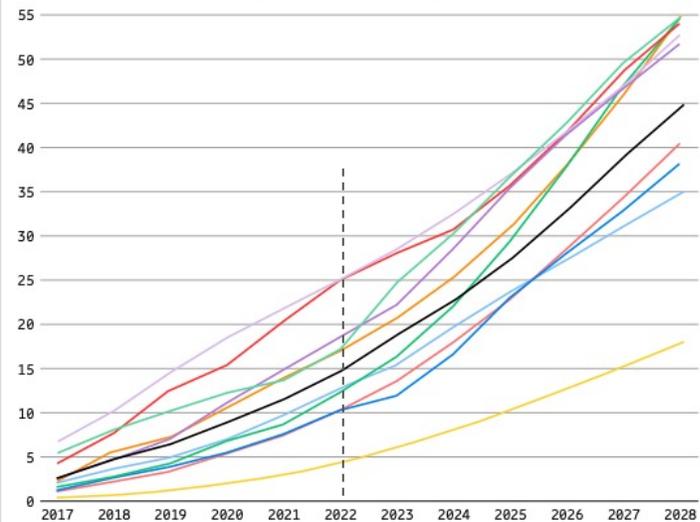
Global internet traffic has compounded at an >40% CAGR for the past 20 years (>80% CAGR over the past 30 years).



## Mobile Data Traffic Per Smartphone (GB/mo)

Per-smartphone data demand is a global phenomena, expected to grow between 11-28% across all major regions.

Figure 20: Mobile data traffic per smartphone (GB per month)



Regions	2022	2028	CAGR 2022-2028
North America	17.4	55	21%
North East Asia	17	55	21%
South East Asia and Oceania	12.5	54	28%
India, Nepal, Bhutan	25	54	14%
GCC	25	53	11%
Western Europe	19	52	18%
Global average	15	46	21%
Latin America	10.5	41	25%
Middle East and North Africa <sup>1</sup>	11	38	24%
Central and Eastern Europe	13	35	18%
Sub-Saharan Africa	4.6	18	26%

# The Size Of The Prize: There's >\$1T Of Public Market Cap Across The Telco Value Chain In The US Alone.

## TelCos: \$450B+ Public Market Cap

\$350B+	Low-Growth, >85% Penetration <sup>1</sup>	50% Asset Turnover	25-35% EBITDA Margins	7-9x Fwd EBITDA	  
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## CableCos: \$205B+

\$190B+	Low-Growth, >85% Penetration <sup>2</sup>	40% Asset Turnover	20-40% EBITDA Margins	7-9x Fwd EBITDA	  
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## TowerCos: \$190B+

\$20B+	>85% Contractual	25% Asset Turnover	>60% EBITDA Margins	18-25x Fwd EBITDA	  
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## Manufacturers: \$45B+

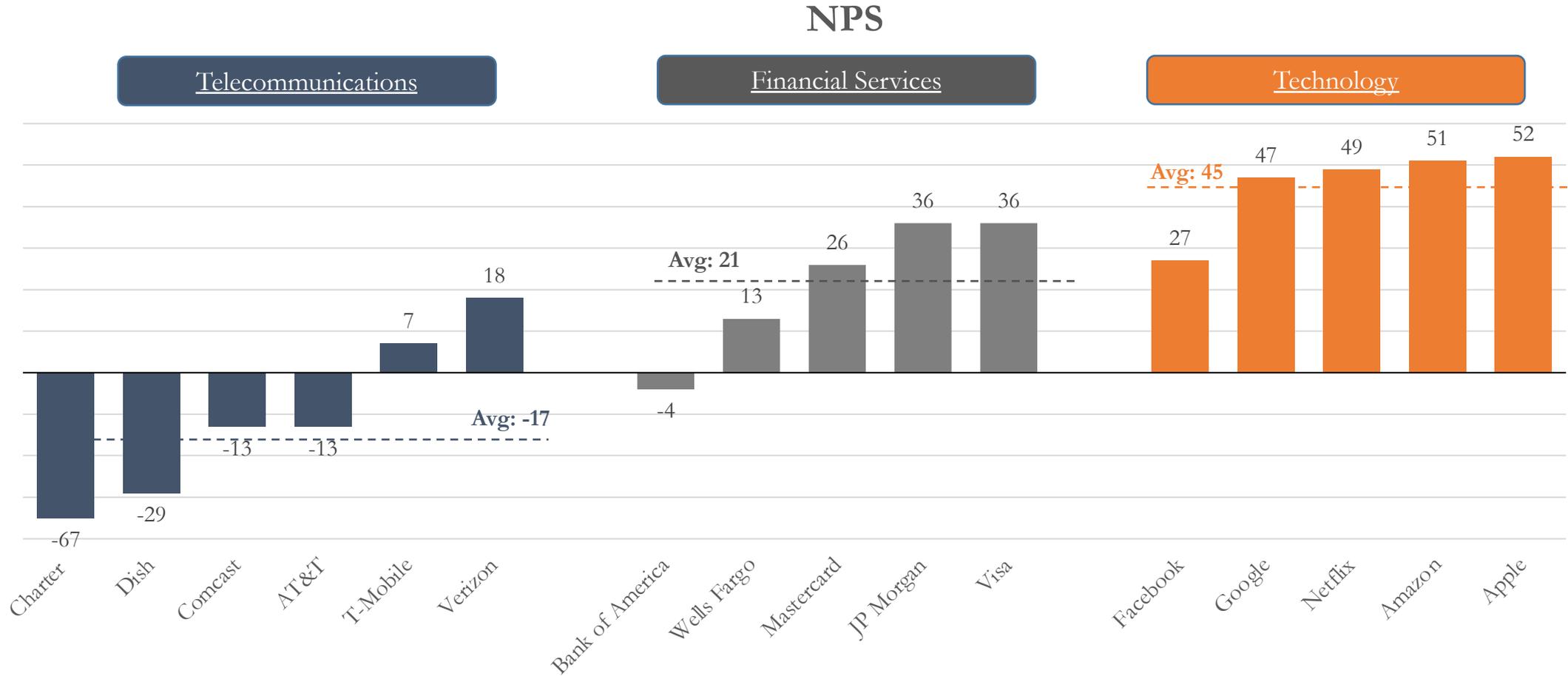
\$50B+	<15% EBITDA Margins	5x Fwd EBITDA	 
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## SoftwareCos: \$20B+

