

ELECTRIC⚡CAPITAL

DEVELOPER REPORT














January — December 2022

INTRODUCTION

Electric Capital is a leading crypto venture firm. We are early-stage investors in many well-known Layer-1 platforms, DeFi protocols, NFT projects, DAOs, and breakout crypto businesses. Learn more at ElectricCapital.com

We share this data publicly in the hopes of helping the crypto community have a clearer understanding of the industry's collective progress. We are grateful to everyone in the community who helps by contributing to our Github, the foundations who help us validate our analysis, and the friends who offer feedback on drafts.

Contributors

												
Maria Shen	Enrique Herreros	Curtis Spencer	Emre Caliskan	Avichal Garg	Ken Deeter	Mitchell Hammer	Mark Xia	Martha Shear	Adam Wolff	Gary Thung	Emily Myers	Photon
Author	Data	Data	Engineer	Author	Data	Contributor	Contributor	Contributor	Contributor	Contributor	Contributor	Contributor
@mariashen	@eherrerosj	@jubos	@n4motto	@avichal	@puntium	@mitchellhammer	@sheatgm	@martha_shear	@dmwlff	@garythung	@EmilyMMeyers	@photon0x

+300 volunteers in the crypto community who added to our Github taxonomy and scrubbed data!

HOW WE MEASURE DEVELOPER ACTIVITY

An early and leading indicator of value creation in emerging platforms is developer engagement. Developers build killer applications that deliver value to end users, which attracts more customers, which then draws more developers.

Because crypto is significantly open source, we have a unique and unprecedented ability to understand an emerging industry that may be worth many trillions.

For the 2022 report, we analyzed 250M code commits. The taxonomy of projects is crowdsourced from [Crypto Ecosystems](#), the foundations from many of the ecosystems, as well as CoinGecko, CoinMarketCap, DappRadar, DefiLlama, Github, Gitlab, and others.

We infer non-original commits, which account for 65% of the total, and credit only the original authors and original ecosystems that produce code. We try our best to eliminate bots and de-duplicate developers with multiple accounts.

More details are in the appendix.

The taxonomy of projects is available at our Github:
github.com/electric-capital/crypto-ecosystems

CAVEATS

We undercount developers because we rely on open-source repositories only

There are many more crypto developers than are accounted for in our report. Some teams are working on closed-source projects or deploy their code on-chain without ever open-sourcing their contracts. We also undercount developers in roles such as backporting, testing, or release engineering as their efforts may not result in unique code contributions.

Some teams first work in a closed source environment, then open-source their code later. We and the community add new open-source repositories to a common mapping found at [Crypto Ecosystems](#). Not all open-source repositories will make it into the taxonomy in time for this report every year.

It requires more than just software engineers to build crypto products that reach mainstream adoption, so this is a dramatic undercounting of the number of people building in crypto.

Not all commits are created equal

Some code commits may be routine changes, whereas others represent hours of accumulated research and analysis. Despite these caveats, we consider the analysis in this report directionally and relatively accurate.

Feedback

We are always looking to improve. Please share feedback with us at devreport@electriccapital.com

EXECUTIVE SUMMARY

Developers are a leading indicator of value creation.

Developers build apps that deliver value to users. Killer apps attract customers, and those customers bring more developers. Because crypto is significantly open source, we have an unprecedented ability to measure developer adoption and fundamental traction in an emerging industry.

Crypto developers are +5% YoY, despite 70%+ decline in prices.

- 23,343 monthly developers as of Dec 2022
- 471,000+ monthly code commits are made toward open-source crypto projects
- +8% YoY growth in Full-Time developers. Full-Time devs contribute 76% of code commits
- All-time high of 61,000+ developers contributed code for the first time in 2022

Crypto developers increased meaningfully since 2018.

- Crypto network value is back to Jan 2018 levels, but monthly developers increased +297%.
- 3x growth in Bitcoin monthly active developers, from 372 to 946 since Jan 18
- 5x growth in Ethereum monthly active developers, from 1084 to 5819 since Jan 2018
- Solana, Polkadot, Cosmos, & Polygon grew from fewer than 200 devs to 1,000+ developers since Jan 2018

Major ecosystems are emerging beyond Bitcoin and Ethereum.

- 72% of monthly active devs work outside the Bitcoin and Ethereum ecosystems
- Solana, NEAR, and Polygon grew 40% YoY and have 500+ total monthly active developers
- Sui, Aptos, Starknet, Mina, Osmosis, Hedera, Optimism, and Arbitrum grew 50%+ YoY and have 100+ total monthly active developers
- 3,901 developers work in DeFi every month across multiple chains, +240% since DeFi summer. 50% of DeFi developers are outside of Ethereum
- 900+ developers write code monthly in NFTs across chains, +299% since 2021

TABLE OF CONTENTS

01. DEVELOPER OVERVIEW	7 — 46
02. ECOSYSTEM DEEPCDIVE	47 — 155
BITCOIN	50 — 54
ETHEREUM	55 — 62
TOP 200 ECOSYSTEMS BY NET VALUE	63 — 155
03. USE CASES	156 — 176
DEFI	159 — 169
NFTS	170 — 176
04. DEVELOPERREPORT.COM	177 — 178
05. APPENDIX	183 — 186

01

DEVELOPER OVERVIEW

WE ARE NOW 14 YEARS INTO THE CREATION OF OPEN-SOURCE CRYPTO

Bitcoin v0.1 released

Satoshi Nakamoto [satoshi at vistomail.com](mailto:satoshi@vistomail.com)

Thu Jan 8 14:27:40 EST 2009

Announcing the first release of Bitcoin, a new electronic cash system that uses a peer-to-peer network to prevent double-spending.

It's completely decentralized with no server or central authority.

See bitcoin.org for screenshots.

Download link:

<http://downloads.sourceforge.net/bitcoin/bitcoin-0.1.0.rar>

Windows only for now. **Open source C++ code is included.**

- Unpack the files into a directory
- Run BITCOIN.EXE
- It automatically connects to other nodes

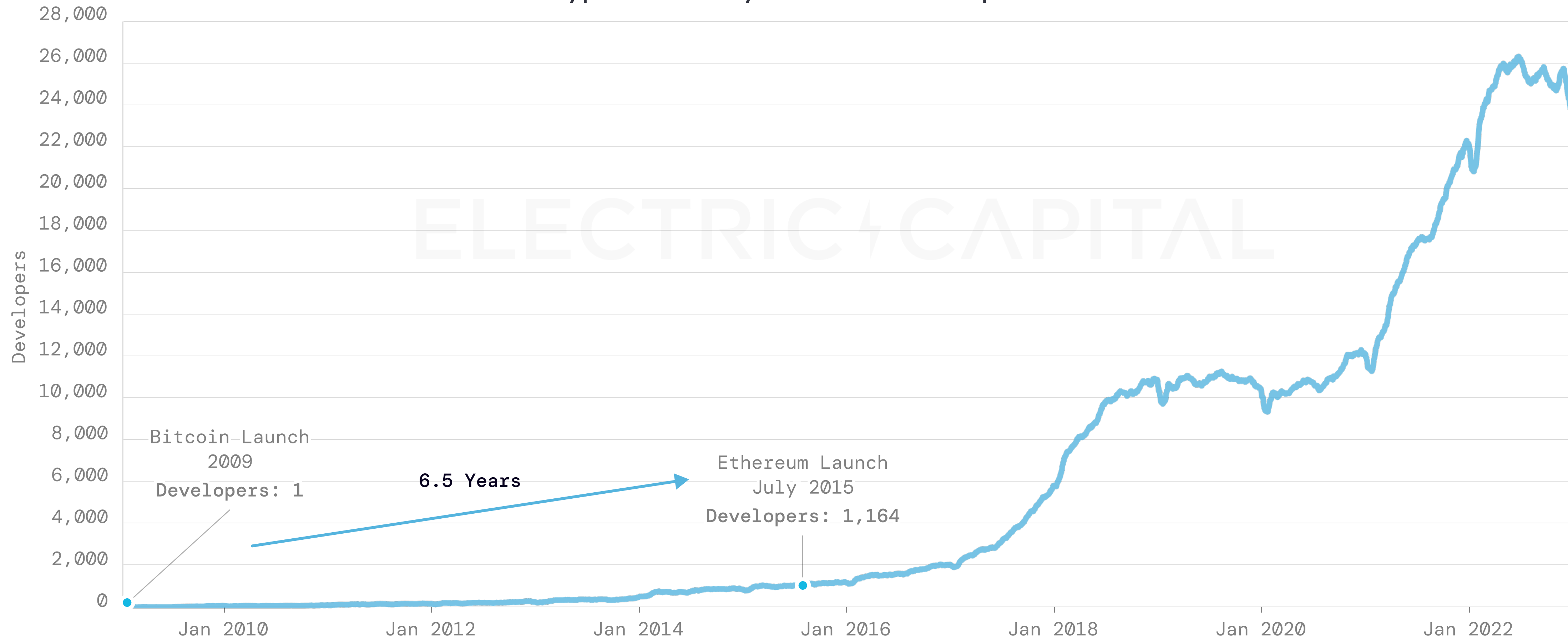
If you can keep a node running that accepts incoming connections, you'll really be helping the network a lot. Port 8333 on your firewall needs to be open to receive incoming connections.

The software is still alpha and experimental. There's no guarantee the system's state won't have to be restarted at some point if it becomes necessary, although I've done everything I can to build in extensibility and versioning.

You can get coins by getting someone to send you some, or turn on Options->Generate Coins to run a node and generate blocks. I made the proof-of-work difficulty ridiculously easy to start with, so for a little while in the beginning a typical PC will be able to generate coins in just a few hours. It'll get a lot harder when competition makes the automatic adjustment drive up the difficulty. Generated coins must wait 120 blocks to mature before they can be spent.

IN THE FIRST 7 YEARS: 1,000+ MONTHLY ACTIVE DEVELOPERS WROTE CODE

All Crypto Monthly Active Developers Since 2009

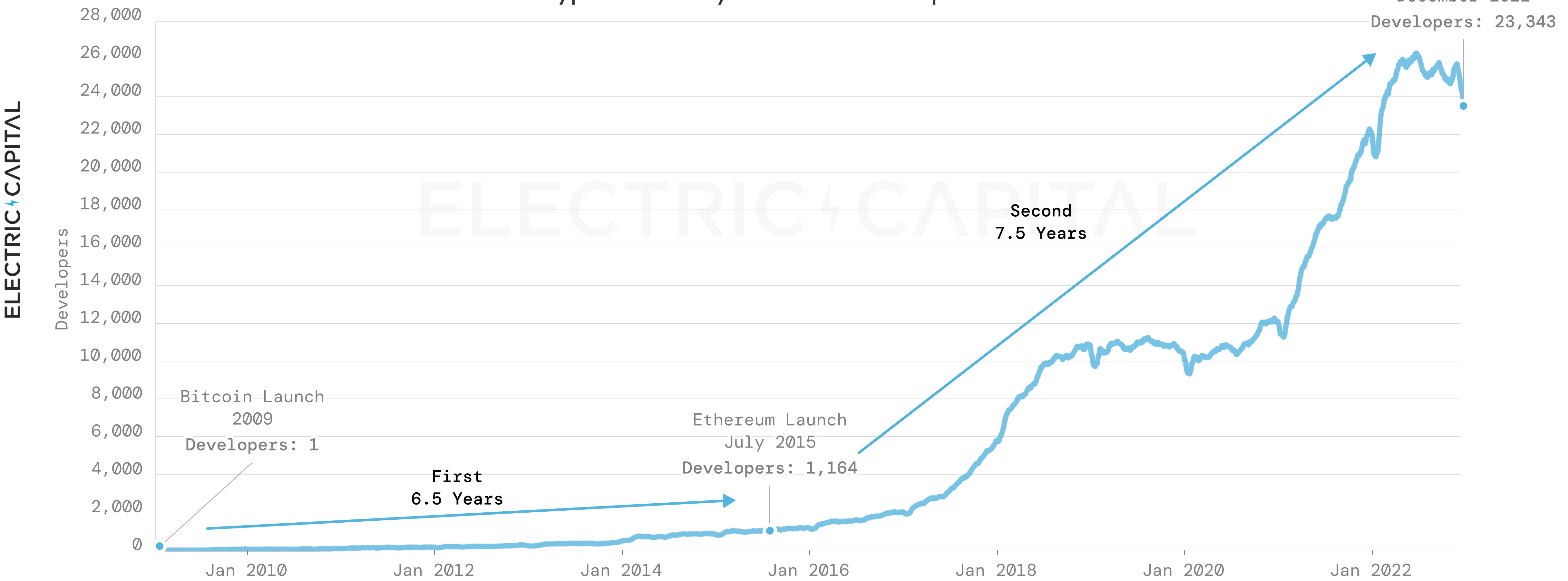


ELECTRIC⚡CAPITAL

We use July 30, 2015 as the Ethereum Launch Date, when the genesis block was created.

IN THE NEXT 7 YEARS: CRYPTO GAINED +22,000 MORE MONTHLY ACTIVE DEVS

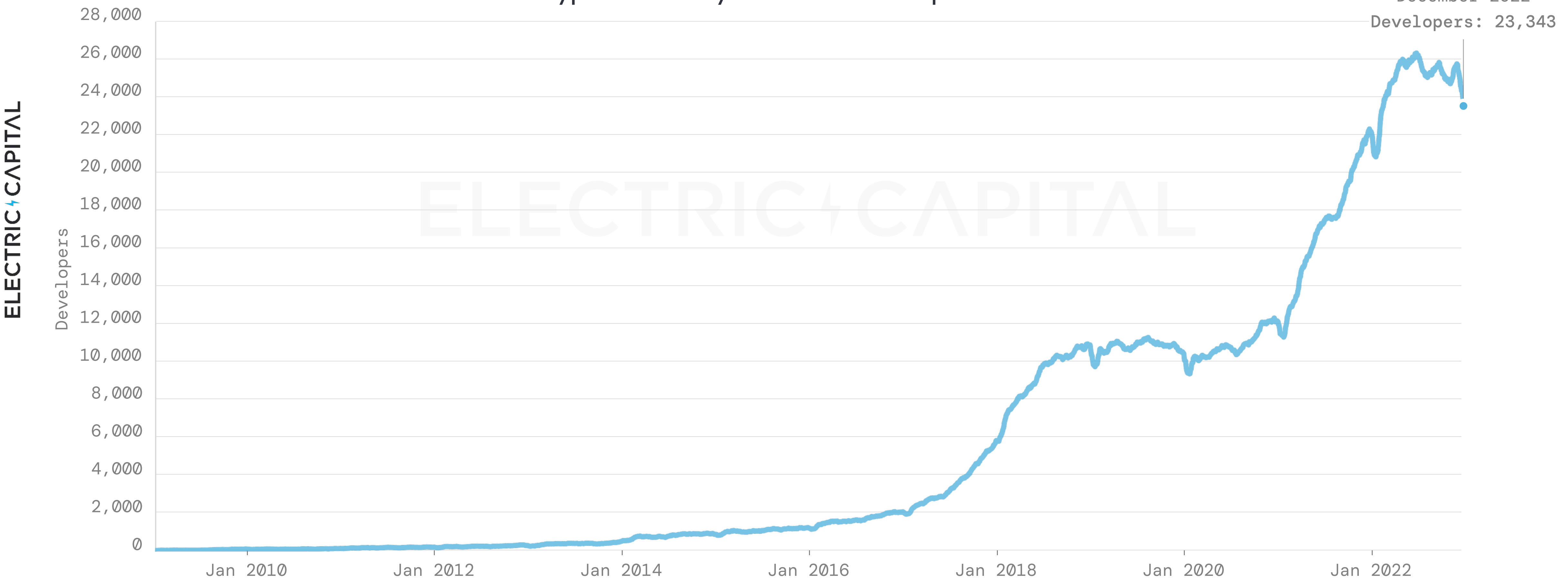
All Crypto Monthly Active Developers Since 2009



We use July 30, 2015 as the Ethereum Launch Date, when the genesis block was created.

THERE ARE NOW **23,343** MONTHLY ACTIVE DEVELOPERS IN CRYPTO

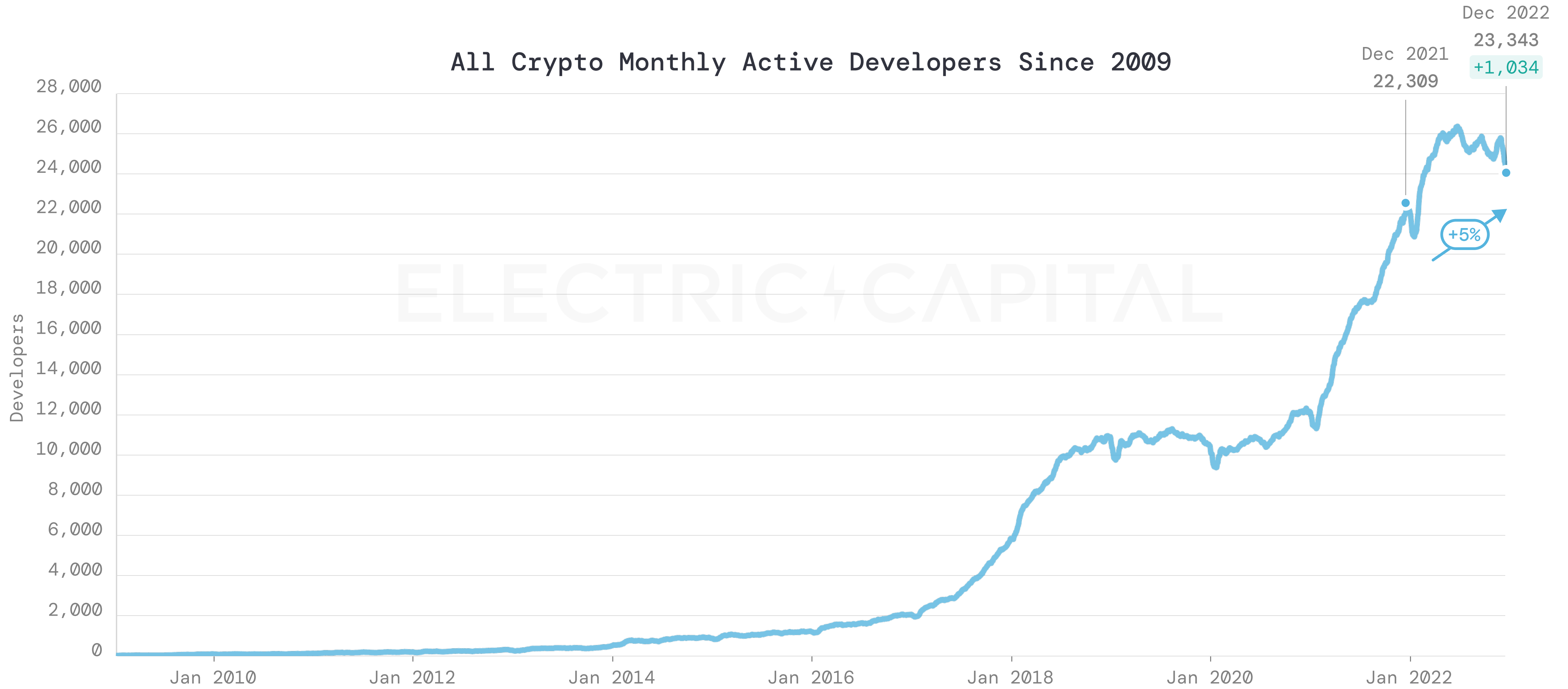
All Crypto Monthly Active Developers Since 2009