\$8B+	<20% EBITDA Margins	10-25x Fwd EBITDA	 
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Sources: Company filings and transcripts, YCharts, Escape Velocity research.  
 Note: please see disclaimers on final page. <sup>1</sup> Smartphone penetration among American adults is 85% as of 2021, per PewResearchCenter. <sup>2</sup> Broadband penetration of 86% as of 2020, per Leichtman Research.

# Customers Want Change: People Love Their Internet Apps, But Hate Their Internet Providers.



# We Have The Tools To Build Something Better: Industry-Grade Radios/Antennas Are Now Available For <\$10K.

<p><b>Nova430H eNB</b></p>  <p>powered by <b>FREEDOMFi</b></p> <ul style="list-style-type: none"><li>+ Baicells Nova430H eNB</li><li>+ 1 CA License Key</li><li>+ 1 Yr FreedomFi FW Support</li><li>+ 1 Yr SAS Licensing Fee</li></ul> <p><b>\$1,599.99</b></p>	<p><b>Nova436H eNB</b></p>  <p>powered by <b>FREEDOMFi</b></p> <ul style="list-style-type: none"><li>+ Baicells Nova436H eNB</li><li>+ 1 CA License Key</li><li>+ 1 Yr FreedomFi FW Support</li><li>+ 1 Yr SAS Licensing Fee</li></ul> <p><i>* External antennas are required and sold separately. Professional installation is recommended.</i></p> <p><b>\$5,749.99</b></p>
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**MOONFLOWER**  
SHIPS IN 1-2 WEEKS

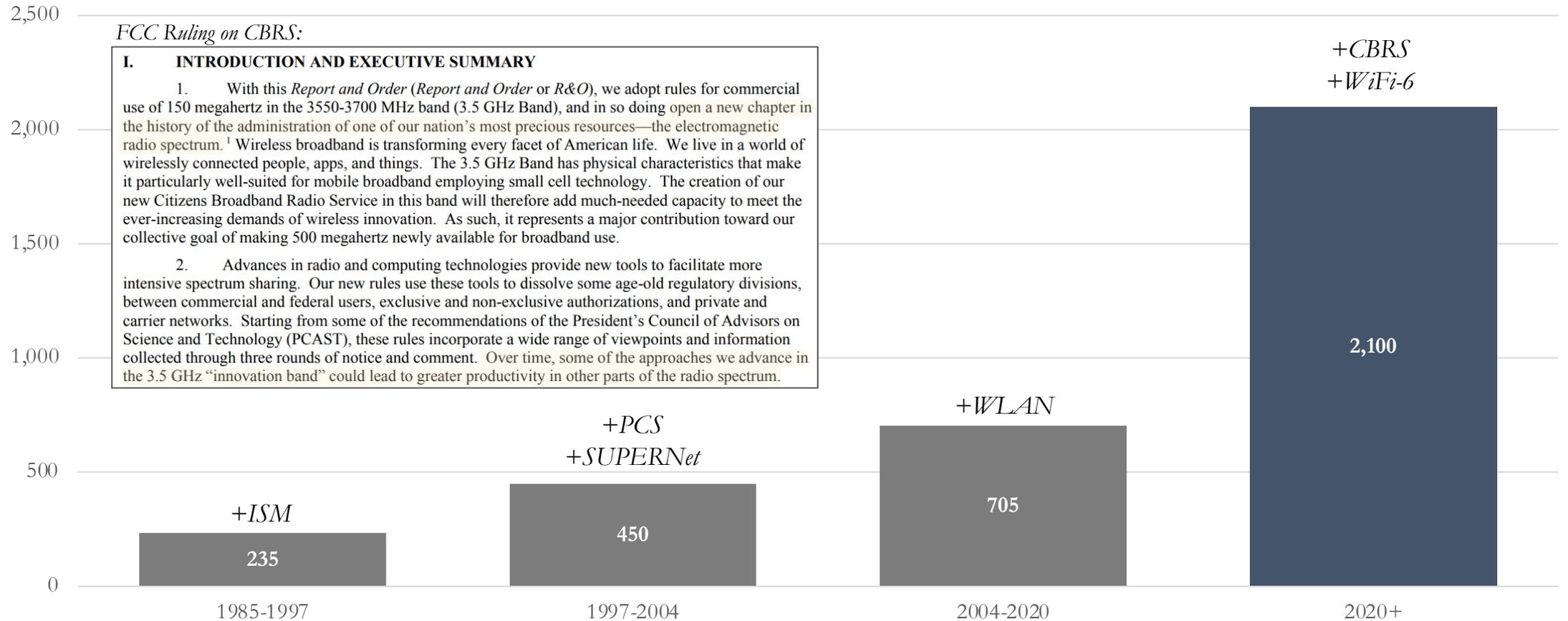
\$7,499.00

1

ADD TO CART

# Regulators Are On Our Side: The FCC Is Unlocking More Spectrum Than Ever Before To Support American Connectivity.

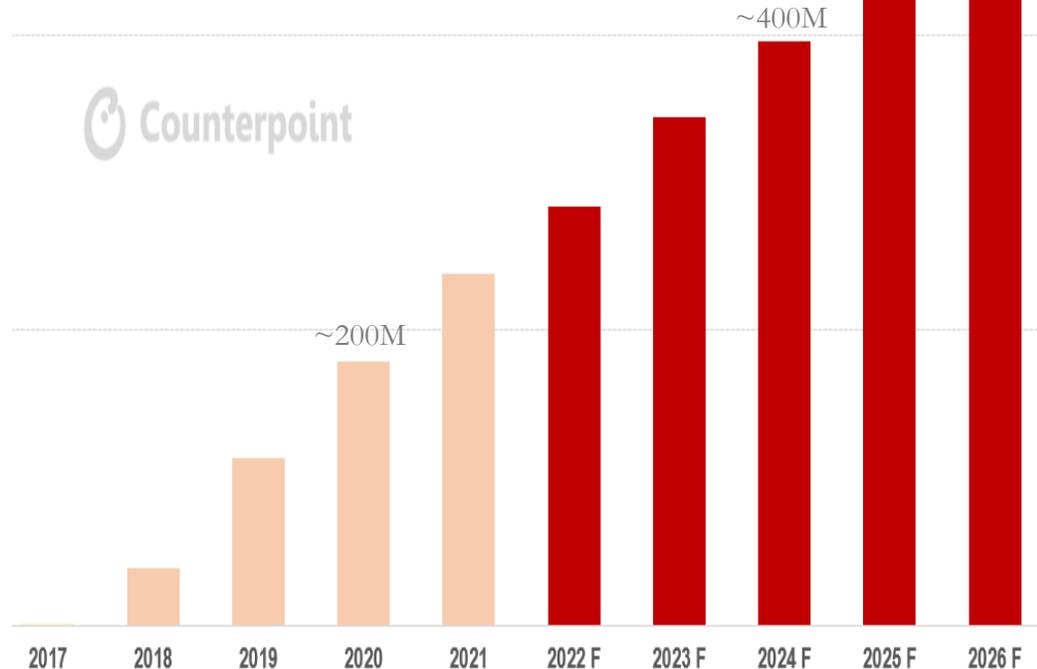
MHz of Unlicensed Spectrum Available



# The Old Moats Are Dying: Interoperability, via eSIM & Open RAN, Creates Openings For New Entrants.

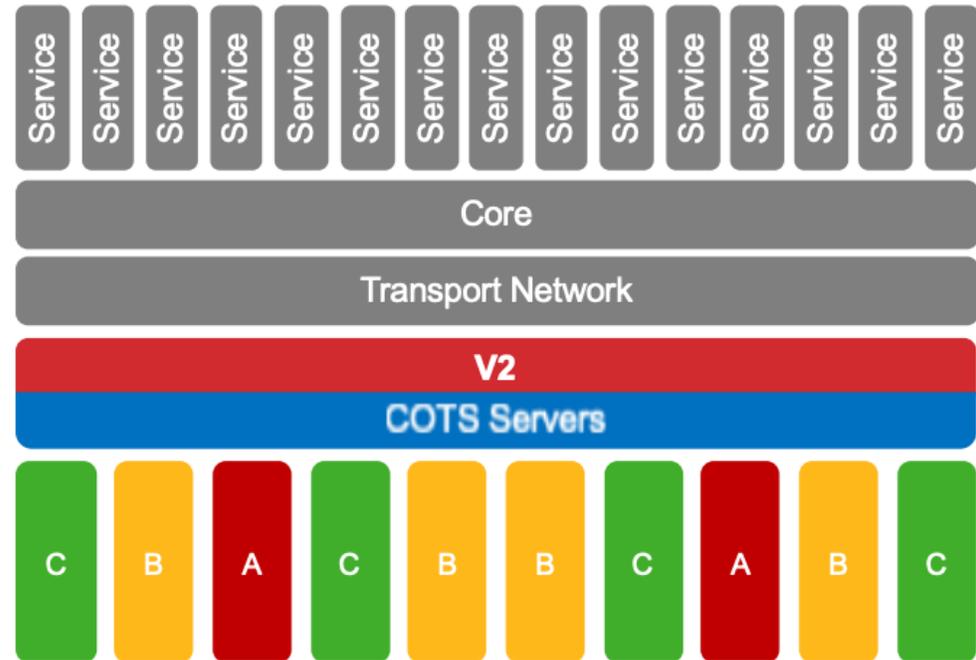
## eSIM-Compatible Smartphone Shipments

eSIMs **allow users to switch between carriers in seconds** by simply scanning a QR code or downloading an app.



## Open RAN Architecture

OpenRAN **allows telcos to mix-and-match hardware from different vendors** into a single, interoperable network.



# Neutrality Is Worth Its Weight In Gold: 2020-2022 Geopolitics Highlight The Importance Of Neutral Telco Infrastructure.

**CNN Exclusive: FBI investigation determined Chinese-made Huawei equipment could disrupt US nuclear arsenal communications**

TECHNOLOGY NEWS AUGUST 17, 2020 / 7:33 AM / UPDATED 2 YEARS AGO

## U.S. tightening restrictions on Huawei access to technology, chips

By David Shepardson

5 MIN READ



WASHINGTON (Reuters) - The Trump administration on Monday announced it will further tighten restrictions on Huawei Technologies Co, aimed at cracking down on its access to commercially available chips.

"It is more dangerous to be dependent on Chinese telecoms networks than to be dependent on Russian gas. Digital infrastructure is the fundament of society," Strand said.

Several weeks after taking over [Ukraine's southern port city of Kherson](#), Russian soldiers arrived at the offices of local internet service providers and ordered them to give up control of their networks.

"They came to them and put guns to their head and just said, 'Do this,'" said Maxim Smelyanets, who owns an internet provider that operates in the area and is based in Kyiv. "They did that step by step for each company."

Russian authorities then rerouted mobile and internet data from Kherson through Russian networks, government and industry officials said. They blocked access to Facebook, Instagram and Twitter, as well as to Ukrainian news websites and other sources of independent information. Then they shut off Ukrainian cellular networks, forcing Kherson's residents to use Russian mobile service providers instead.