ELECTRIC⚡CAPITAL

+5% MONTHLY ACTIVE DEVELOPERS FROM DECEMBER 2021 TO DECEMBER 2022

All Crypto Monthly Active Developers Since 2009

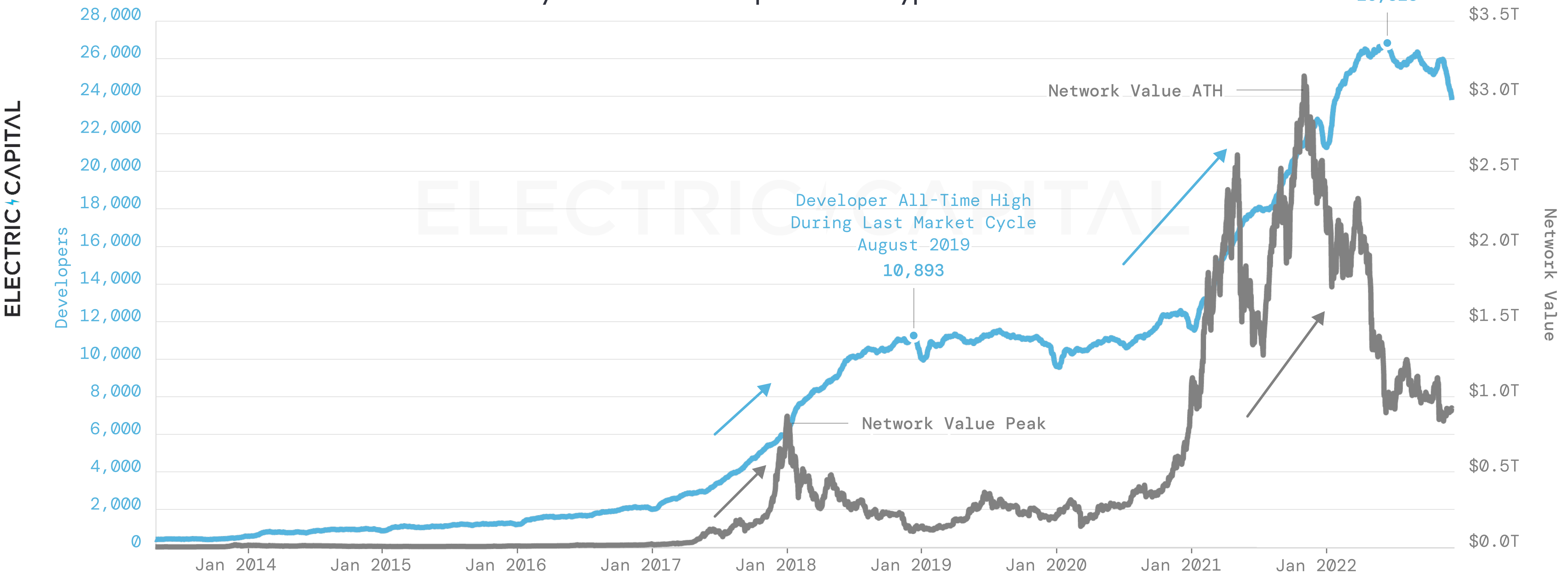


ELECTRIC⚡CAPITAL

+5%

MONTHLY ACTIVE DEVS INCREASE ALONGSIDE PRICES IN A MARKET CYCLE

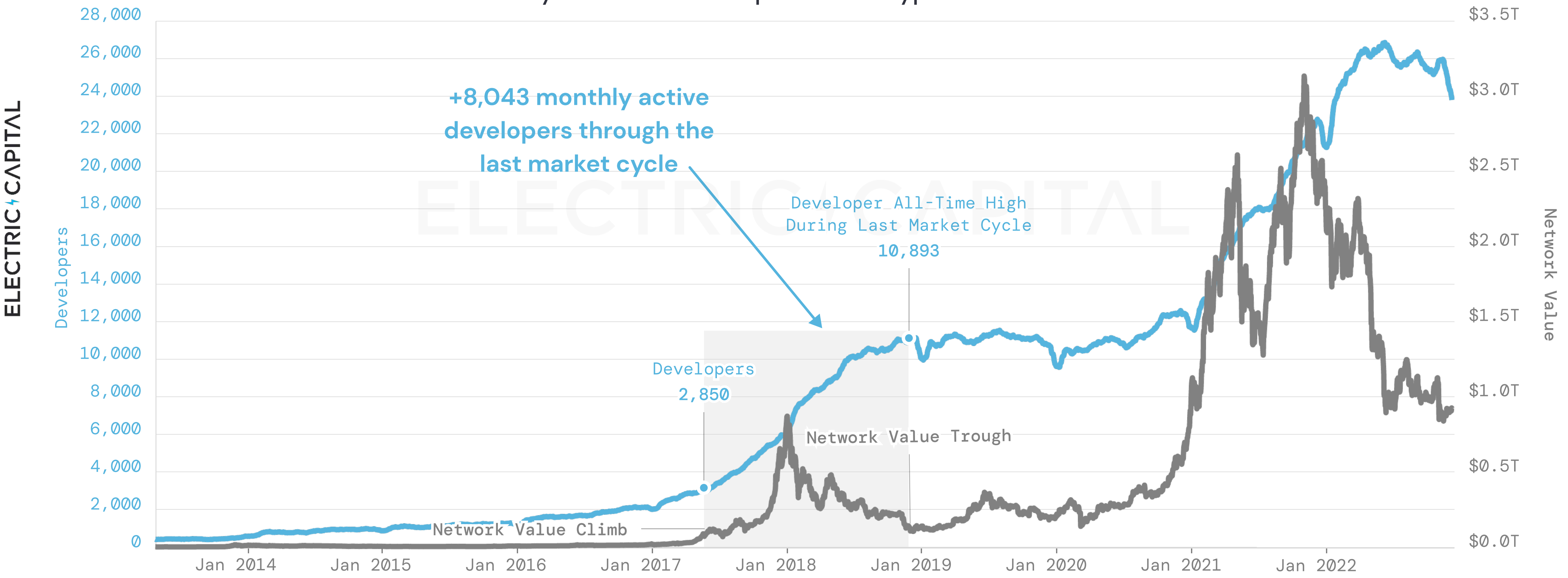
Monthly Active Developers vs Crypto Network Value



Total Network Value is the value of total crypto market cap from CoinGecko. Total Network Value reached a high Jan 6, 2018. Total Network Value reached an all-time high Nov 8, 2021.

DURING THE LAST MARKET CYCLE: MONTHLY DEVELOPERS GREW BY +8,043 TO OVER 10,000 FOR THE FIRST TIME

Monthly Active Developers vs Crypto Network Value

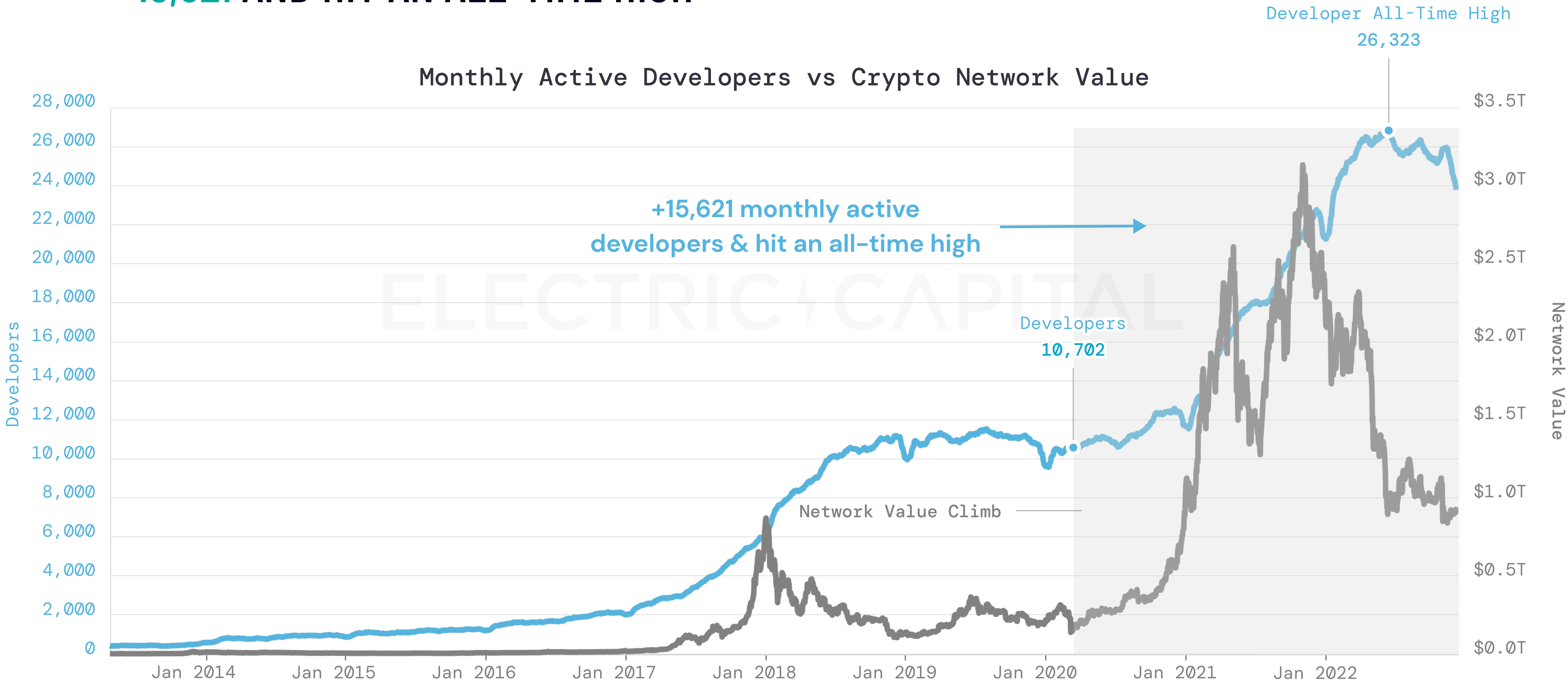


Total Network Value is the value of total crypto market cap from Coingecko. Total Network Value began to climb May 11, 2017. Total Network Value reached a trough Dec 14, 2018. Previous Dev ATH was on Dec 16, 2018.

DURING THE CURRENT MARKET CYCLE: MONTHLY ACTIVE DEVELOPERS GREW BY **+15,621** AND HIT AN ALL-TIME HIGH

ELECTRIC⚡CAPITAL

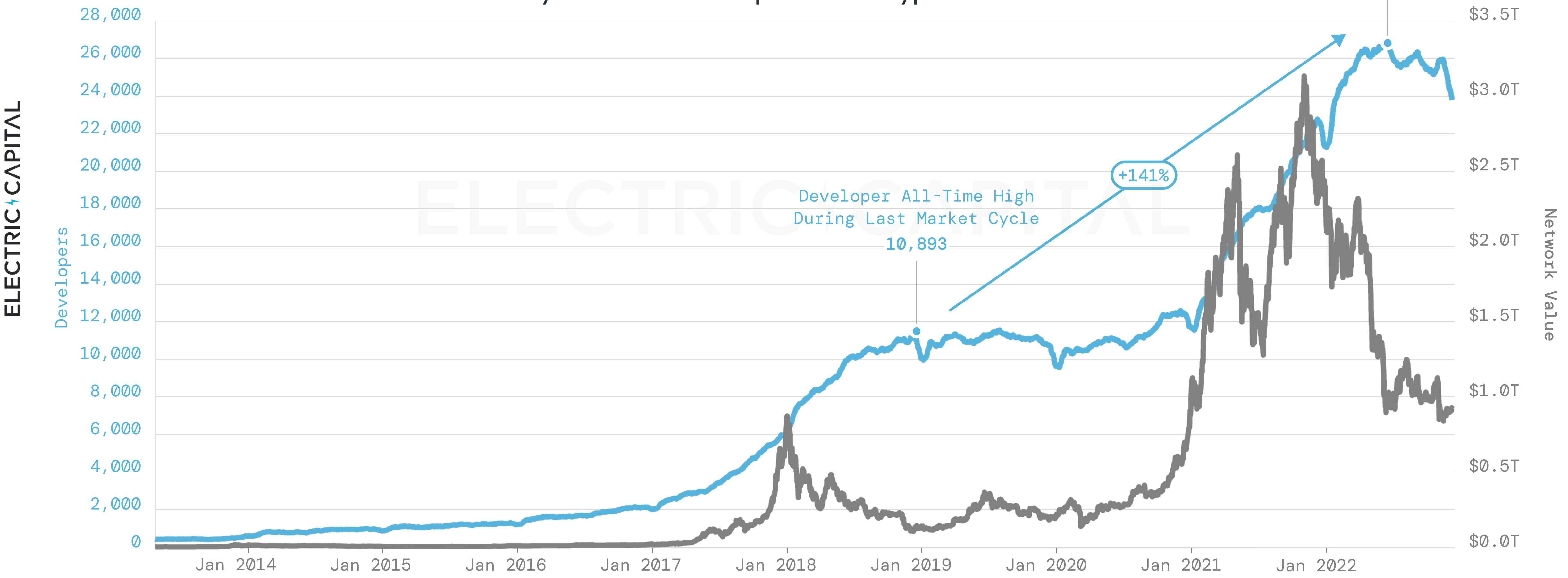
Monthly Active Developers vs Crypto Network Value



Total Network Value is the value of total crypto market cap from Coingecko. Total Network Value began to climb May 11, 2020. Total Network Value reached an All-Time High Nov 8, 2021.

FROM LAST CYCLE'S DEVELOPER PEAK TO THIS CYCLE'S DEVELOPER PEAK: MONTHLY ACTIVE DEVELOPERS GREW BY +141%

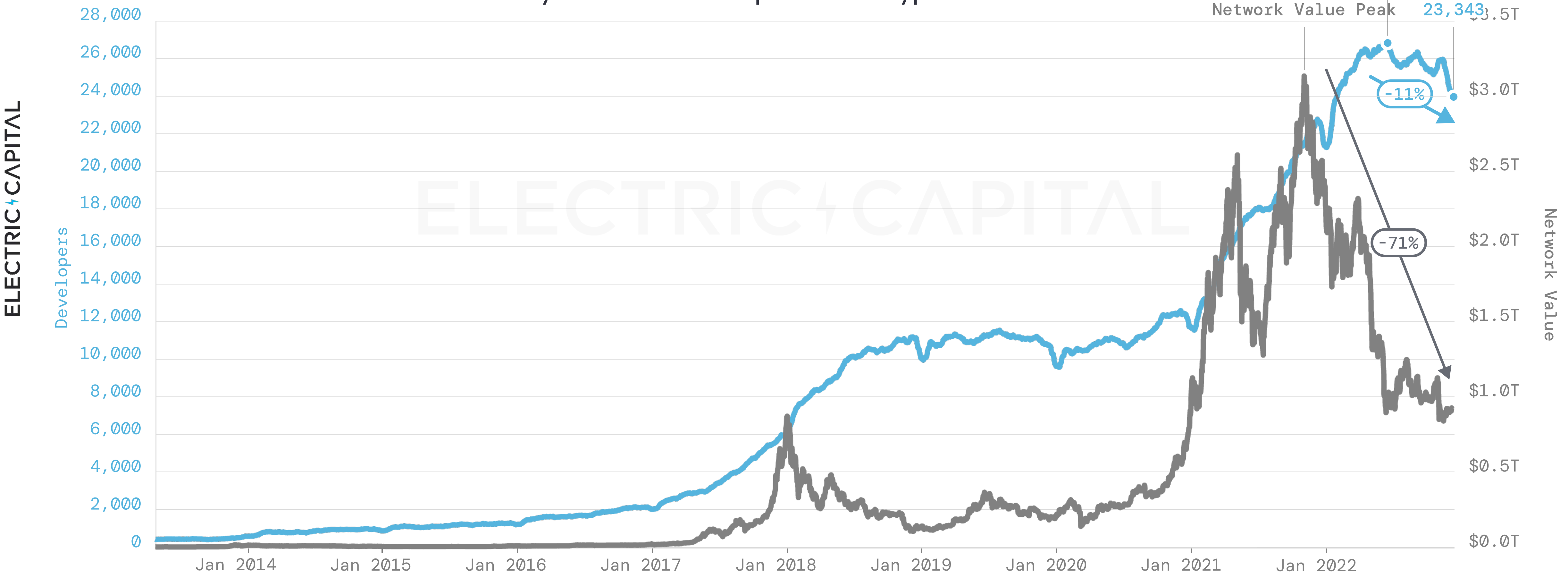
Monthly Active Developers vs Crypto Network Value



Previous Developer ATH was on Dec 16, 2018. Developer All Time High was on June 16, 2022.

DEVELOPERS ARE STAYING WHILE NETWORK VALUE IS DOWN: DEVELOPERS ARE DOWN -11% FROM PEAK WHILE NETWORK VALUE IS DOWN -71%

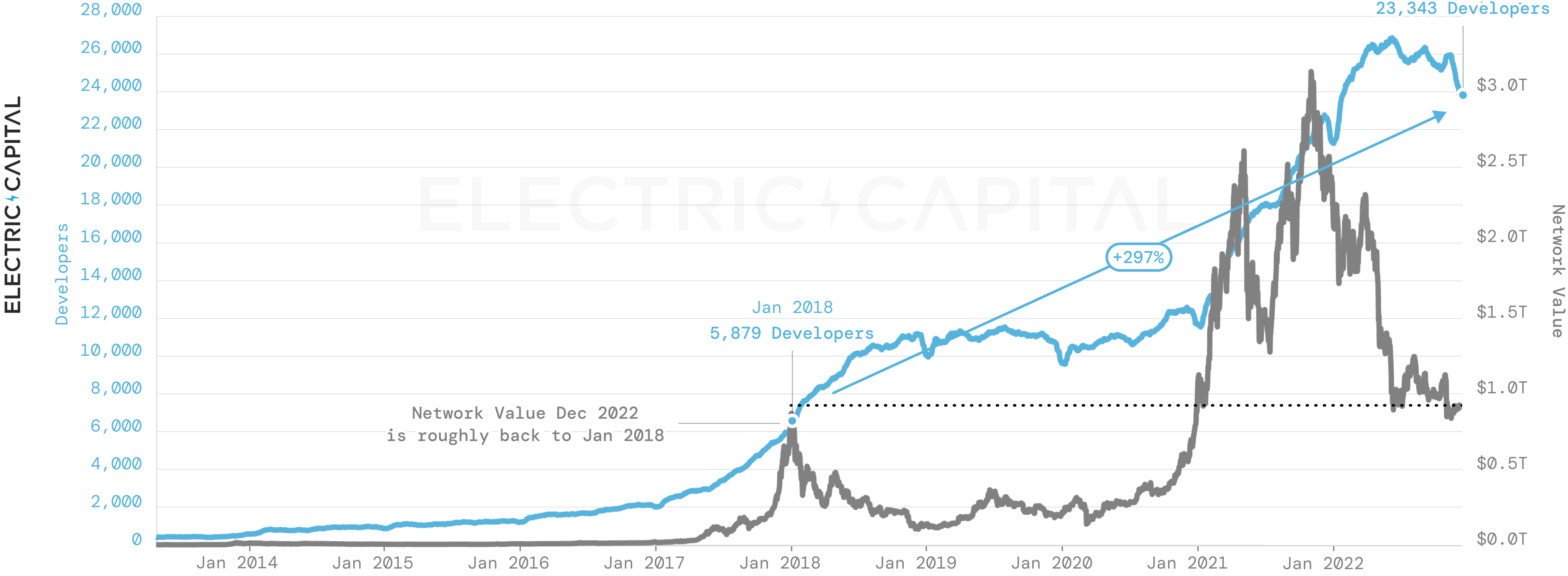
Monthly Active Developers vs Crypto Network Value



Total Network Value is the value of total crypto market cap from Coingecko. Total Network Value reached an all-time high Nov 8, 2021.

DEVELOPERS ARE STICKY: NETWORK VALUE IS ROUGHLY BACK TO JANUARY 2018 LEVELS, BUT MONTHLY ACTIVE DEVELOPERS INCREASED +297%

Monthly Active Developers vs Crypto Network Value



Network Value Dec 2022 is roughly back to Jan 2018

+297%

Jan 2018
5,879 Developers

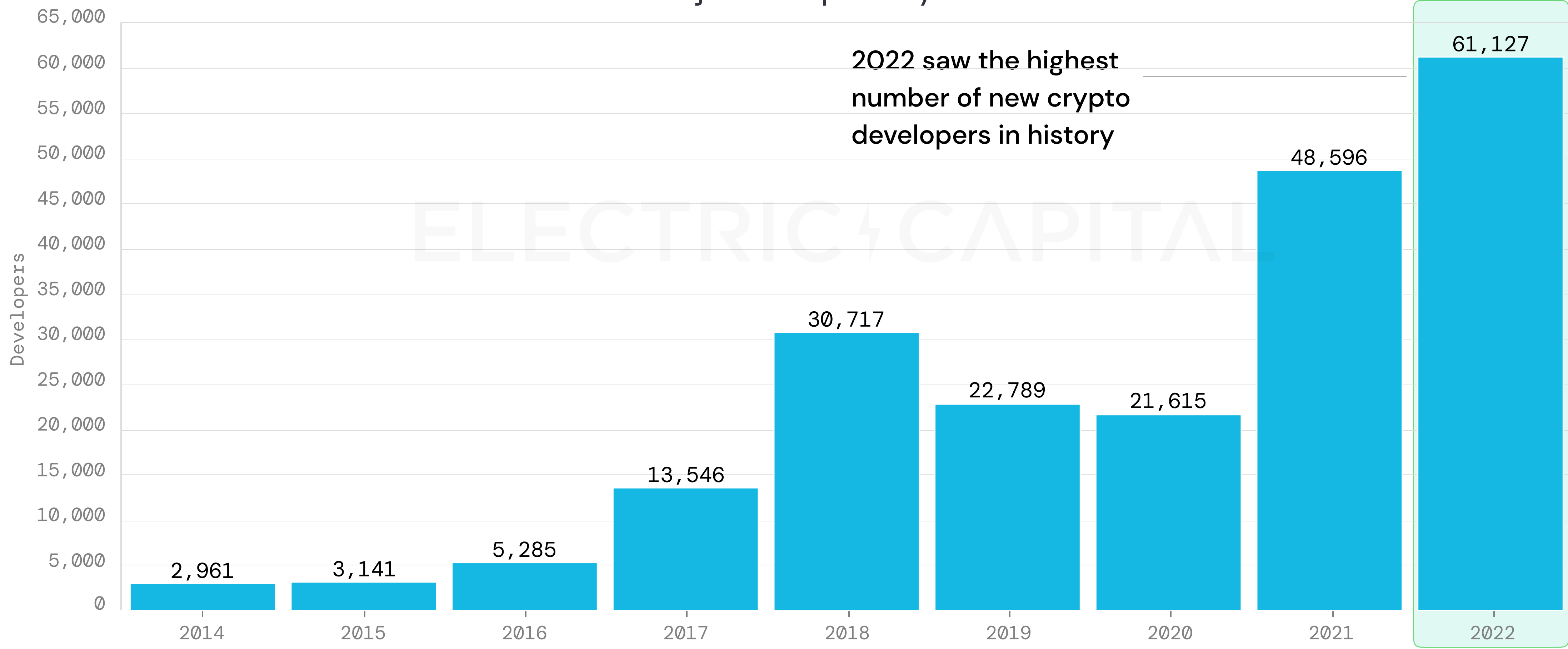
Dec 2022
23,343 Developers

Total Network Value is the value of total crypto market cap from Coingecko.

HOW MANY NEW DEVELOPERS ENTERED CRYPTO?

THE HIGHEST NUMBER OF NEW DEVELOPERS EVER WROTE OPEN-SOURCE CRYPTO CODE IN 2022: 61,127 NEW DEVELOPERS

Number of Developers by Year Joined



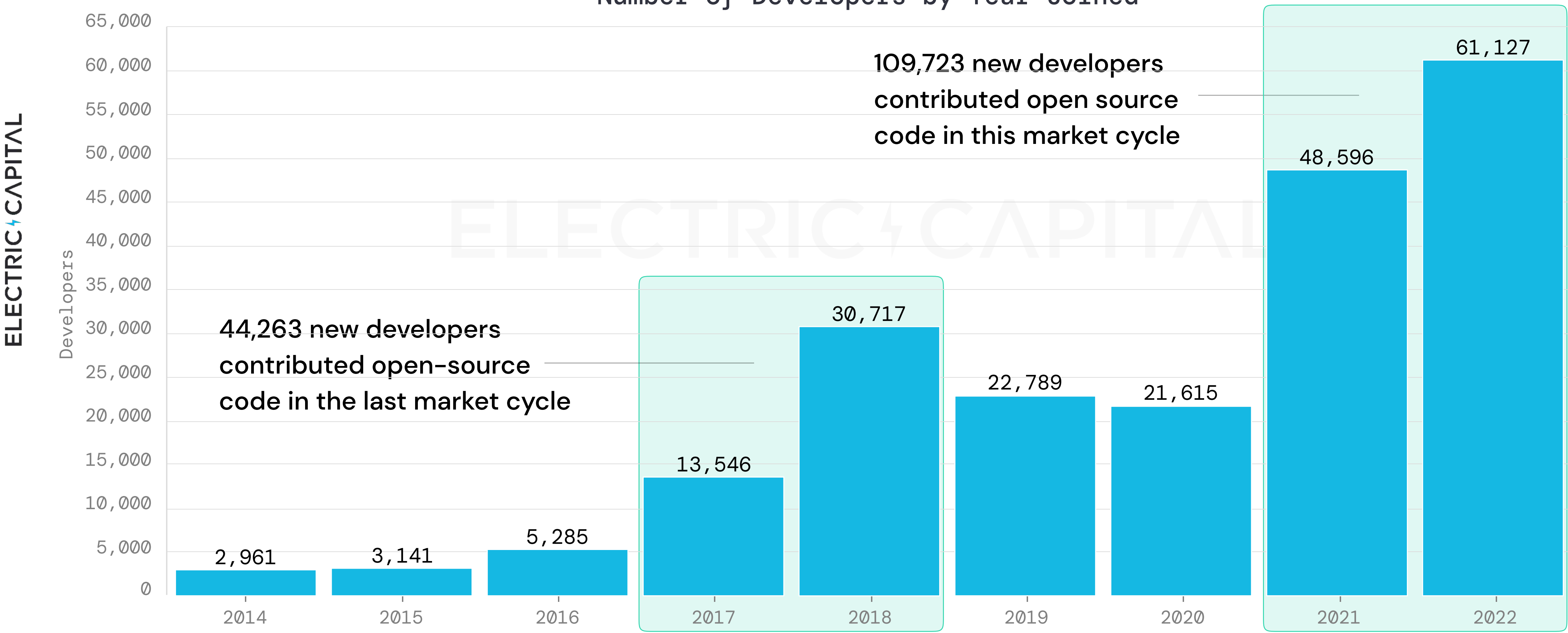
All 2022 numbers end at Dec 15, 2022. This means 2022 new developers is an undercounting of new developers for that year.

ELECTRIC CAPITAL

ELECTRIC CAPITAL

IN THE 2021 & 2022 MARKET UPSWING, **109,723** NEW DEVELOPERS CONTRIBUTED OPEN-SOURCE CODE, A **+148%** INCREASE COMPARED TO 2017 AND 2018 AT 44,263

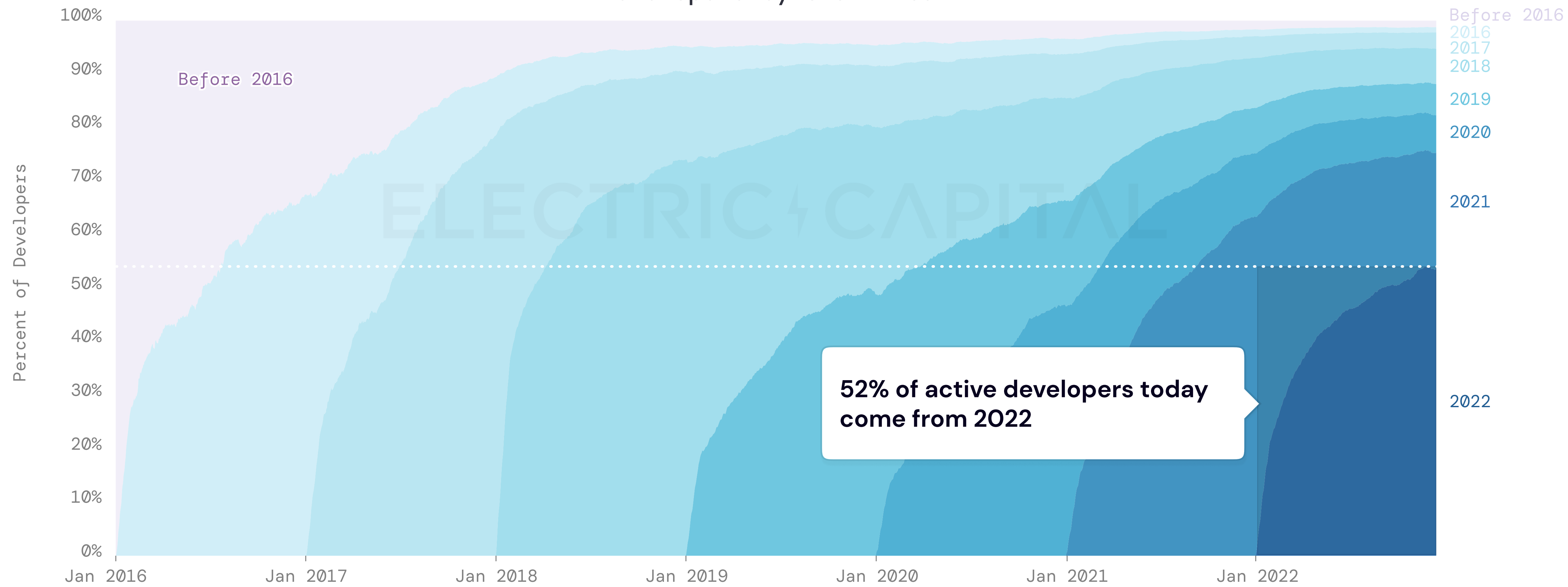
Number of Developers by Year Joined



All 2022 numbers end at Dec 15, 2022. This means 2022 new developers is an undercounting of new developers for that year.

52% OF MONTHLY ACTIVE DEVELOPERS STARTED CONTRIBUTING IN 2022

Developers by Start Year



ELECTRIC CAPITAL

ELECTRIC CAPITAL

52% of active developers today come from 2022

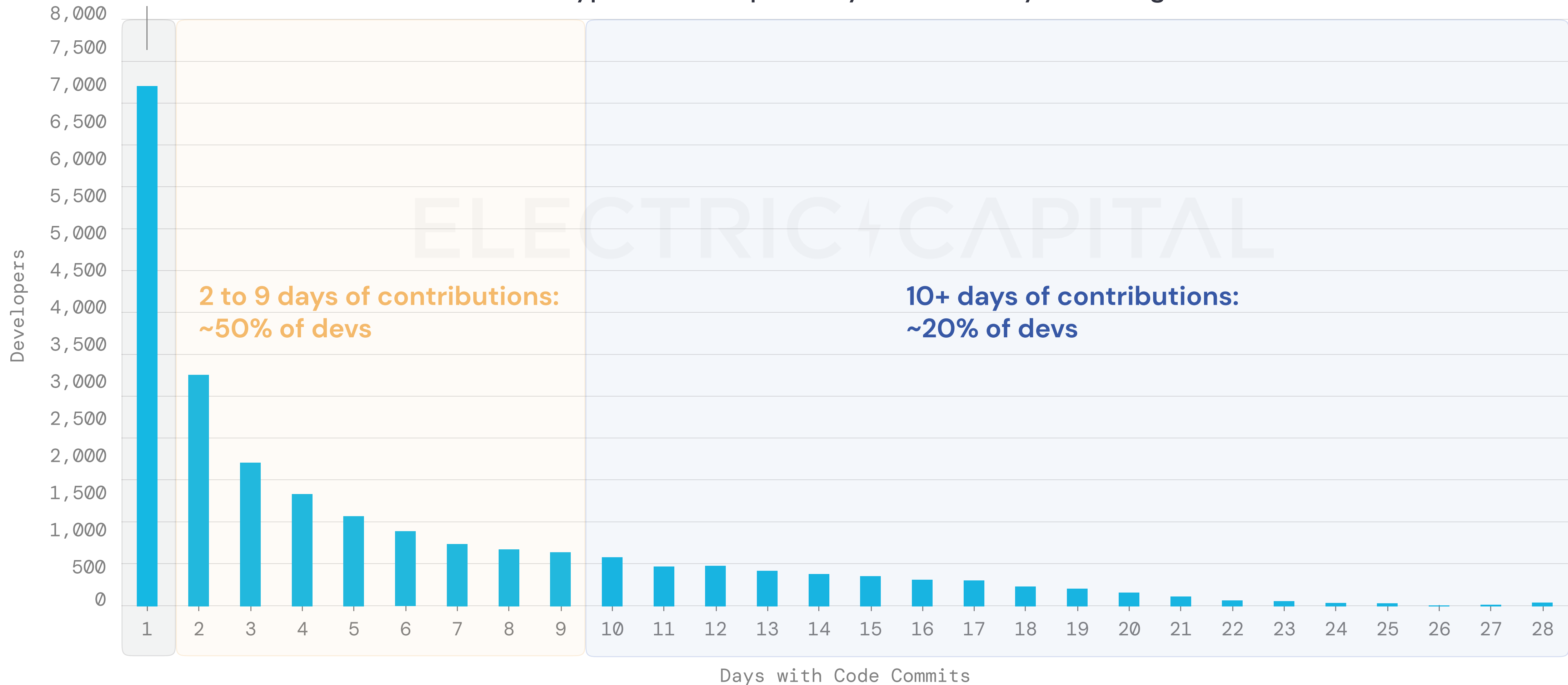
HOW ACTIVE ARE DEVELOPERS?

LET'S LOOK AT ACTIVITY BY FREQUENCY AND VOLUME OF COMMITS

FREQUENCY: 30% OF DEVS COMMIT CODE 1 DAY IN A MONTH, 50% COMMIT CODE 2-9 DAYS, AND 20% OF DEVELOPERS COMMIT CODE 10+ DAYS IN A MONTH

One day of contribution:
~30% of devs

All Crypto Developers by Active Days Histogram

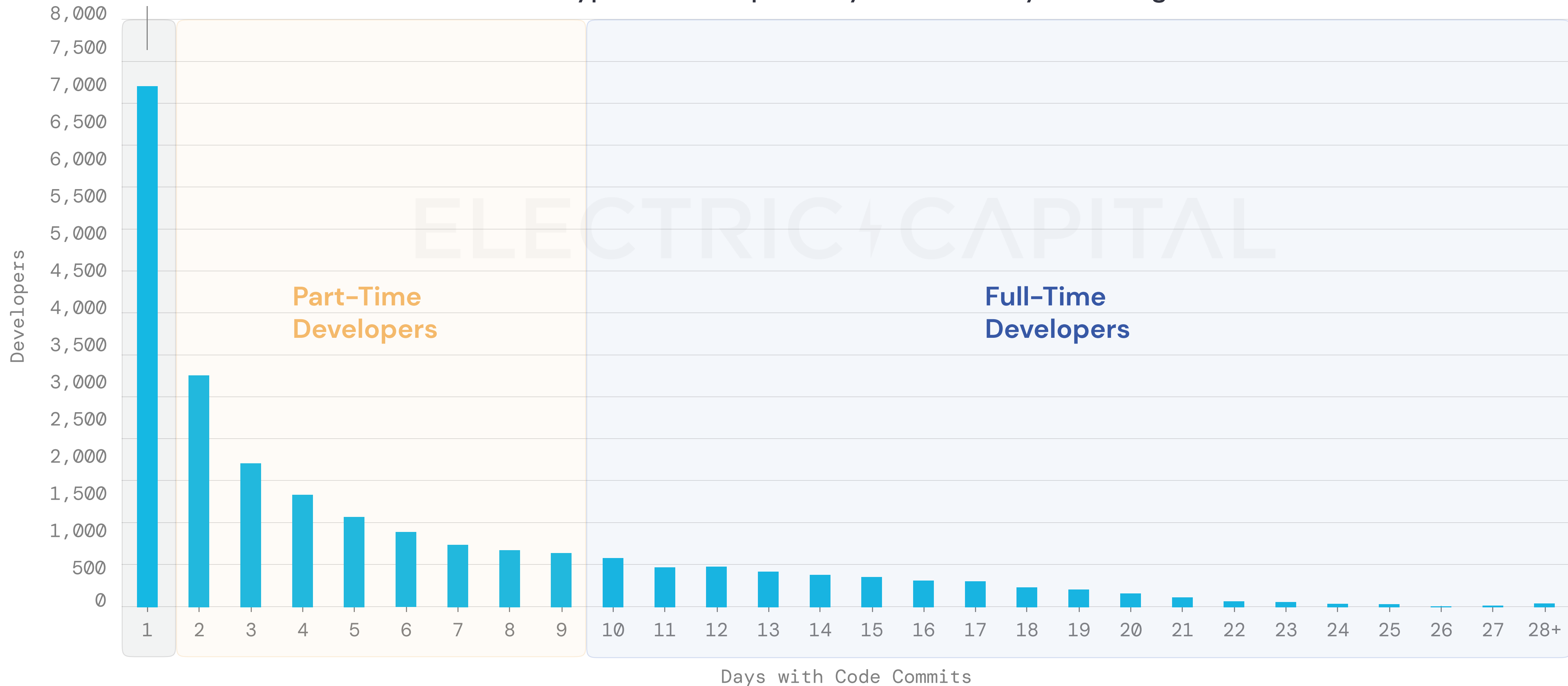


*Developers active for one-day in a month are not necessarily One-Time developers. One-Time developers are those who were active only one day in a 3-month period.

WE CAN BUCKET THESE DEVELOPERS INTO ONE-TIME, PART-TIME, & FULL-TIME

One-Time Developer Candidates*

All Crypto Developers by Active Days Histogram



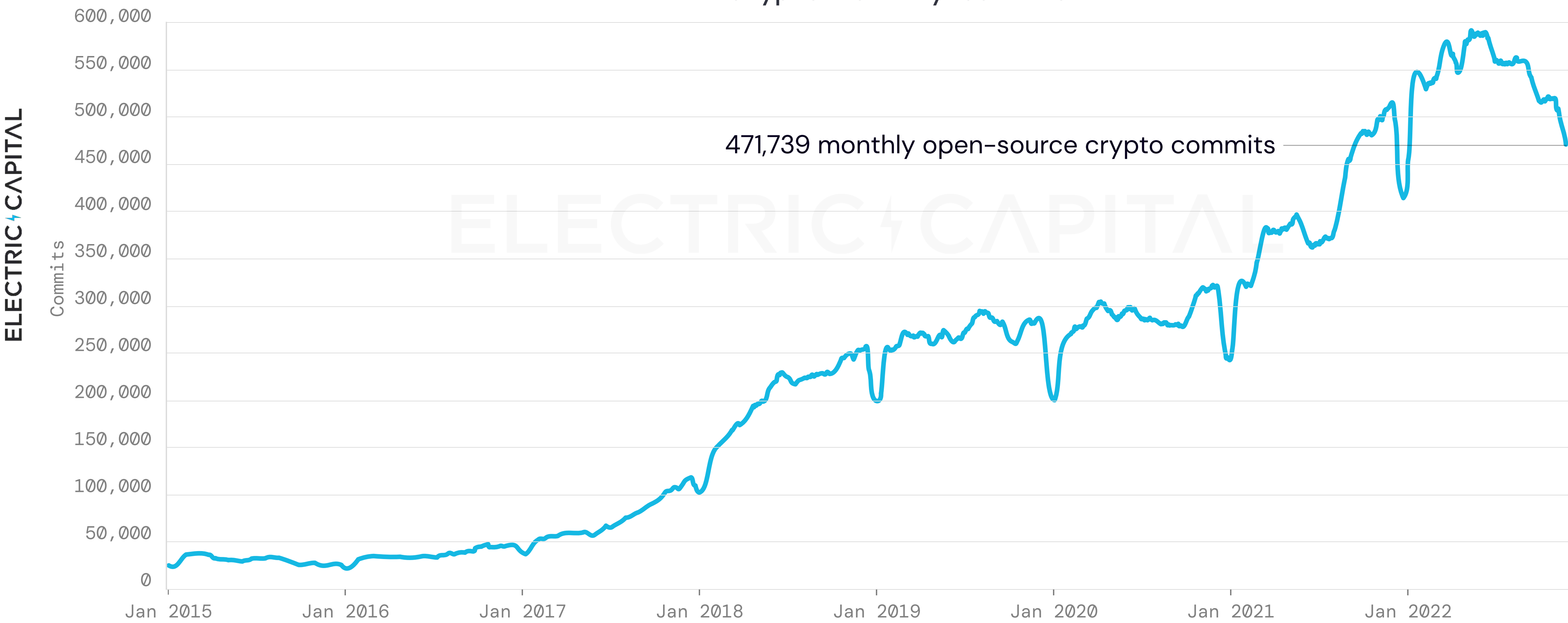
*Developers active for one-day in a month are not necessarily One-Time developers. One-Time developers are those who were active only one day in a 3-month period.