# So, Why Build In DeWi?

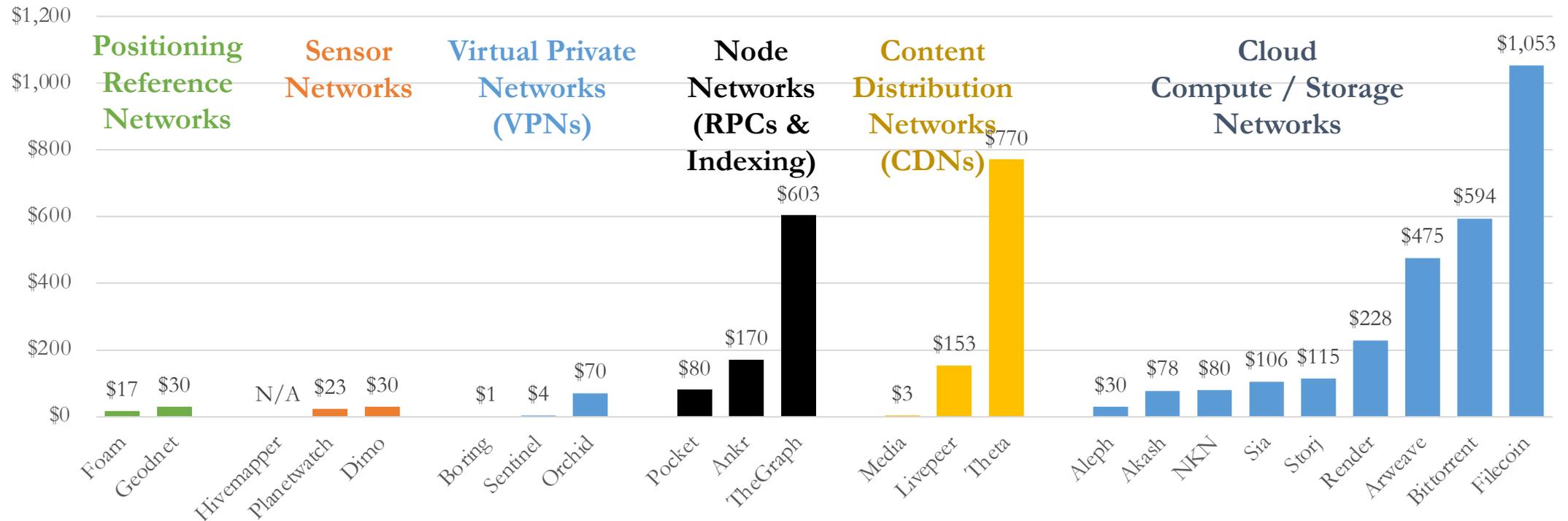
For A World With Reliable, Efficient &  
Fair Connectivity For Everyone.



# What About Other Types Of Infrastructure?

# Outside DeWi, Entrepreneurs Are Building Many Types Of Decentralized Infrastructure — Both Physical & Digital.

FDV of Decentralized Infrastructure Tokens (\$M)



Many Tokens Are Trading At A Discount To Median Seed / Series A Valuations (Albeit On Small Volumes).

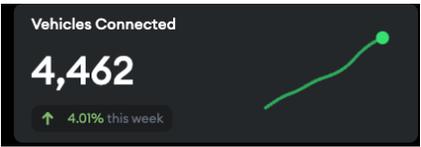
Sources: Coinmarketcap, Protocol websites, announcements, and whitepapers, Escape Velocity research; as of 12/21/22.  
 Note: please see disclaimers on final page.

# Decentralized Sensor Networks Show Promising Early Growth, But Must Overcome Hardware-Slow Iteration Cycles.

## Decentralized Sensor Networks Early Growth



Vehicle OBDs  
Launched Nov'22



Vehicle dashcams  
Launched Nov'22



Weather sensors  
Launched Aug'22



Pre-launch  
Sensor Networks



## Manufacturing Challenges

Even for well-resourced / venture-backed teams, custom sensor hardware takes 6-12+ months to bring into production *before* you can iterate on product market fit.



An update on the Hivemapper Dashcam production numbers...

We know you've been waiting on your Hivemapper Dashcam, so we want to transparently update you on Hivemapper Dashcam production numbers. We are behind our previously shared production numbers.

The core issue is yield loss, which is a fancy way of saying that when the dashcams are built, some percentage of them are not passing our end of line testing. Specifically, our yield loss is ~30%. The end of line testing verifies that the dashcam is working properly before shipping it out to a customer.

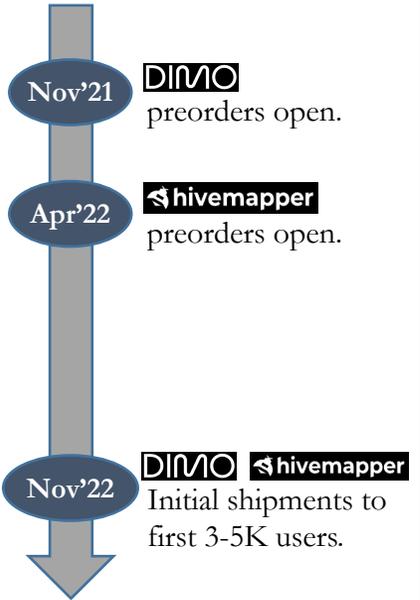
To address this production volume issue, we have developed a few changes to the manufacturing process and hardware. We currently have ~6 dashcam devices with these changes. Over the past few days, we have tested these devices with positive results.

The initial results gave us the confidence to expand the small initial test to 100 dashcam devices. Each device will be driven for 15 minutes and must satisfy a set of criteria to pass. We are performing these tests from today to Saturday. If less than < 10% of the dashcams fail the end of line testing then we will adopt these changes and expect to scale Hivemapper Dashcam production to the previously shared numbers.

Once we gather more data on the 100 dashcams later this week (Fri or Sat), we will be sharing a more detailed update.