ELECTRIC CAPITAL

ELECTRIC CAPITAL

VOLUME: THERE ARE 471K+ MONTHLY COMMITS IN OPEN-SOURCE CRYPTO

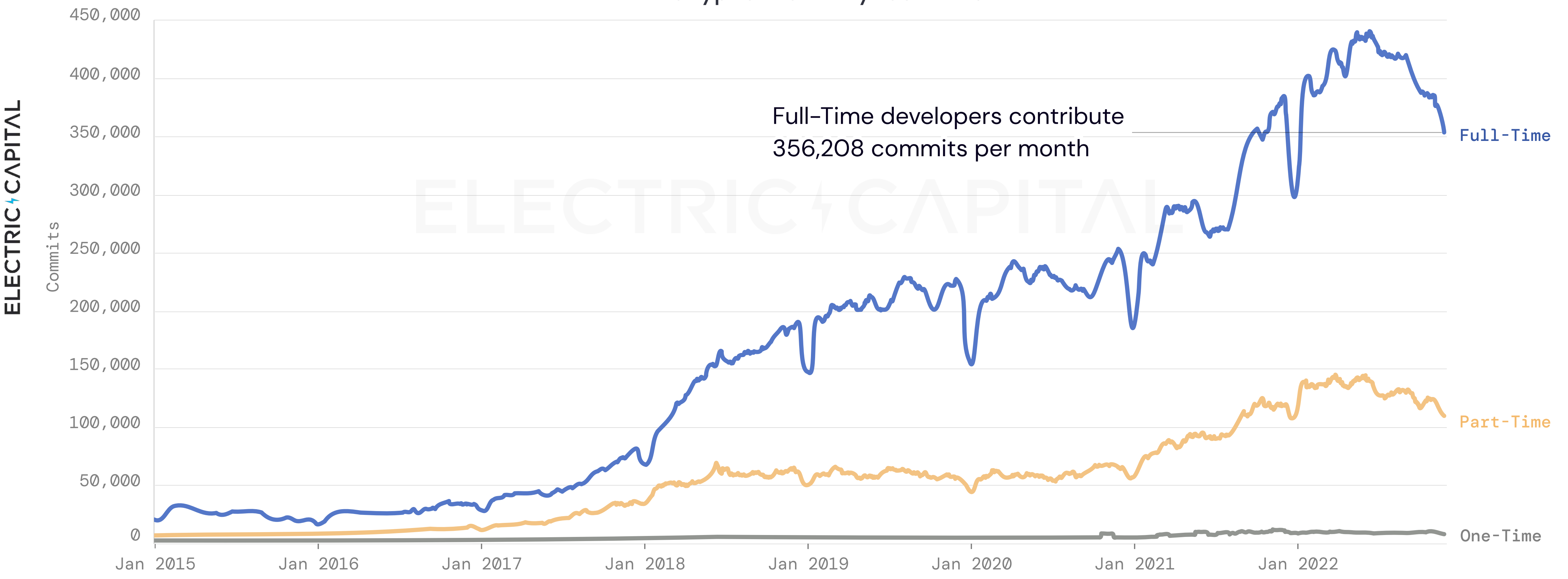
All Crypto Monthly Commits



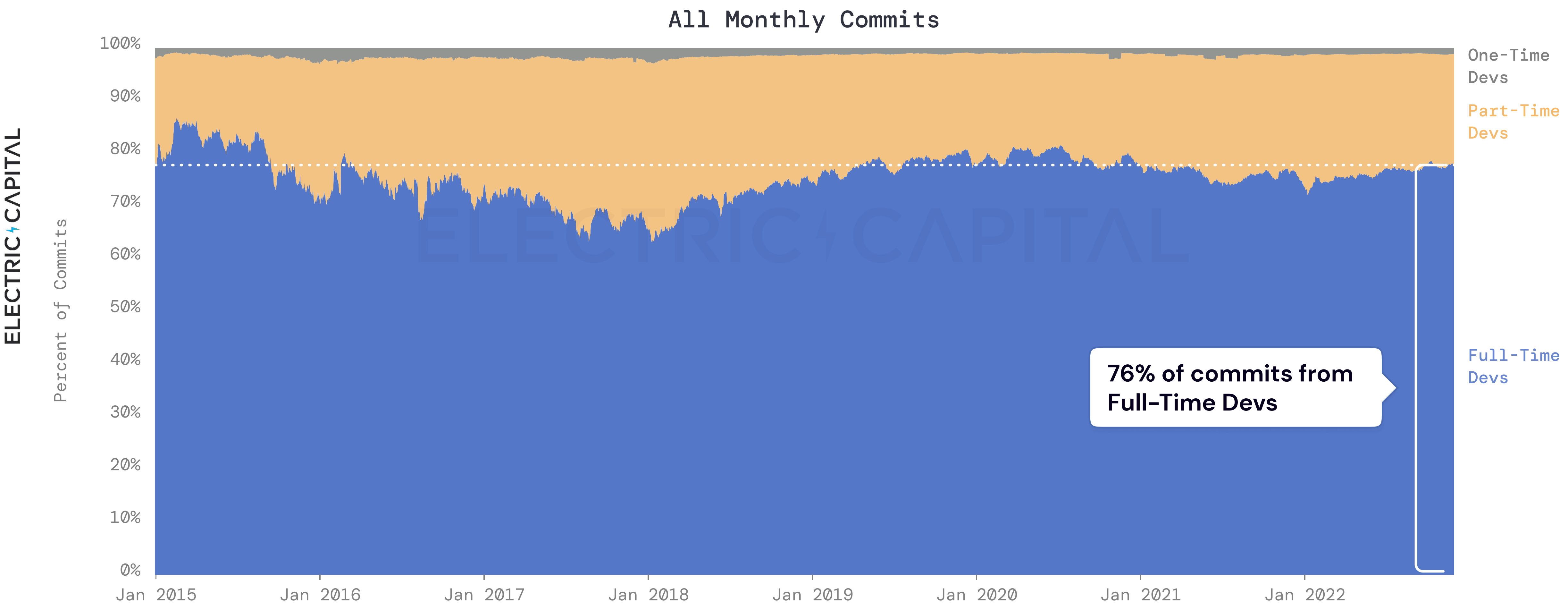
ELECTRIC⚡CAPITAL

WE CAN SEGMENT BY FREQUENCY OF CONTRIBUTION: FULL-TIME DEVS CONTRIBUTE THE MOST COMMITS: 356K COMMITS A MONTH

All Crypto Monthly Commits



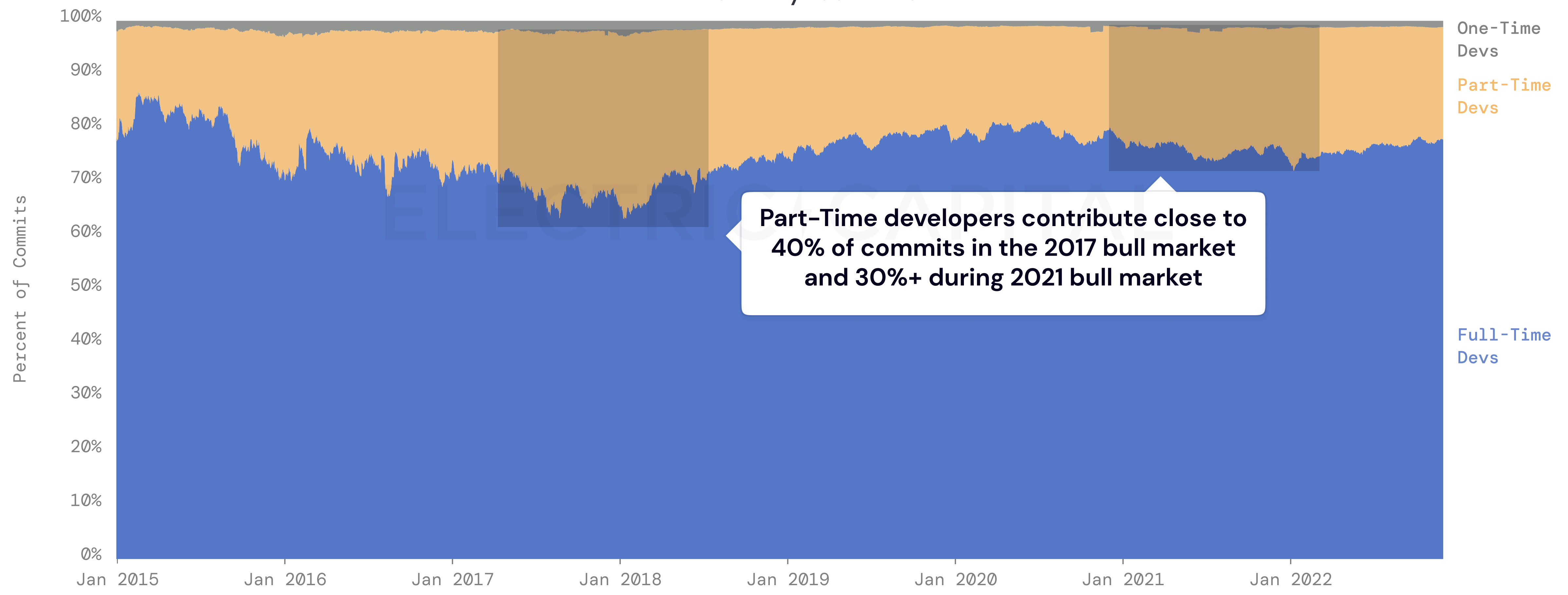
FULL-TIME DEVELOPERS ARE THE BIGGEST CODE CONTRIBUTORS: FULL-TIME DEVELOPERS CONTRIBUTE **76%** OF ALL COMMITS



PART-TIME DEVELOPERS CONTRIBUTE MORE COMMITS IN BULL MARKETS

ELECTRIC CAPITAL

All Monthly Commits

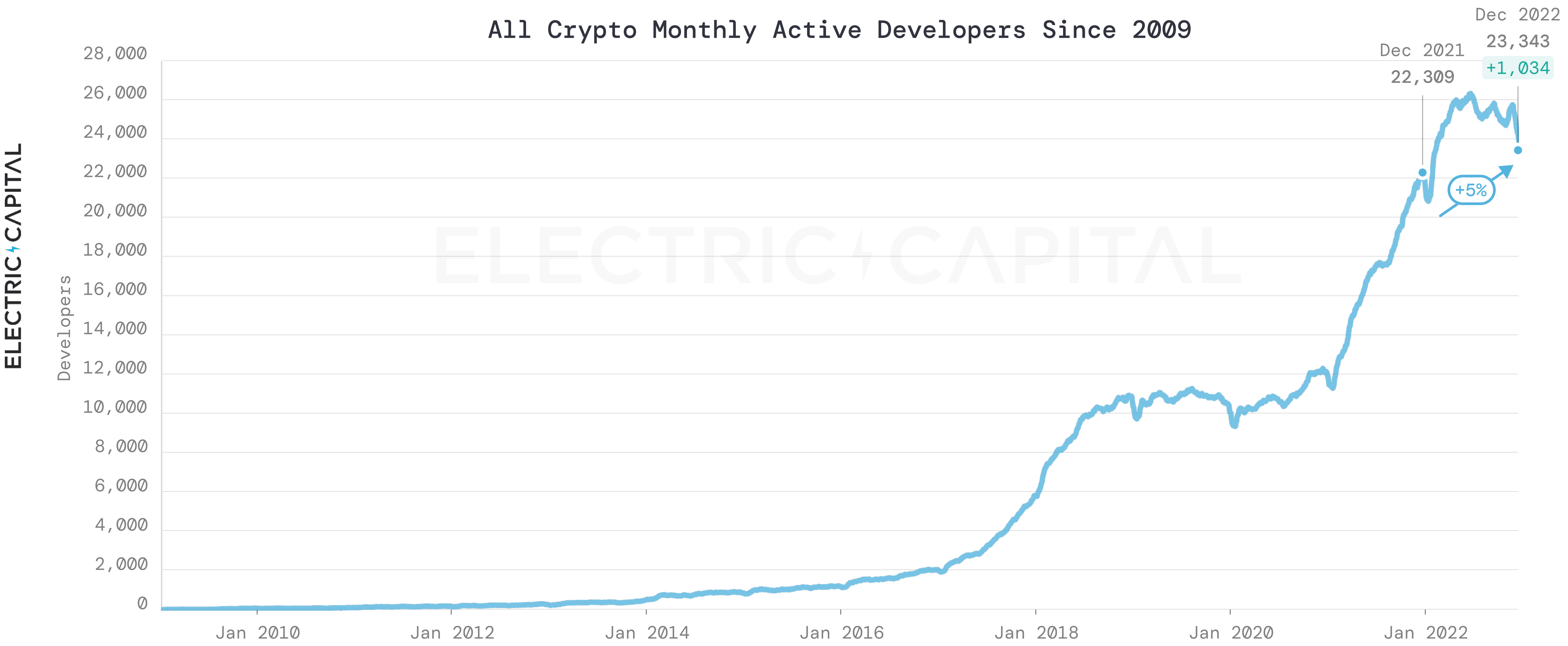


Part-Time developers contribute close to 40% of commits in the 2017 bull market and 30%+ during 2021 bull market