4:24 PM · Dec 19, 2022

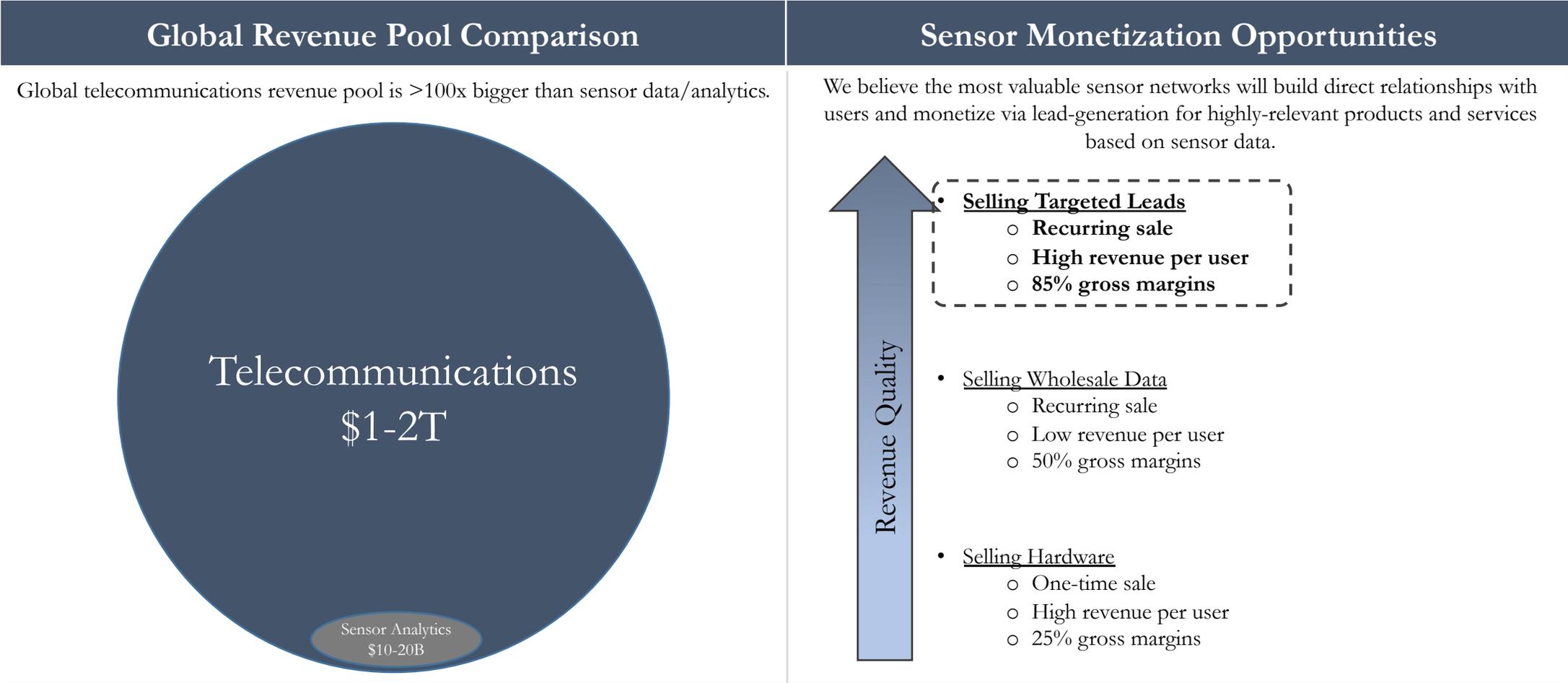
### Launch Timelines



Sources: Protocol websites, announcements, and block explorers, Twitter, Escape Velocity research.

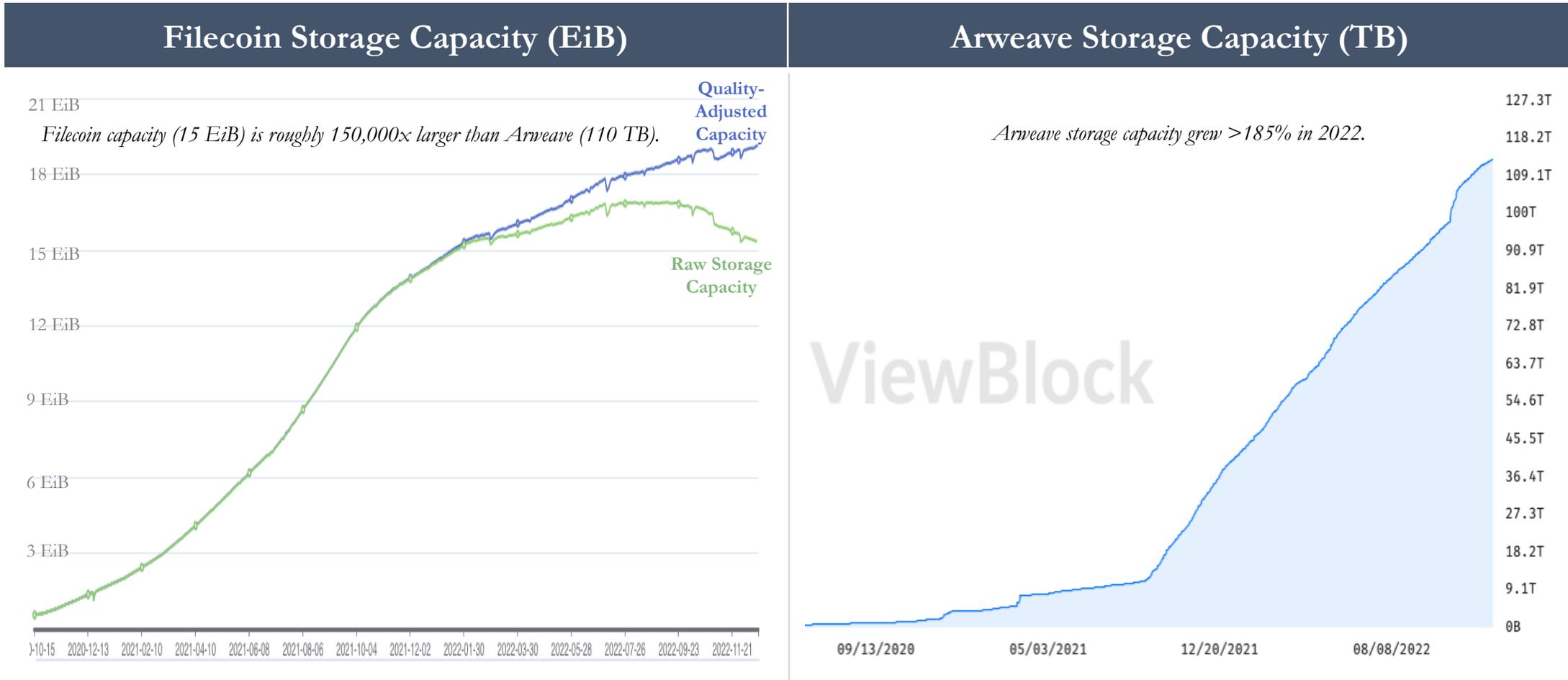
Note: please see disclaimers on final page.