**APPLY THIS FREQUENCY BASED SEGMENTATION
TO DEVELOPERS IN 2022...**

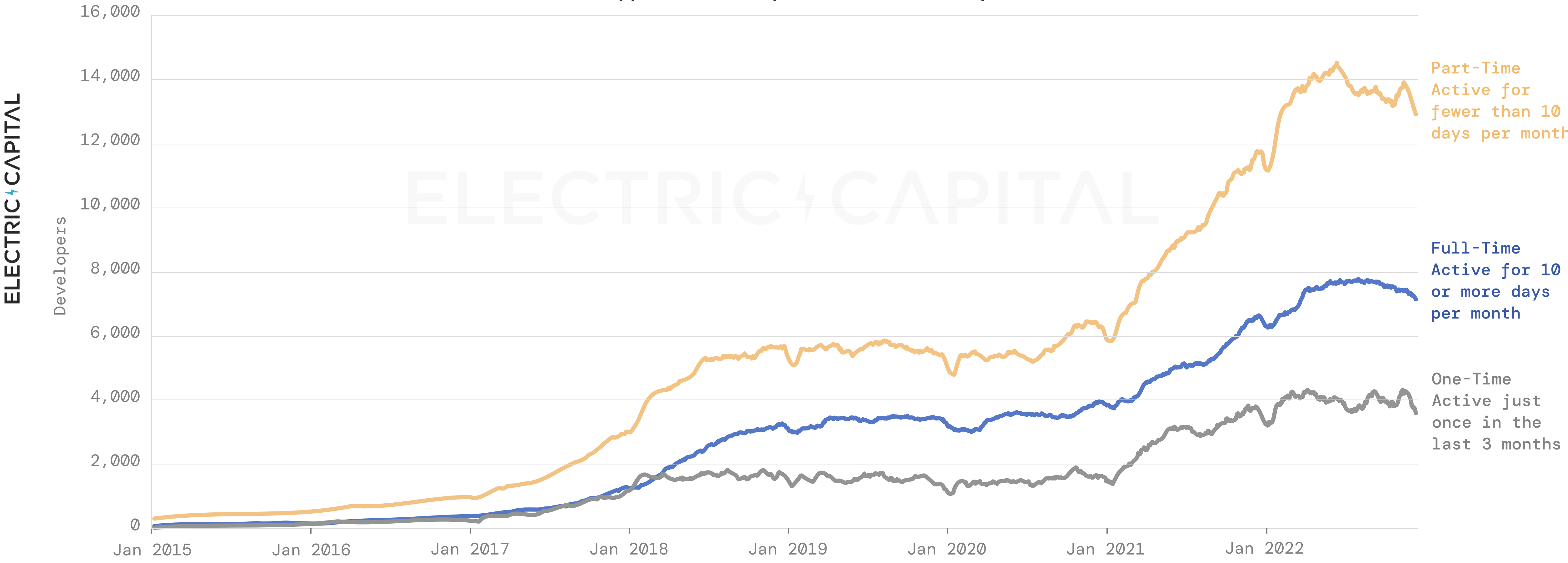
+5% MONTHLY ACTIVE DEVELOPERS FROM DECEMBER 2021 TO DECEMBER 2022

All Crypto Monthly Active Developers Since 2009



WE CAN SEGMENT DEVELOPERS BASED ON FREQUENCY OF CONTRIBUTION

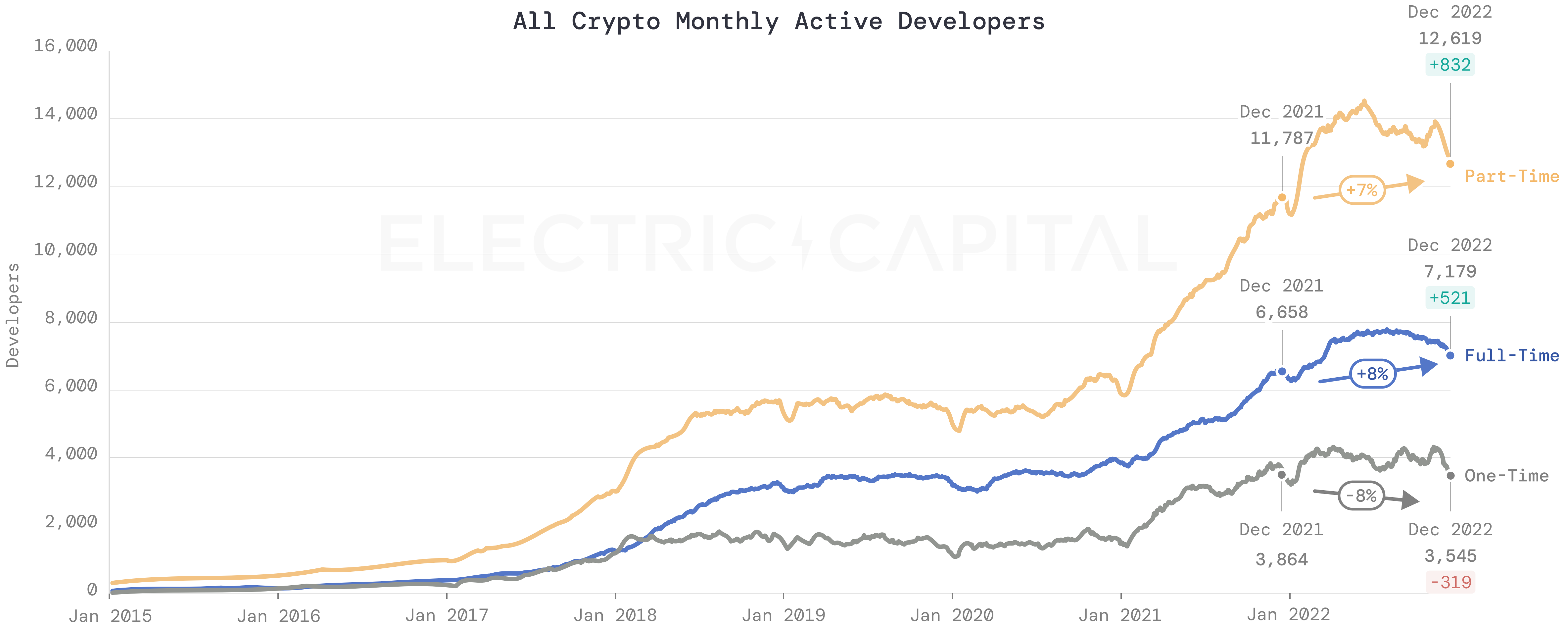
All Crypto Monthly Active Developers



+8% FULL-TIME DEVELOPERS YEAR OVER YEAR TO 7,179 FULL-TIME DEVELOPERS

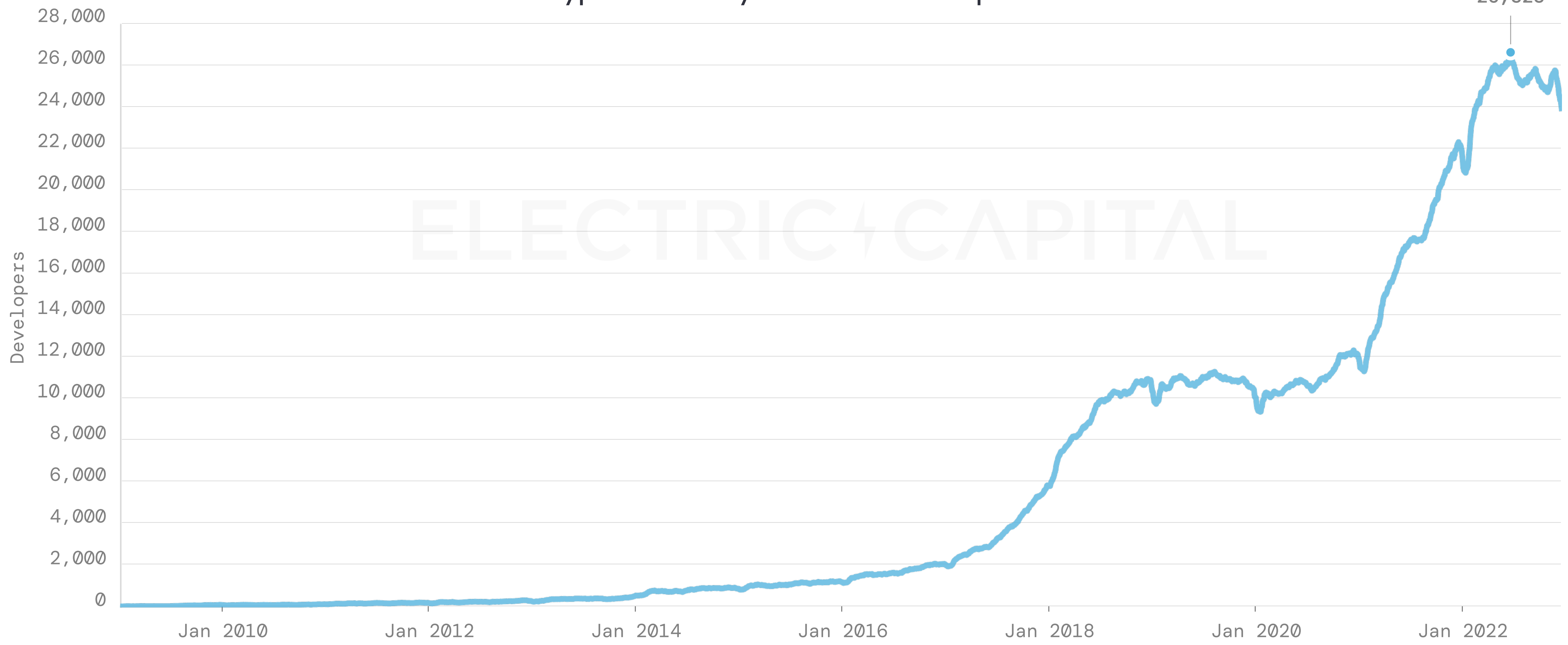
All Crypto Monthly Active Developers

ELECTRIC⚡CAPITAL



DEVELOPERS REACHED ALL-TIME HIGH IN JUNE 2022

All Crypto Monthly Active Developers Since 2009



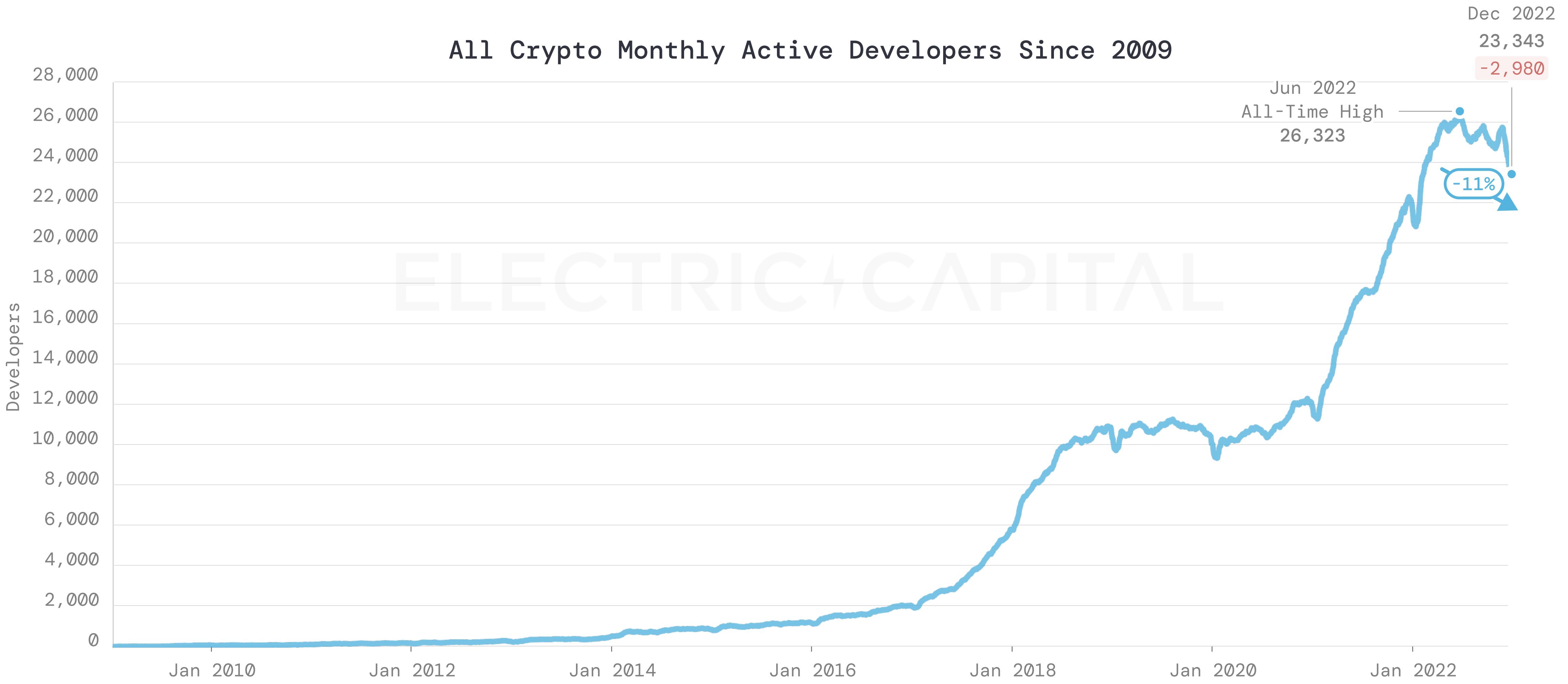
Jun 2022
All-Time High
26,323

ELECTRIC CAPITAL

SINCE ALL-TIME HIGH: MONTHLY ACTIVE DEVELOPERS FELL -11%

All Crypto Monthly Active Developers Since 2009

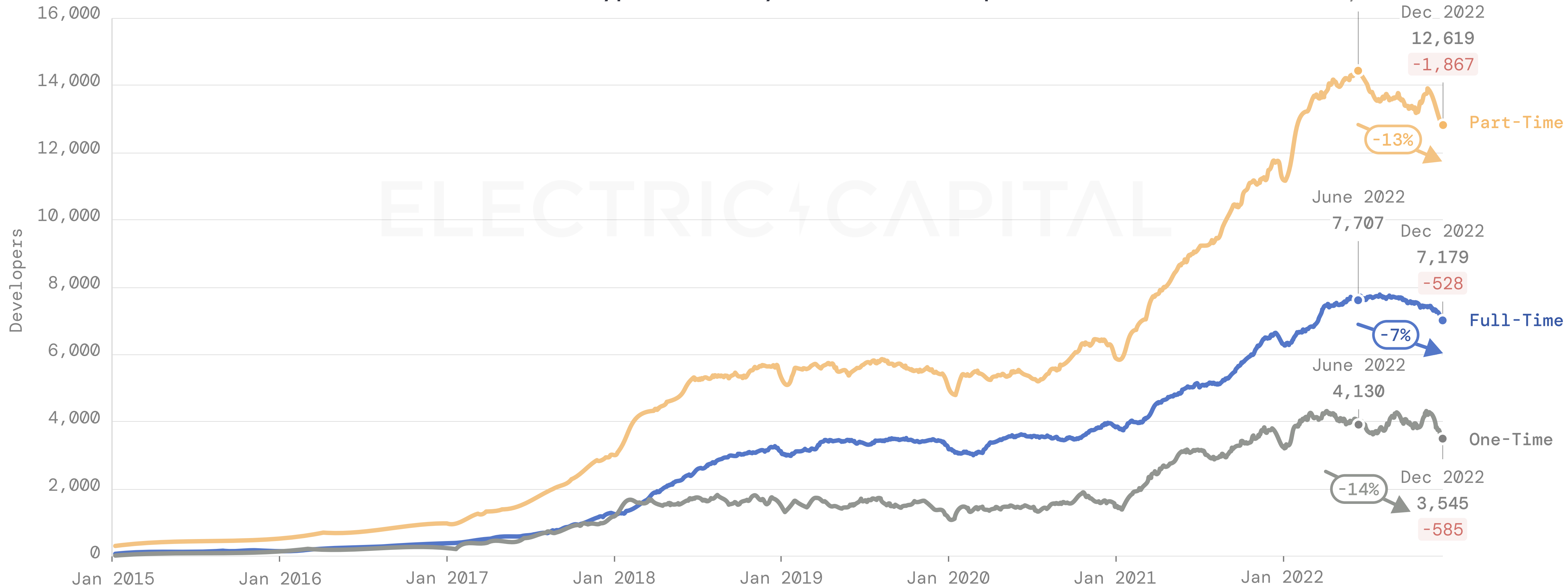
ELECTRIC⚡CAPITAL



ELECTRIC⚡CAPITAL

SINCE ALL-TIME HIGH: DEVELOPER LOSSES ARE MOSTLY FROM PART-TIME (-13%) AND ONE-TIME (-14%) DEVELOPERS

All Crypto Monthly Active Developers



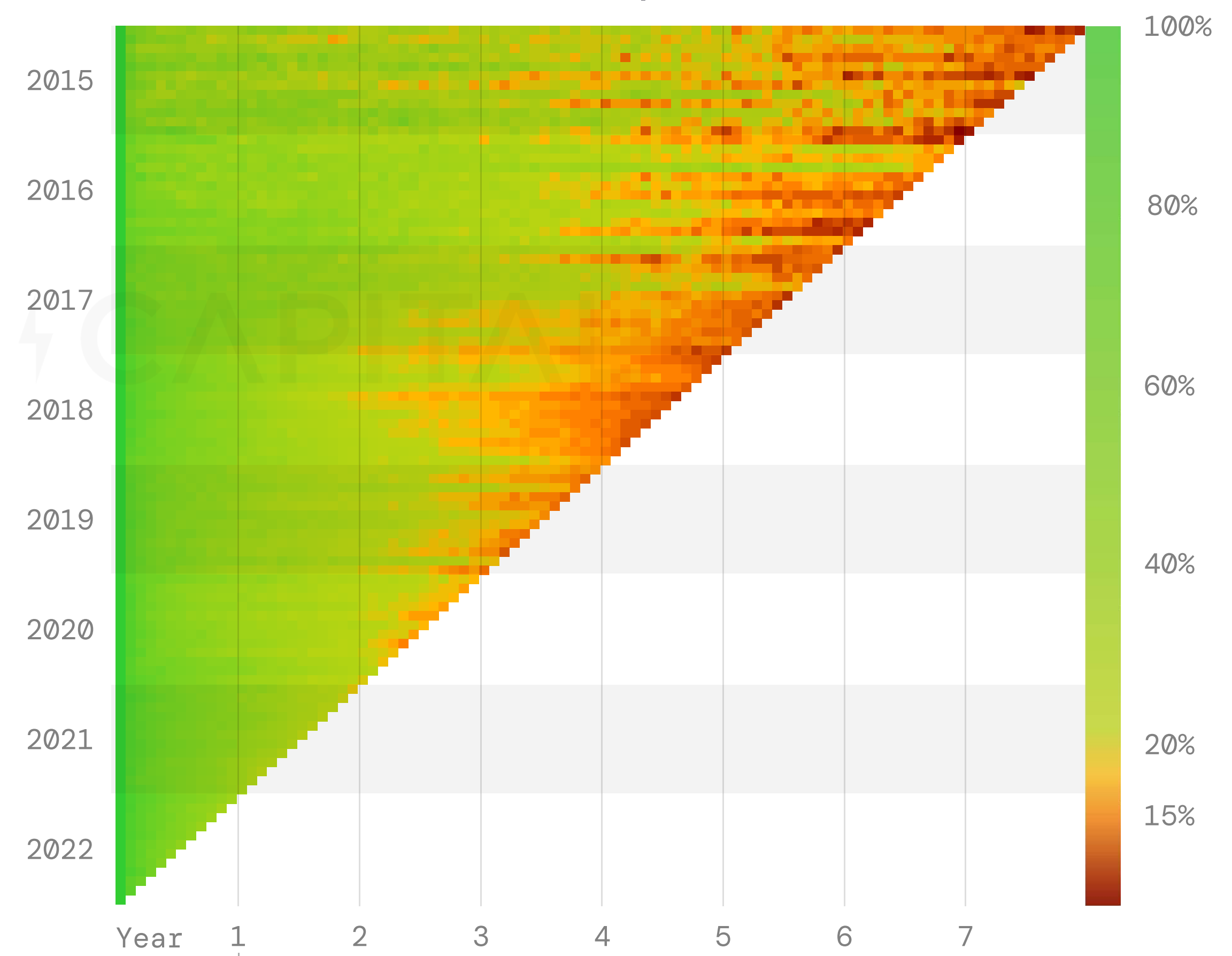
HOW DO WE RECONCILE
61K DEVELOPERS WHO CONTRIBUTED TO CRYPTO IN 2022
VS. 23K MONTHLY ACTIVE DEVELOPERS?

WE CAN LOOK MORE GRANULARLY AT RETENTION BY MONTHLY COHORTS

ELECTRIC CAPITAL

Each row represents the developers that joined each month

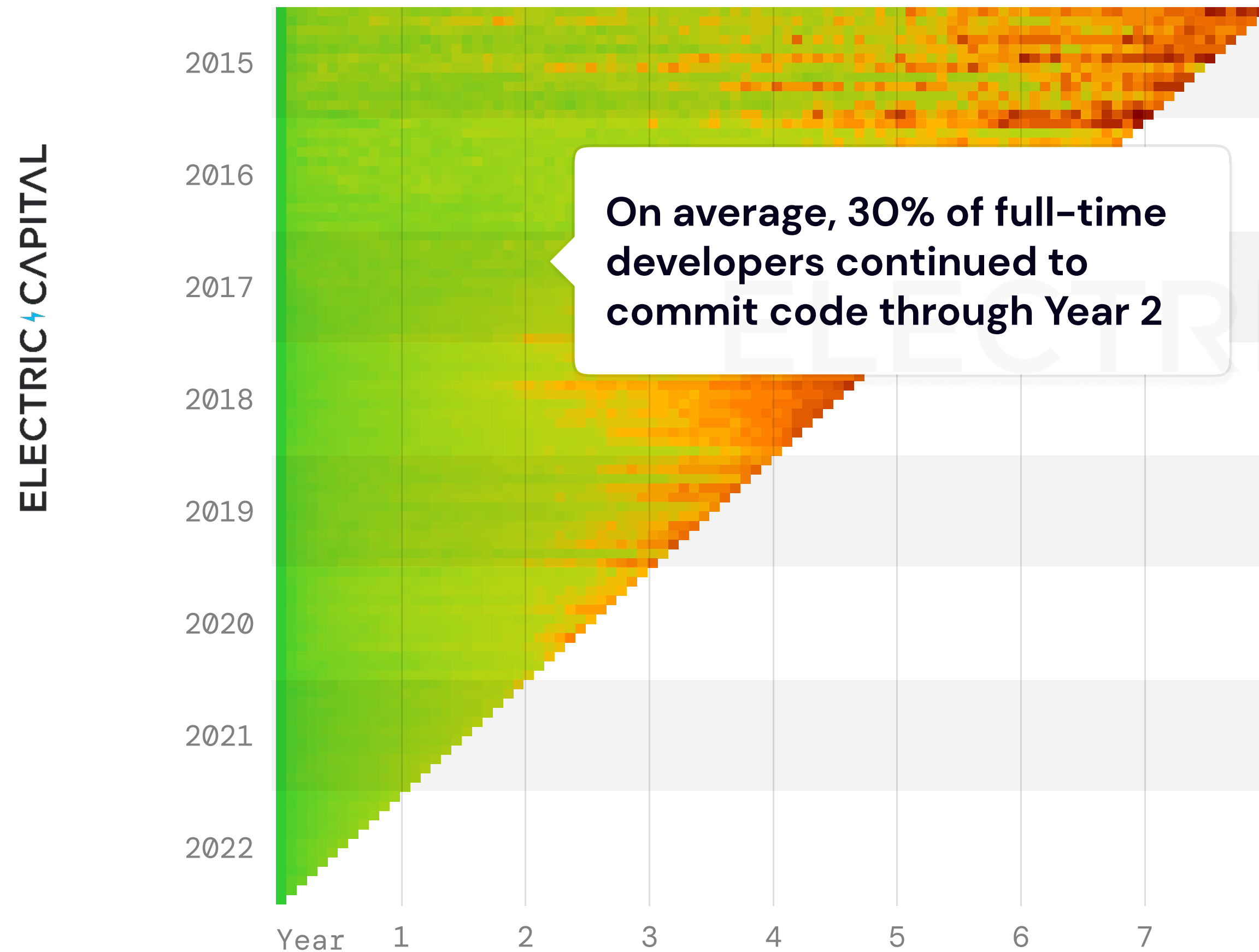
Full-Time Developer Retention



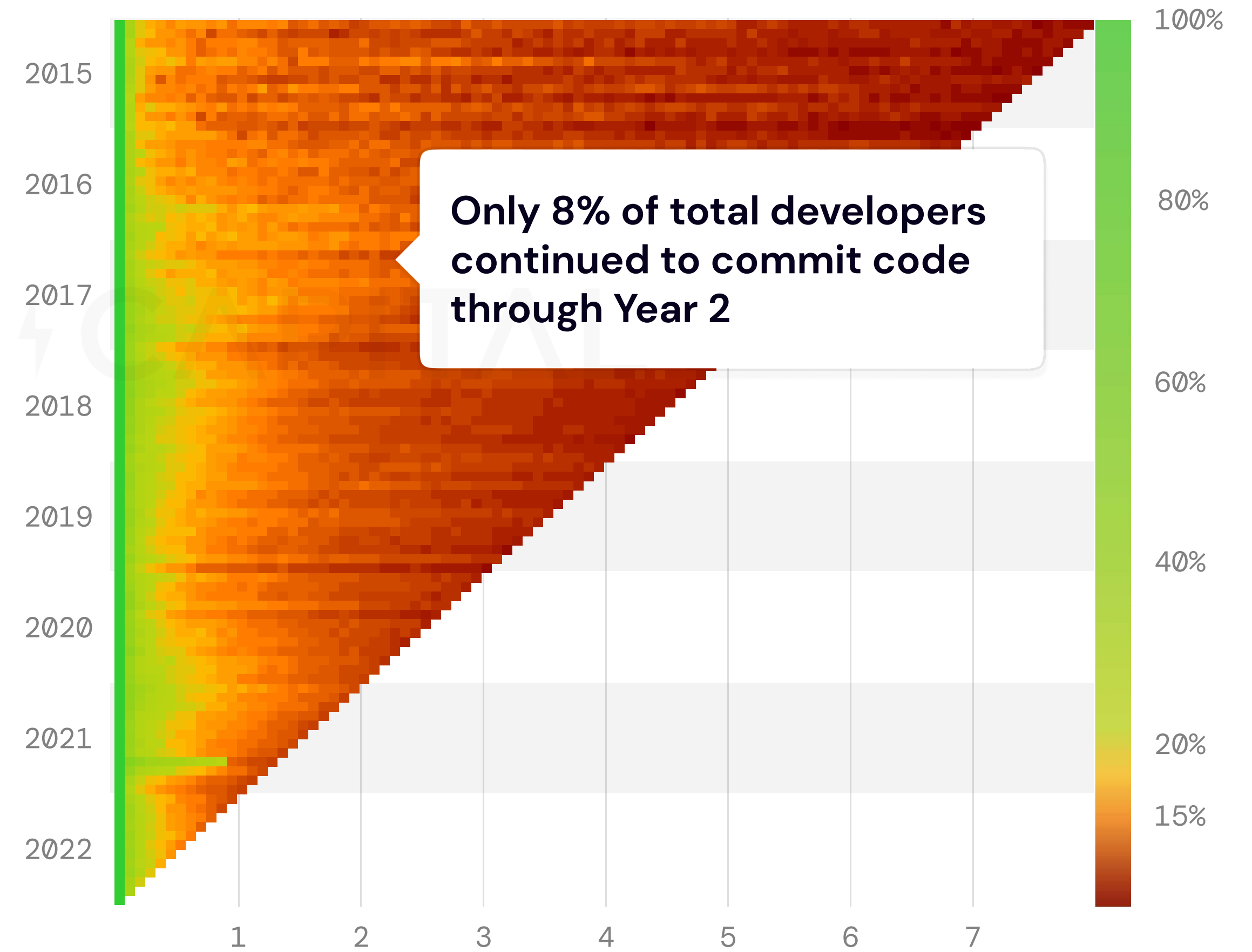
Each column represents the percent of developers from that month that committed code the next month

FULL-TIME DEVELOPERS HAVE SIGNIFICANTLY BETTER RETENTION OVER TIME: **30%** OF FULL-TIME DEVS CONTINUED TO CONTRIBUTE THROUGH YEAR 2

Full-Time Developer Retention



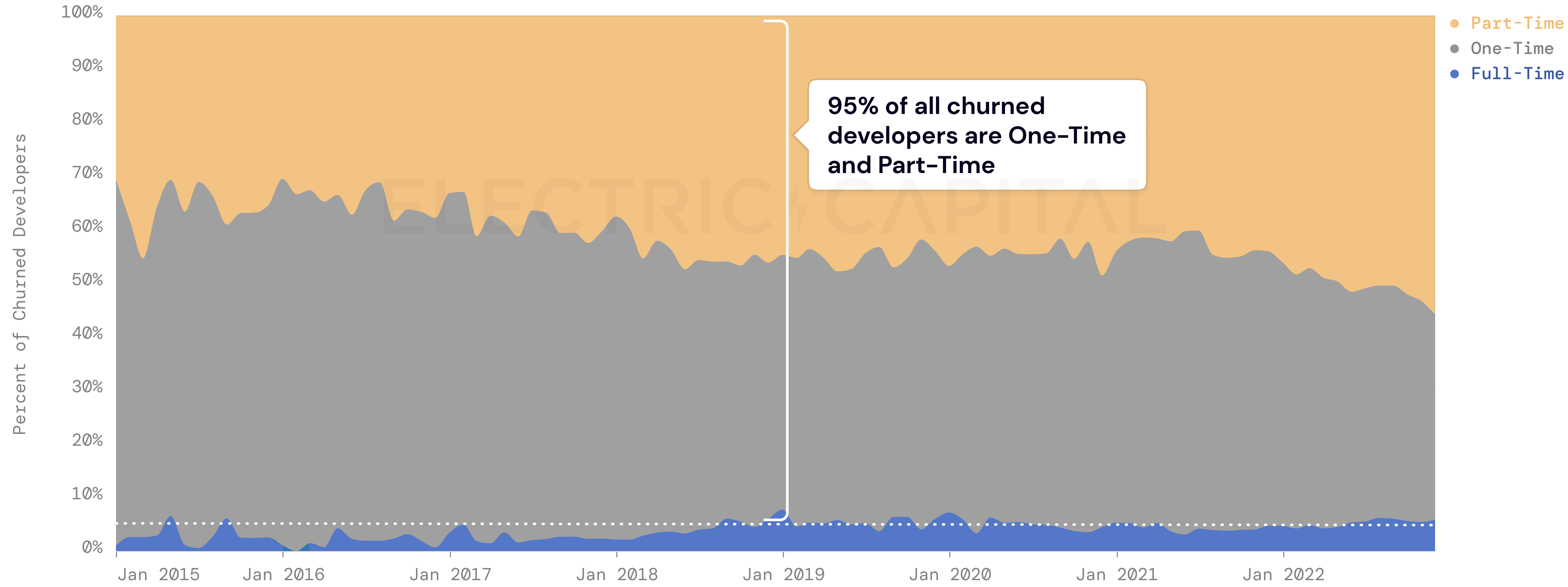
Total Developer Retention



HOW ACTIVE WERE DEVELOPERS WHO LEFT?

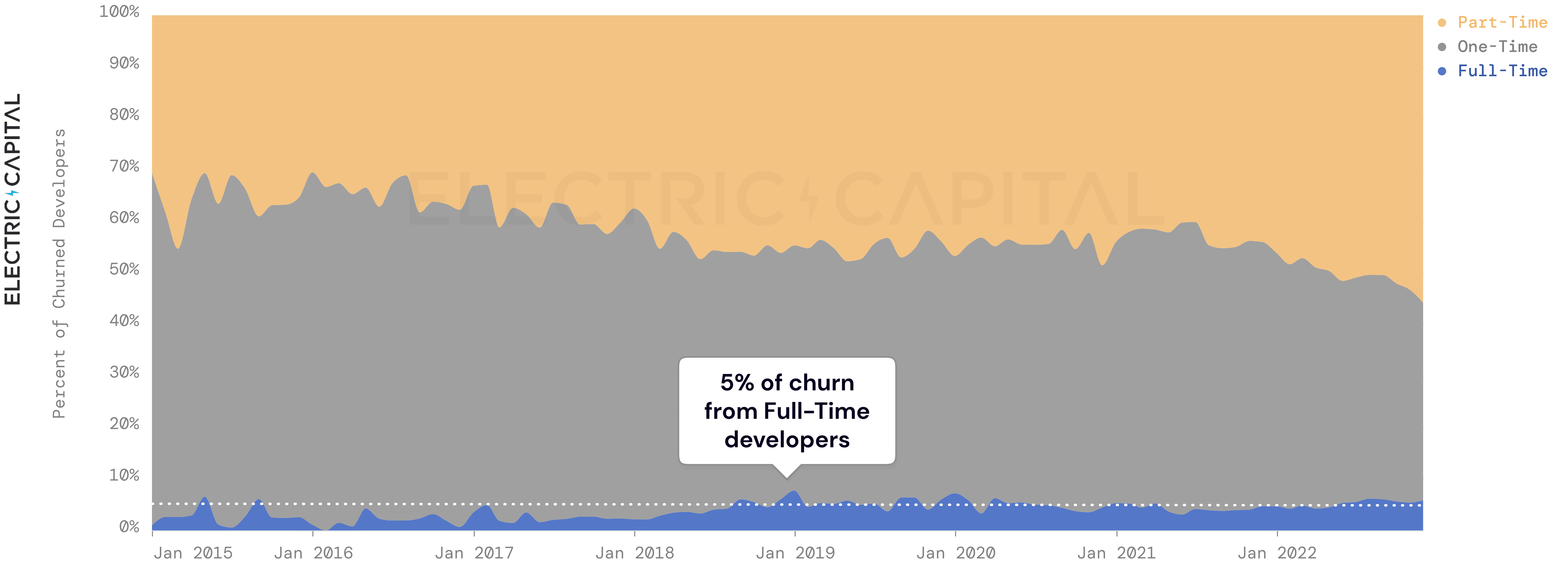
95% OF MONTHLY DEVELOPERS WHO LEAVE ARE ONE-TIME AND PART-TIME DEVELOPERS

All Developer Churn



HEAVY CONTRIBUTORS STAY: FULL-TIME DEVELOPERS ONLY ACCOUNT FOR 5% OF CHURN

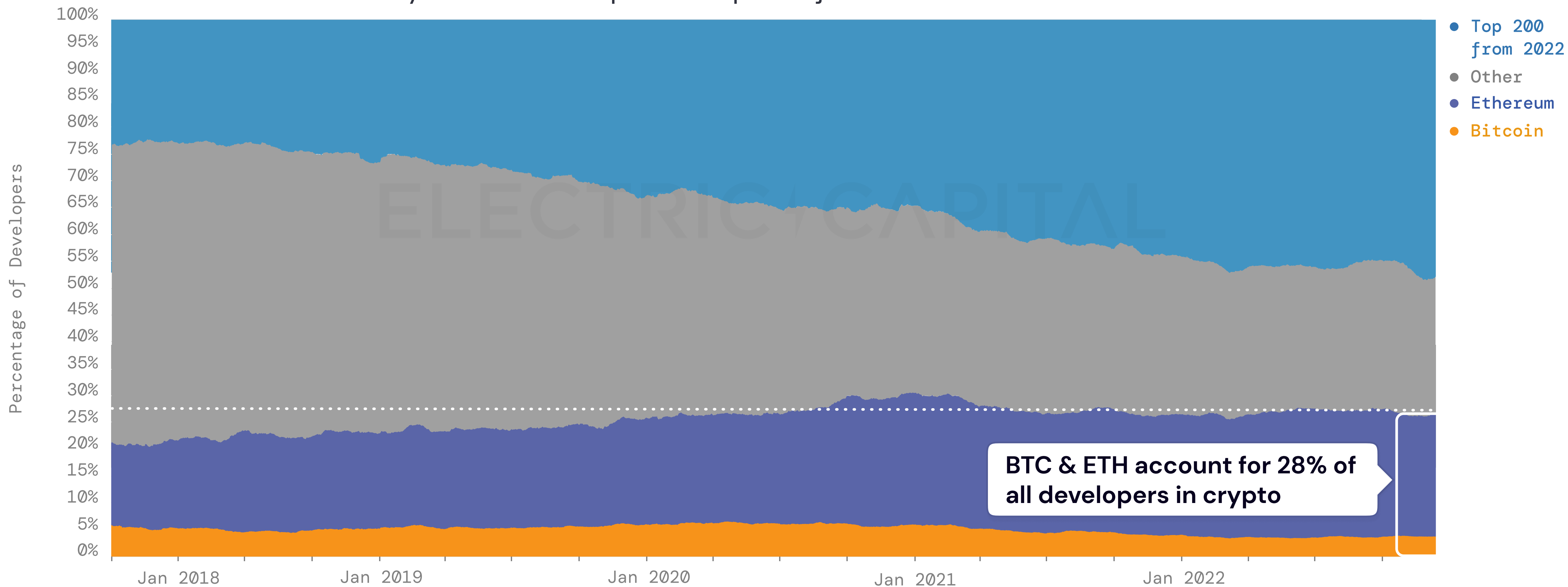
All Developer Churn



WHAT ARE THESE DEVELOPERS WORKING ON?
LET'S SEGMENT BY ECOSYSTEMS

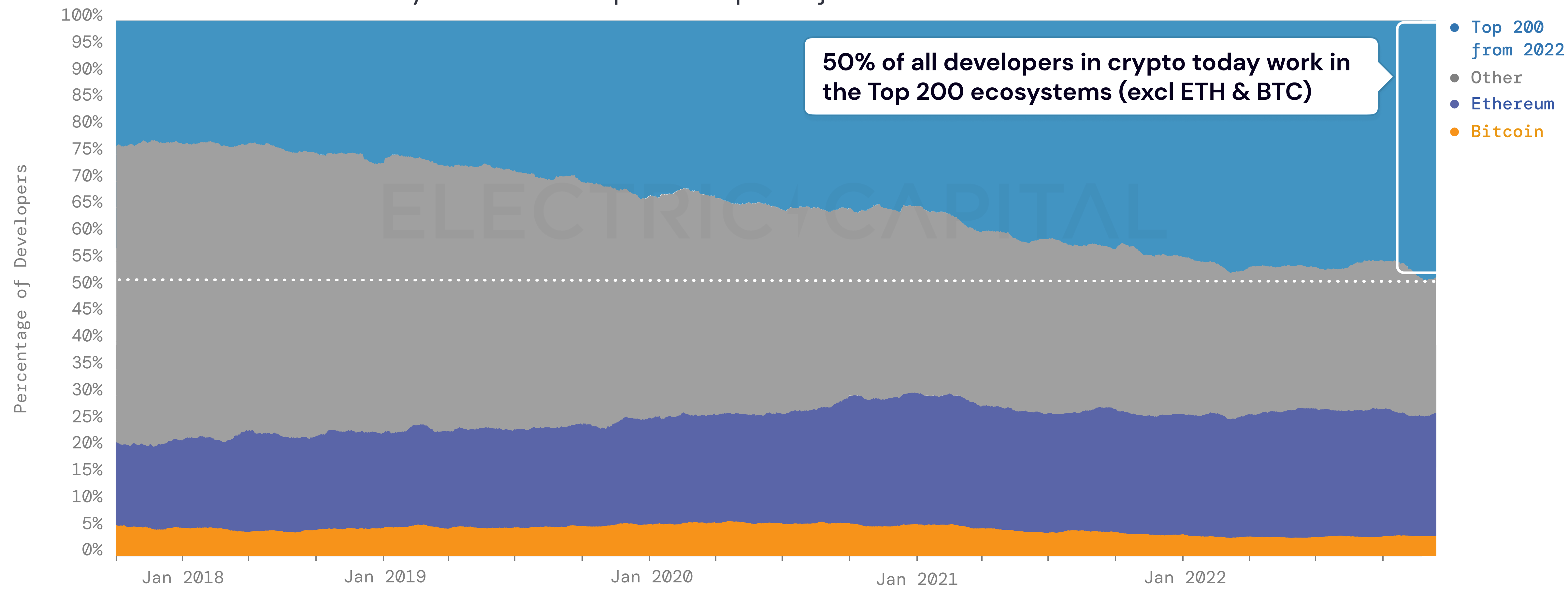
BITCOIN & ETHEREUM ACCOUNT FOR 28% OF ALL DEVELOPERS IN CRYPTO

Normalized Monthly Active Developers - Top 200 from 2022 vs Ethereum vs Bitcoin vs Other



50% OF DEVELOPERS WORK IN THE TOP 200 ECOSYSTEMS BY NETWORK VALUE OUTSIDE OF BITCOIN & ETHEREUM

Normalized Monthly Active Developers - Top 200 from 2022 vs Ethereum vs Bitcoin vs Other



LET'S DEEP DIVE INTO BITCOIN, ETHEREUM,
AND OTHER TOP 200 ECOSYSTEMS...

02

ECOSYSTEM DEEP DIVE

ECOSYSTEMS ARE COMPRISED OF COMMUNITY AND PROTOCOL LEVEL DEVELOPERS

Ecosystem Developers

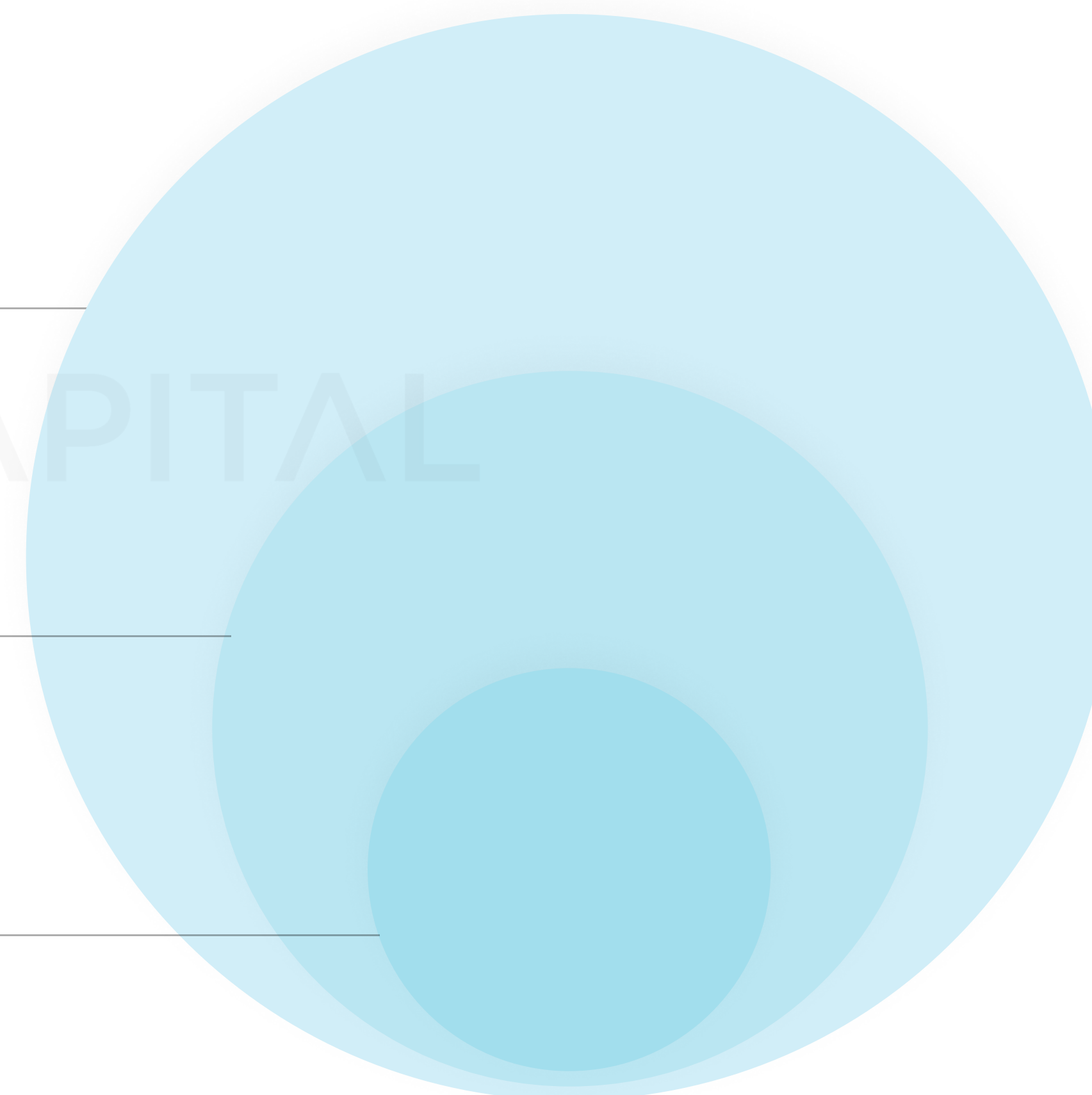
Developers roll into a broad ecosystem of related communities with shared security at the base layer. Examples: Ethereum, Solana, Polygon, and NEAR.

Community Developers

Developers working on decentralized applications, tooling, docs, wallets, and anything else furthering the project.