# Now That Global Sensor Networks Are Feasible, The Question Becomes: What Could They Be Worth?



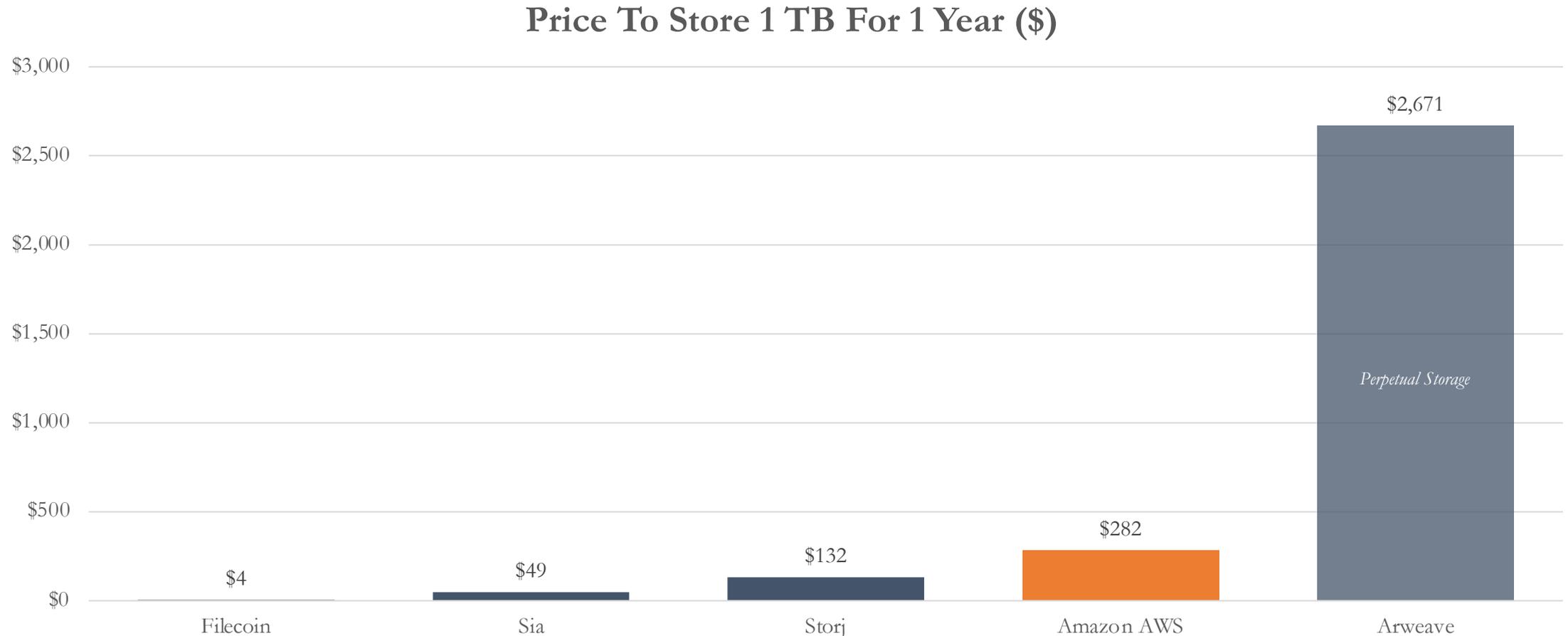
Sources: Escape Velocity research.  
 Note: please see disclaimers on final page.

# Like DeWi, Decentralized Storage Has Figured Out How To Scale Supply-Side Capacity.

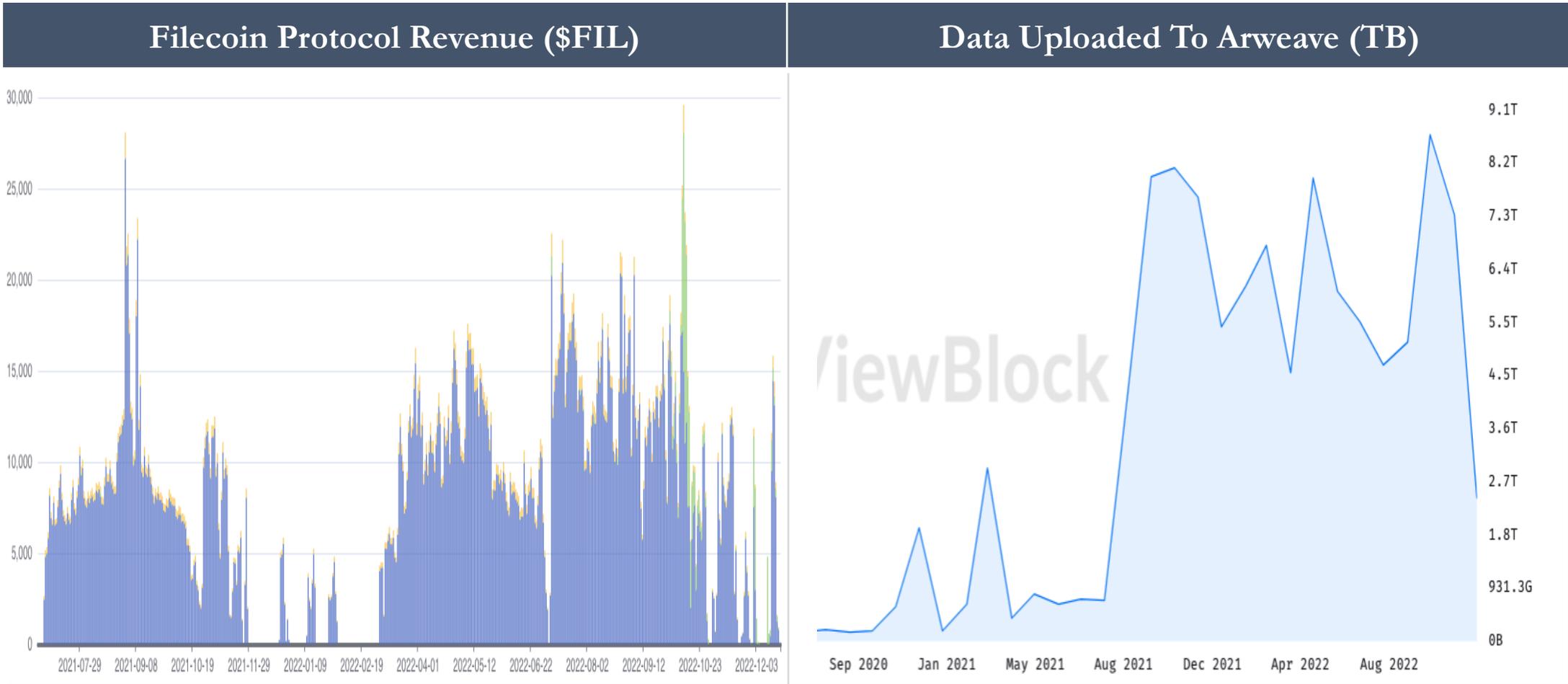


Sources: Starboard Ventures, ViewBlock, Escape Velocity research; as of 12/21/22.  
 Note: please see disclaimers on final page.

# Like DeWi, Decentralized Storage Can Both Compete On Price (Filecoin) *And* Enable Net New Use Cases (Arweave).

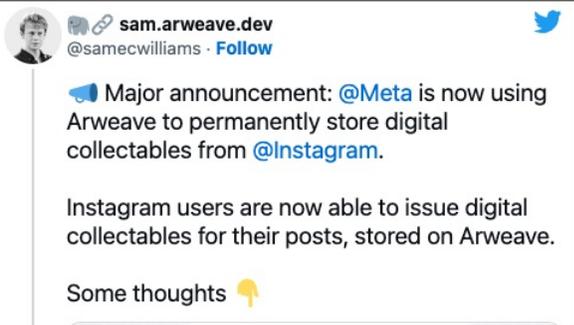


# Like DeWi, Storage Protocols Have Not Yet Demonstrated Signs Of Product-Market Fit In 2022.



Sources: Starboard Ventures, ViewBlock, Escape Velocity research; as of 12/21/22.  
 Note: please see disclaimers on final page.

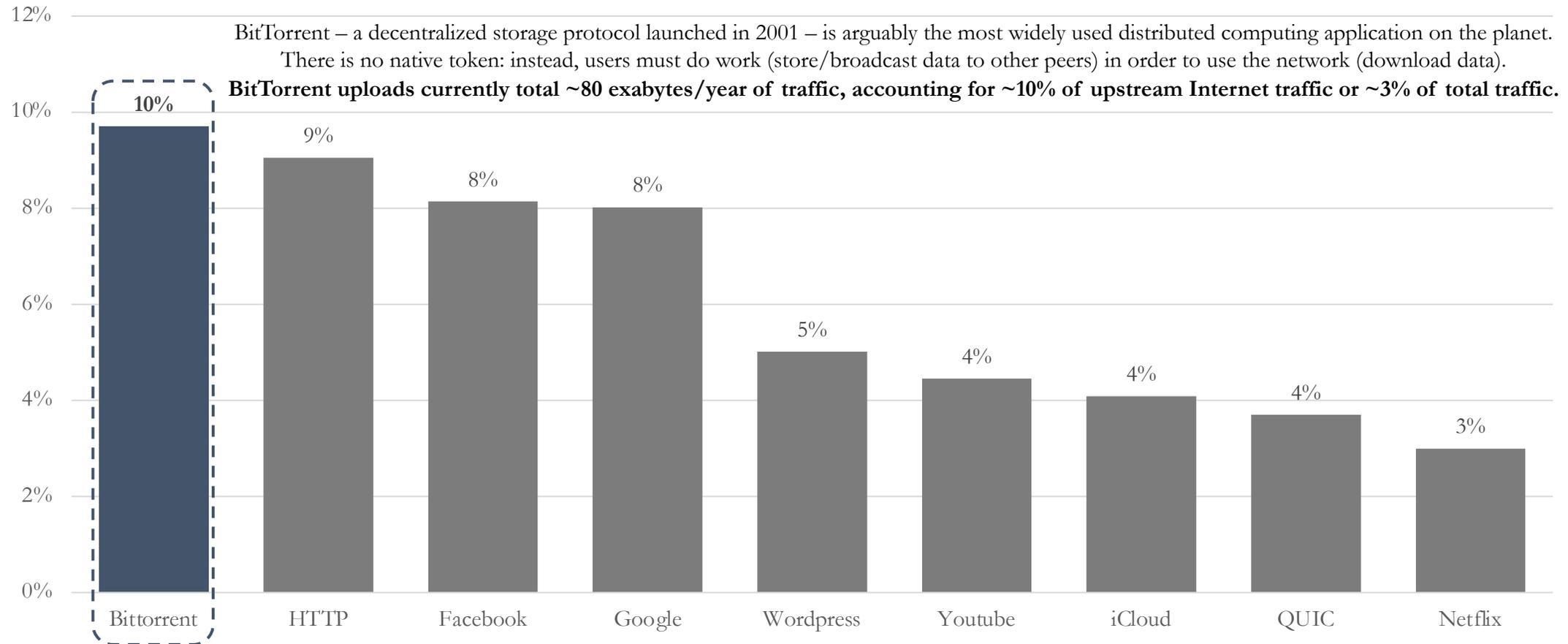
# That Said, Ecosystem Growth Suggests 2023 Could Be A Breakout Year For Decentralized Storage.