Protocol Developers

Working on the core protocol only



COMMUNITY EXAMPLE: OPTIMISM

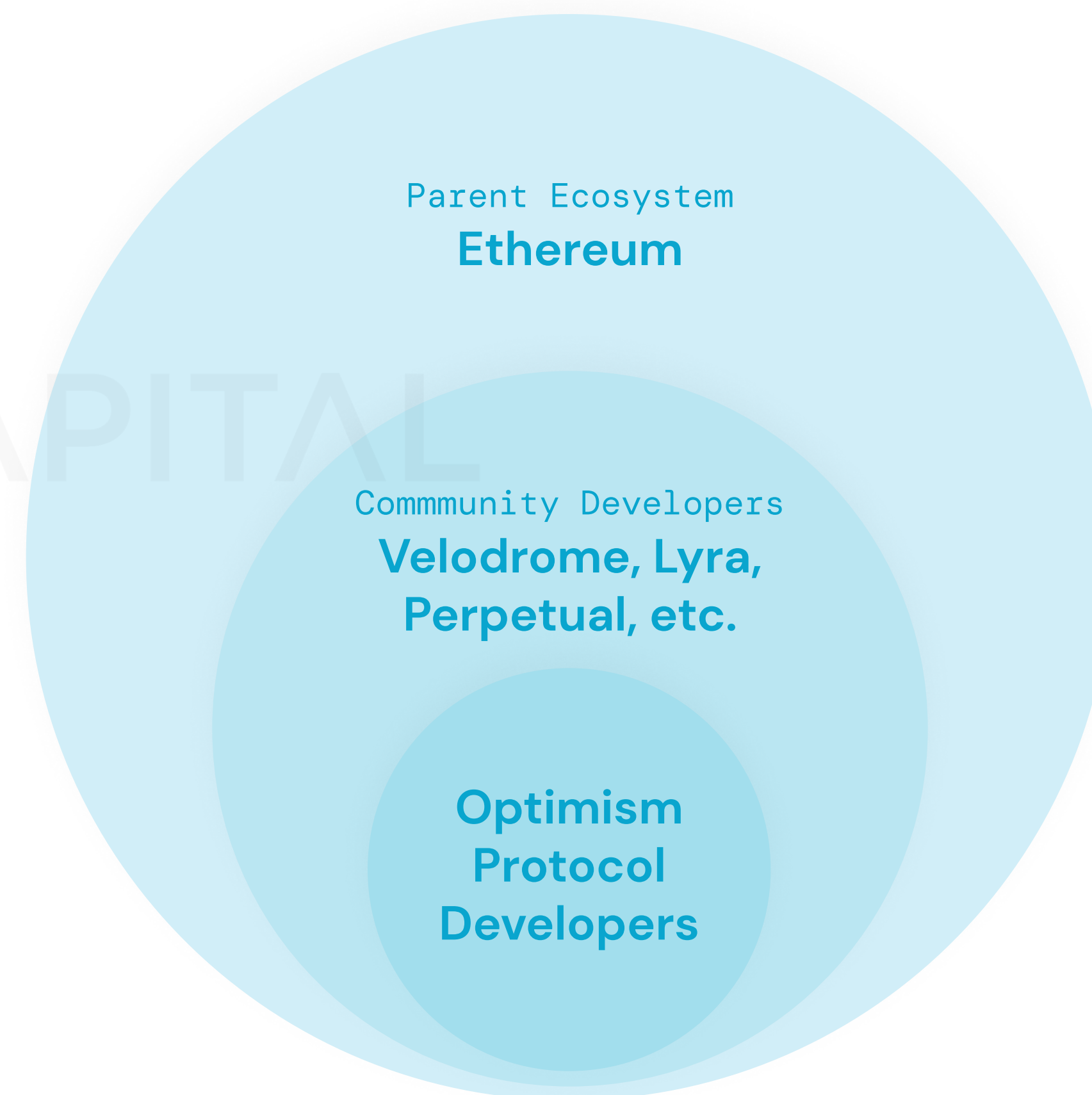
Communities can live in ecosystems; the Optimism ecosystem lives inside the Ethereum ecosystem.

Optimism Community

- Velodrome
- Lyra
- Perpetual Protocol
- Sonne Finance
- & many more!

Optimism Protocol

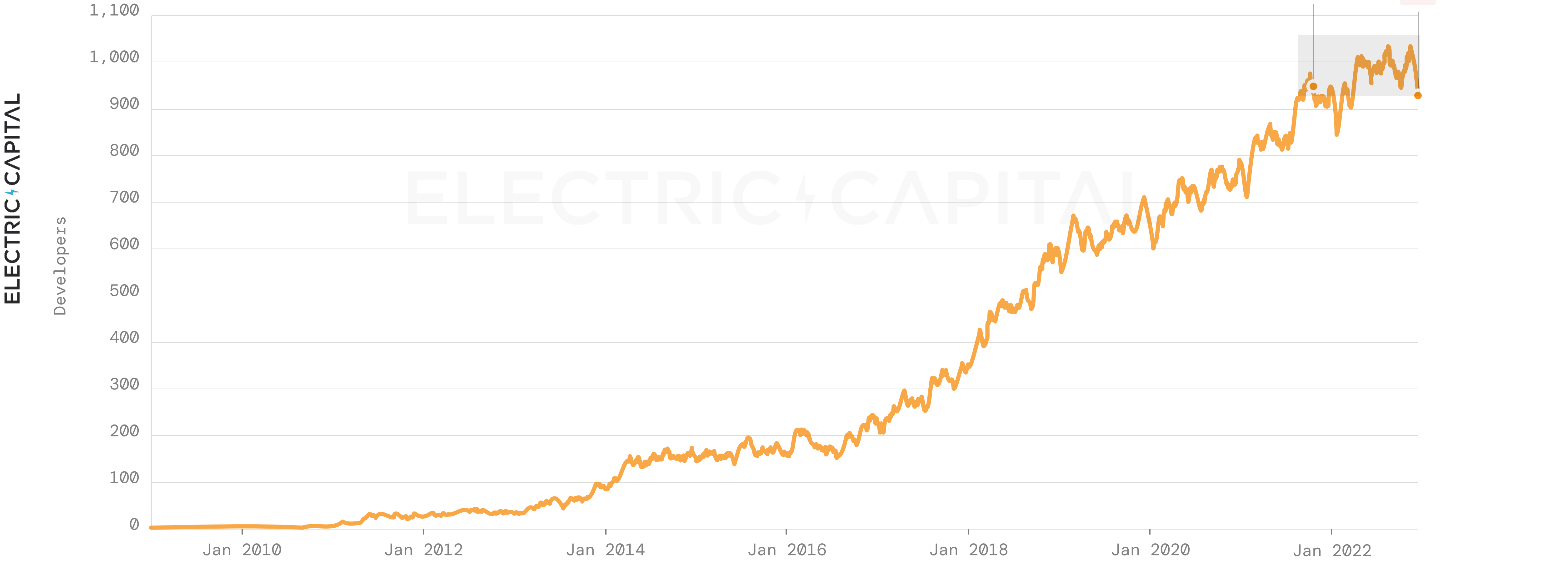
- Contracts (L1 and L2 smart contracts for Optimism)
- Cannon (fault prover)



BITCOIN

BITCOIN MONTHLY ACTIVE DEVS ARE FLAT BETWEEN DEC 2021 AND DEC 2022

Bitcoin Monthly Active Developers



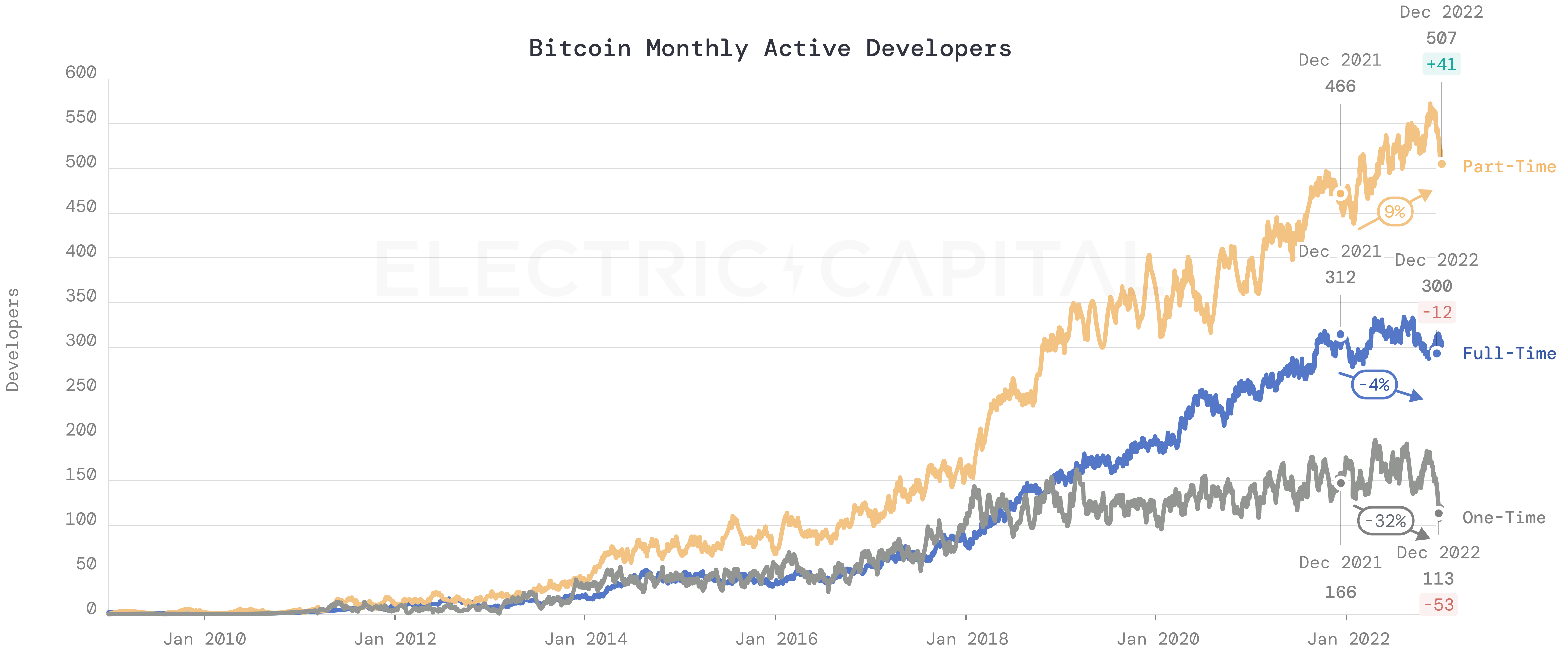
ELECTRIC⚡CAPITAL

ELECTRIC⚡CAPITAL

BITCOIN: MOST YOY LOSS COMES FROM ONE-TIME DEVELOPERS (-32%)