Decentralized Storage Partnerships	“Layer-2” Storage Businesses
<div>  <p><b>Major announcement: @Meta is now using Arweave to permanently store digital collectables from @Instagram.</b></p> <p>Instagram users are now able to issue digital collectables for their posts, stored on Arweave.</p> <p>Some thoughts 🙌</p> </div> <div>  <p><b>Filecoin Takes Blockchain Filing to New Levels With Lockheed Martin Partnership</b></p> <p>Filecoin's new partner will help the network launch a node into space</p> <p>By Brenden Rearick, InvestorPlace Financial News Writer May 24, 2022, 11:16 am EST</p> </div> <div> <p>Business</p> <p><b>AMD, Seagate and EY Join Protocol Labs-led Decentralized Storage Alliance</b></p> <p>The industry organization is led by Filecoin creator Protocol Labs.</p> <p>By Brandy Betz Oct 31, 2022 at 7:00 a.m. EDT Updated Oct 31, 2022 at 11:59 a.m. EDT</p> <p>Read 137 replies</p> </div>	<div>  <p><b>Bundlr Network</b> Scaling solution that processes &gt;90% of data uploaded to Arweave; raised \$5M.</p> </div> <div>  <p><b>SEAL</b> Partnerships with University of Utah &amp; UC Berkeley storing data via IPFS.</p> </div> <div>  <p><b>ardrive</b> Frontend for Arweave protocols; raised \$17M.</p> </div> <div>  <p><b>filebase</b> Frontend for Sia &amp; IPFS protocols; raised \$2M.</p> </div>

Sources: Company websites & announcements, CoinDesk, InvestorPlace, Twitter, Escape Velocity research.  
 Note: please see disclaimers on final page.

# “DeStorage” Growth Will Drive DeWi Growth: P2P Storage Is Already The #1 Driver Of Upstream Internet Traffic.

## Share of Global Upstream Internet Traffic (%)



# Decentralized Content Delivery & Positioning Networks Will Also Grow Synergistically With DeWi.

## Content Delivery

## DeWi

## Positioning

Content Delivery Networks, or CDNs, cache frequently-visited Internet content on distributed servers.

By storing data close to the “edge”, internet providers minimize backhaul data transfer, reducing costs (Netflix + Youtube alone make up >25% of global Internet traffic).



**DeWi can lower backhaul costs significantly by caching the popular content on decentralized CDNs — perhaps up to 25%+ COGS savings.**



Positioning networks provide precise and/or verifiable coordinates by leveraging a network of stations with known locations (reference network).

Existing telco infrastructure uses GPS backbone for critical location and timekeeping. Having an independent reference network improves security, robustness, and liveness.

**In order to solve its gaming/spoofing issues, DeWi will need to embrace trust-minimized decentralized positioning networks.**

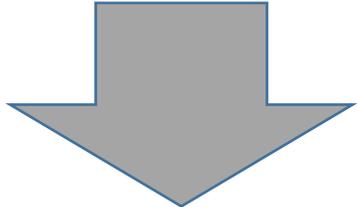
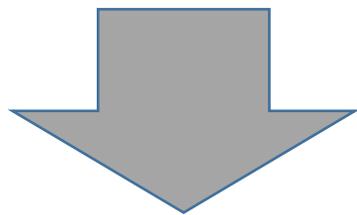
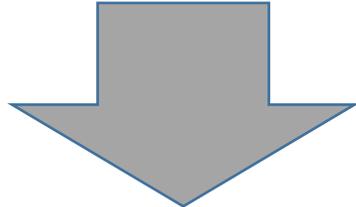
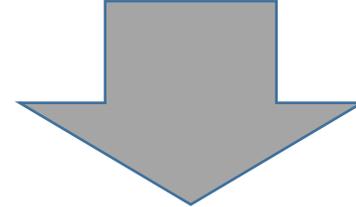


# In Decentralized Energy, Several VC-Backed Projects Are Launching In 2023 Targeting A \$1T+ Global Profit Pool.



Sources: Company websites announcements, BCG, Gartner, McKinsey, WHO, Capital IQ, Coatue Oct'22 Fintech whitepaper, Escape Velocity research.  
 Note: please see disclaimers on final page.

# We Expect To See More Web 2 Marketplaces Flirt With Decentralizing Elements Of Their Business In 2023.

Labor/Talent	Ridesharing/Mobility	Reservations/Ticketing	Vertical Payments
  	  	  	  

By (Partially) Decentralizing, Marketplaces Can Be Use Tokens Incentivize Key Stakeholders In New Ways.

**Building Infrastructure Is Hard...**  
**Especially Decentralized Infrastructure.**

# For Those Up For The Challenge... We're Here To Provide The Fuel.

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@danconia\_crypto on twitter

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@moneromahesh on telegram  
@moneromahesh on twitter

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