Bitcoin Monthly Active Developers

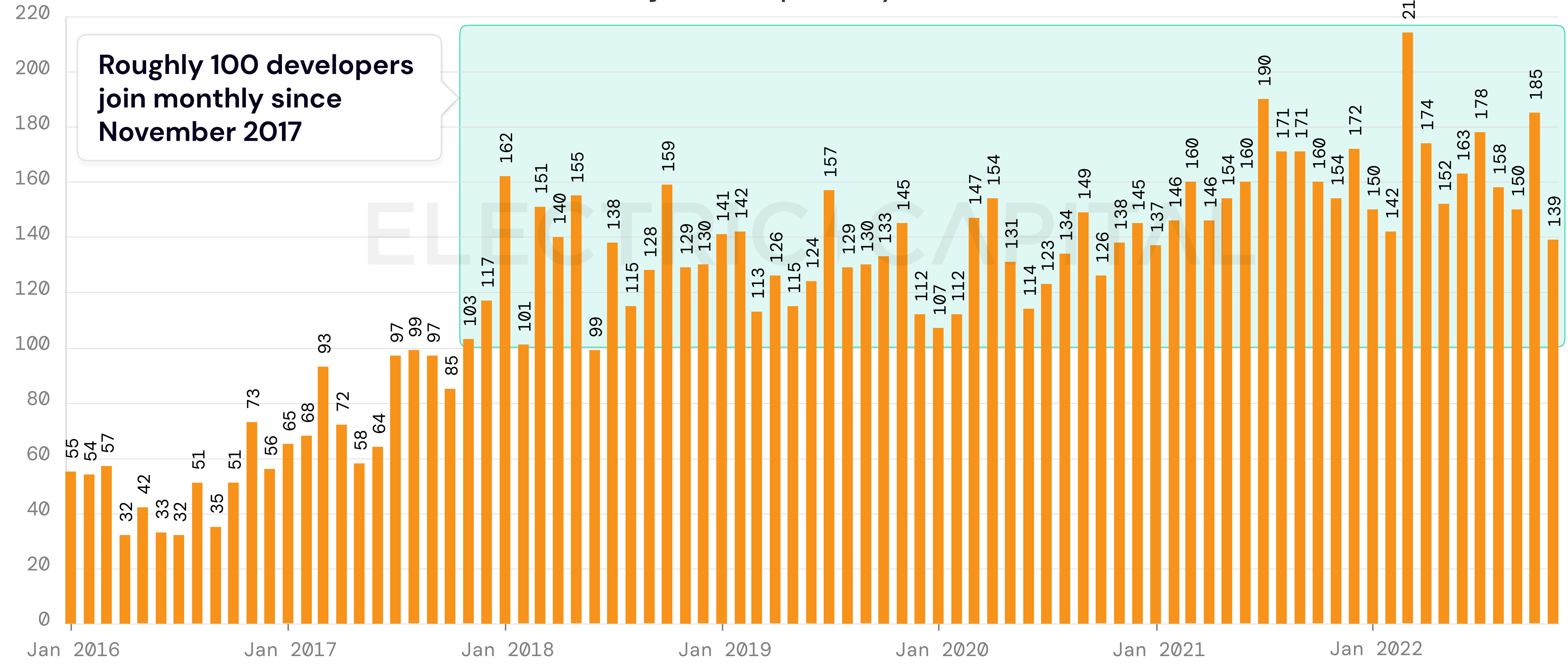
ELECTRIC⚡CAPITAL



100+ NEW DEVELOPERS CONTRIBUTE TO BITCOIN PROJECTS EVERY MONTH

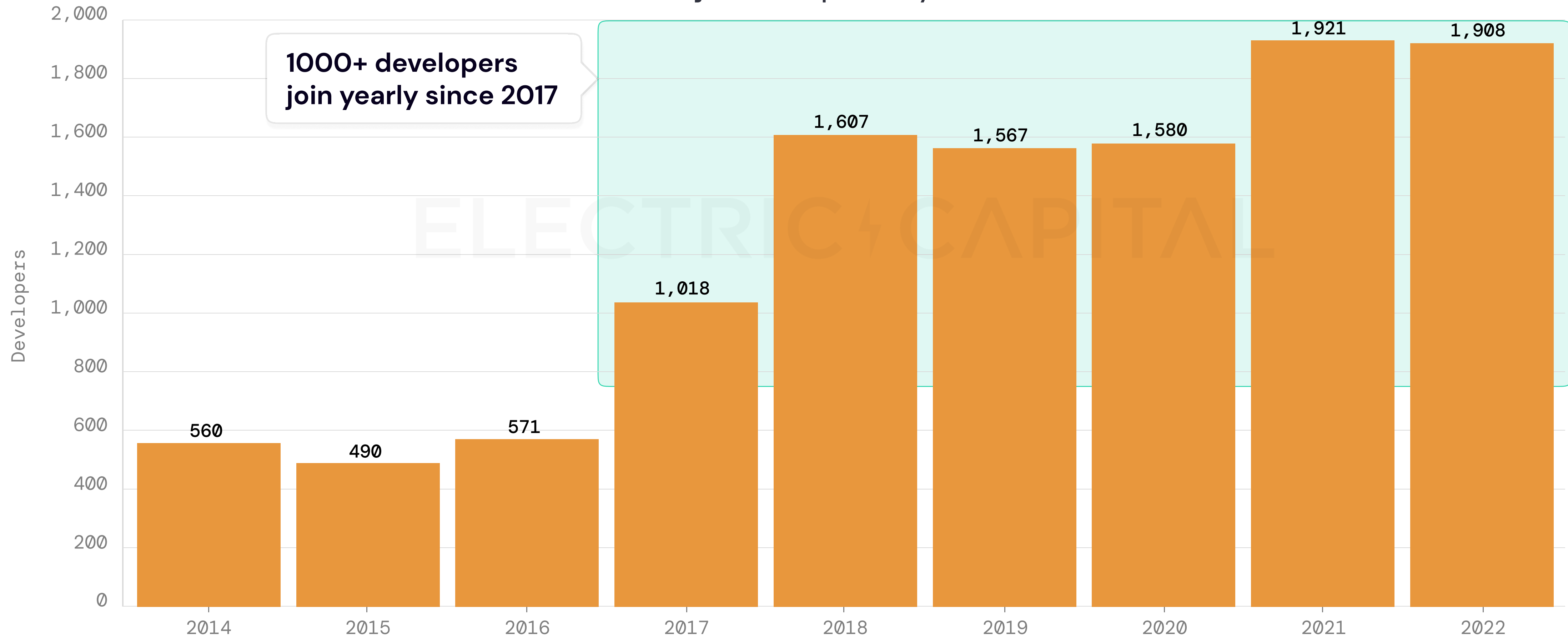
ELECTRIC CAPITAL

Number of Developers by Month Joined



+1,000 NEW BITCOIN DEVELOPERS PER YEAR ACROSS MARKET CONDITIONS

Number of Developers by Year Joined



1000+ developers
join yearly since 2017

ELECTRIC CAPITAL

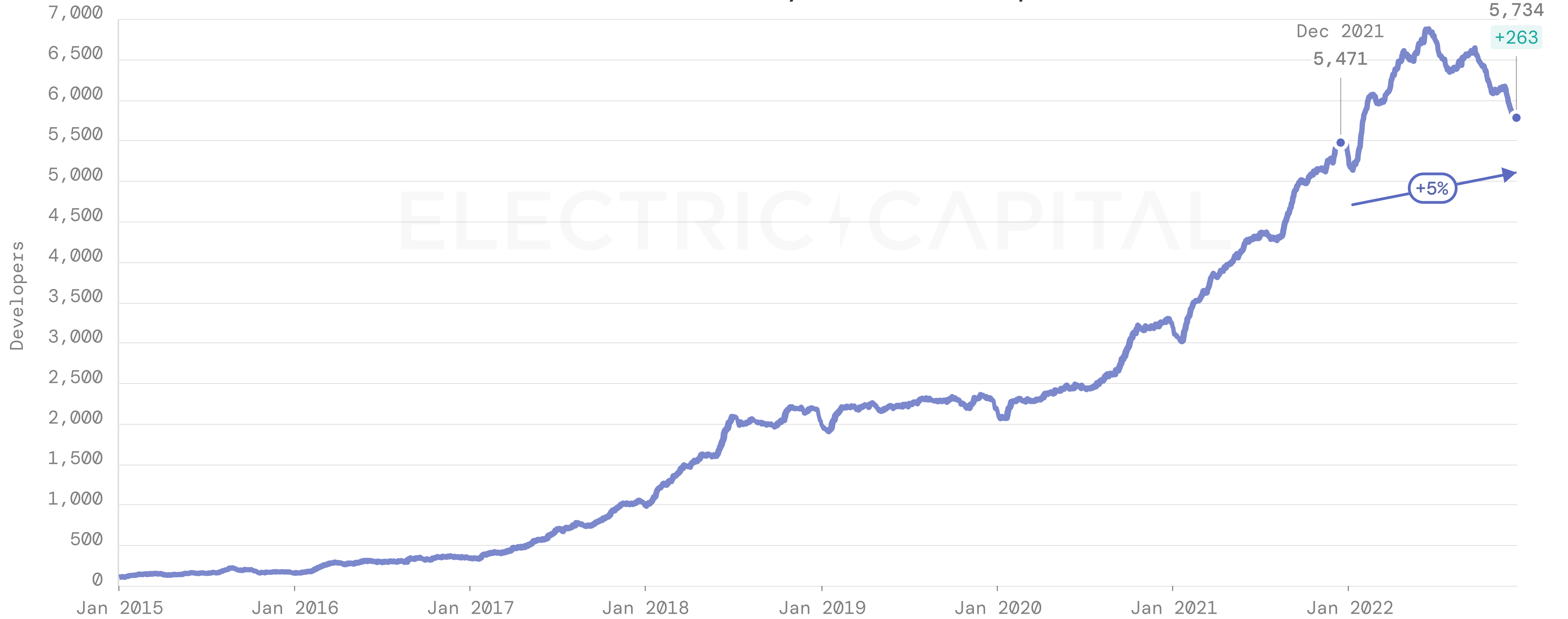
ELECTRIC CAPITAL

Developers

ETHEREUM

+5% MONTHLY ACTIVE ETHEREUM DEVELOPERS FROM DEC 2021 TO DEC 2022

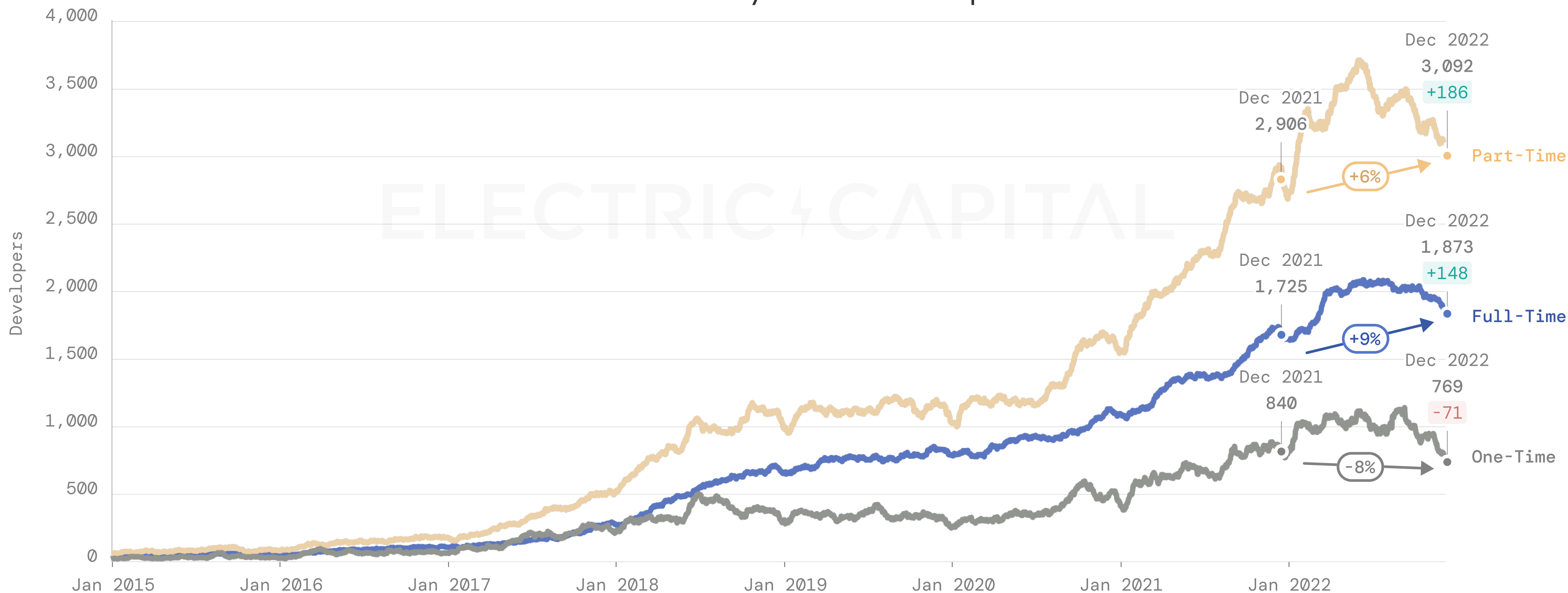
Ethereum Monthly Active Developers



ELECTRIC⚡CAPITAL

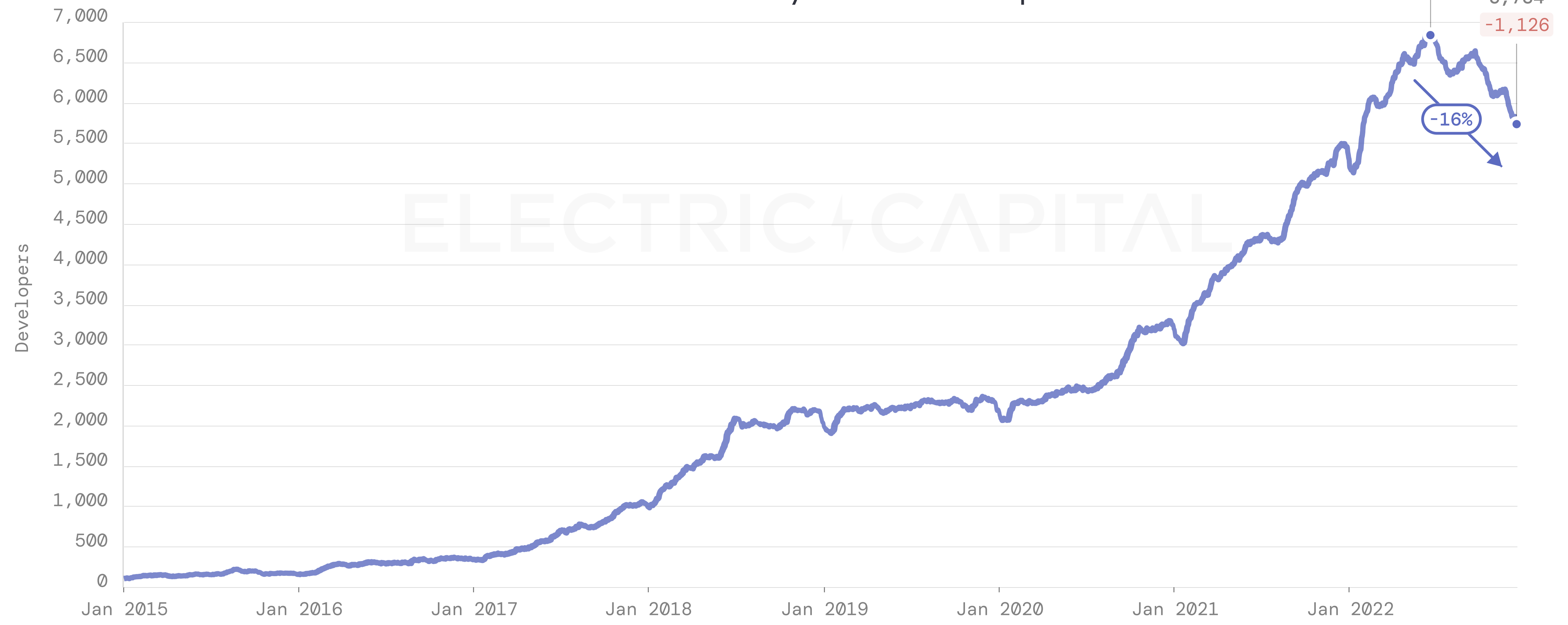
ETHEREUM'S GROWTH COMES FROM FULL-TIME (+9%) AND PART-TIME (+6%) DEVELOPERS, LOSSES COME FROM ONE-TIME DEVELOPERS (-8%)

Ethereum Monthly Active Developers



SINCE ALL-TIME HIGH: **-16%** DECLINE IN MONTHLY ACTIVE ETHEREUM DEVS

Ethereum Monthly Active Developers

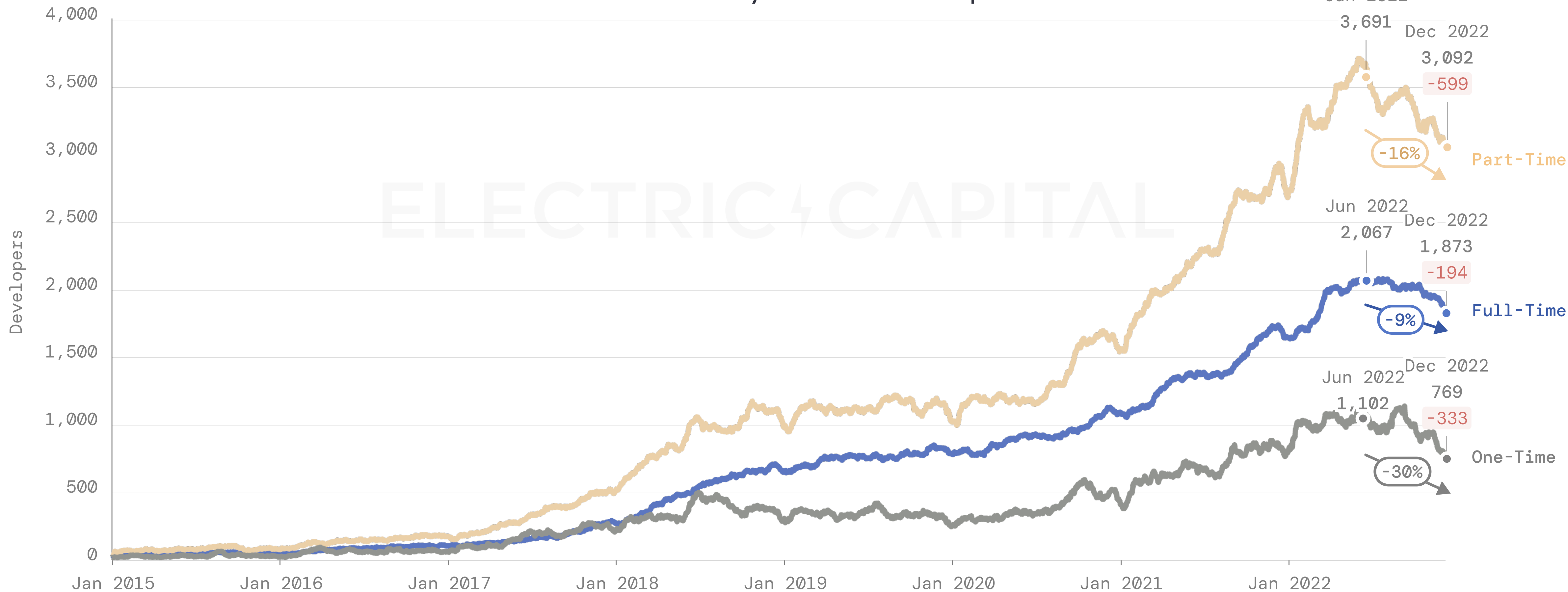


ELECTRIC CAPITAL

ELECTRIC CAPITAL

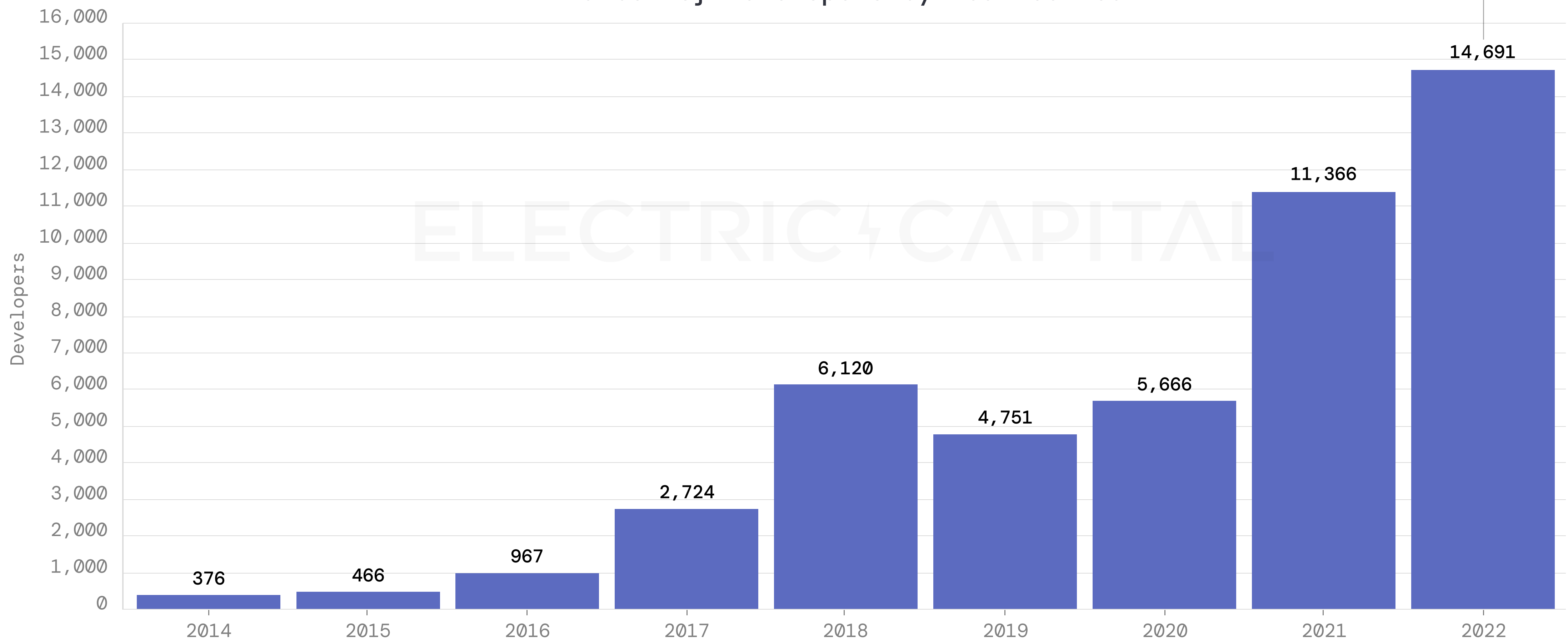
SINCE ATH: MOST LOSS COMES FROM ONE-TIME (-30%) & PART-TIME (-16%) DEVS

Ethereum Monthly Active Developers



2022: +14,691 NEW ETHEREUM DEVELOPERS, THE HIGHEST IN HISTORY

Number of Developers by Year Joined



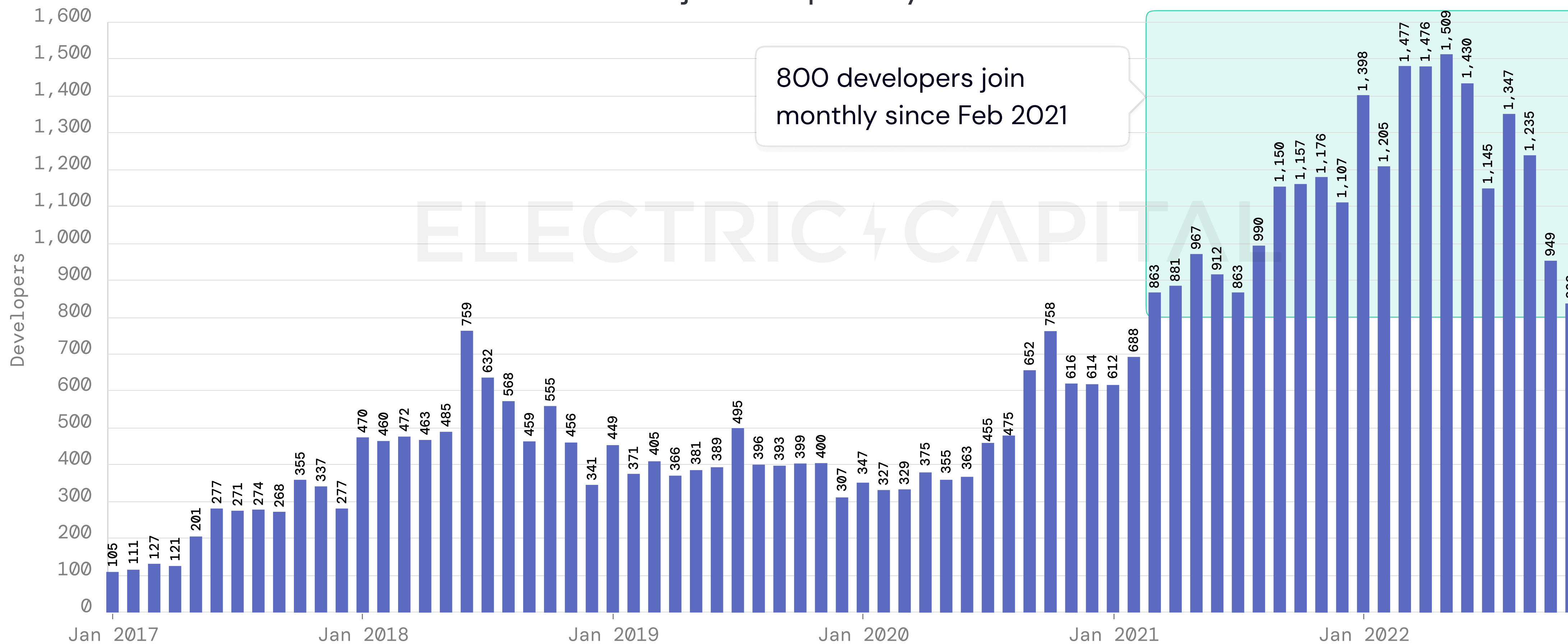
2022
All-Time High

ELECTRIC⚡CAPITAL

ELECTRIC⚡CAPITAL

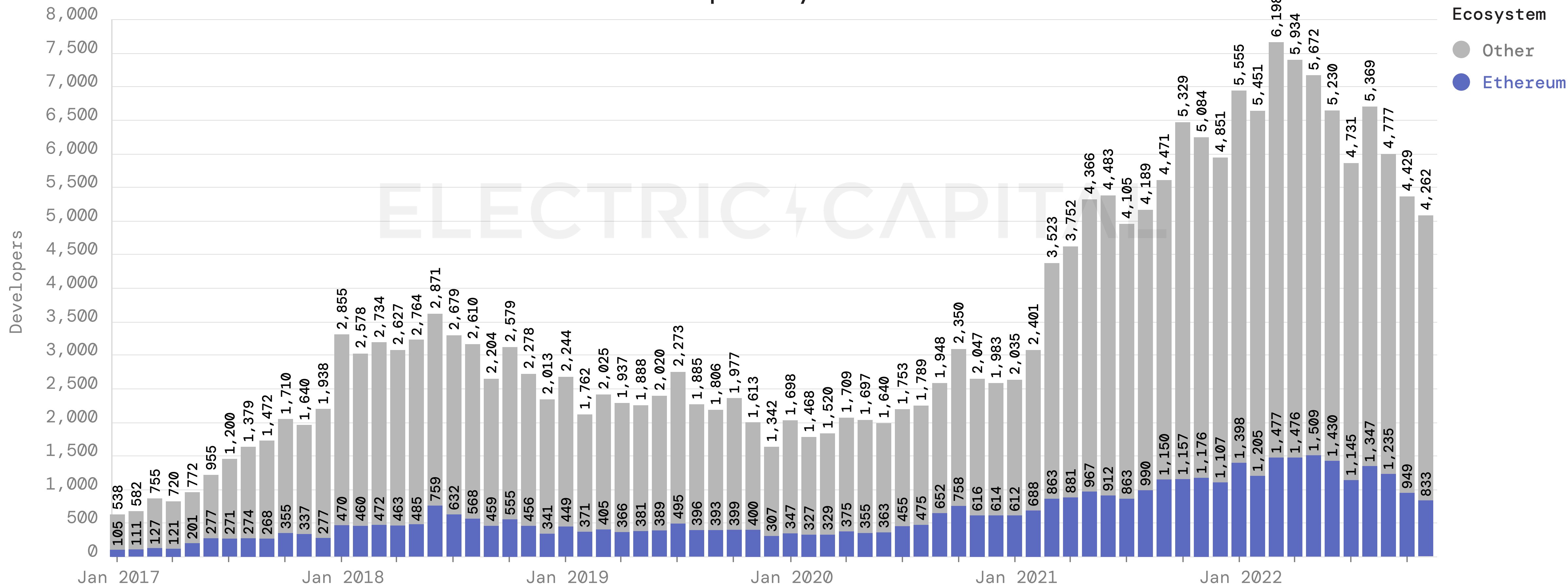
800+ NEW ETHEREUM DEVELOPERS PER MONTH SINCE FEB 2021

Number of Developers by Month Joined



ETHEREUM ACCOUNTS FOR 16%+ OF ALL NEW DEVELOPERS IN CRYPTO

Ethereum Developers by Month Joined



ELECTRIC CAPITAL

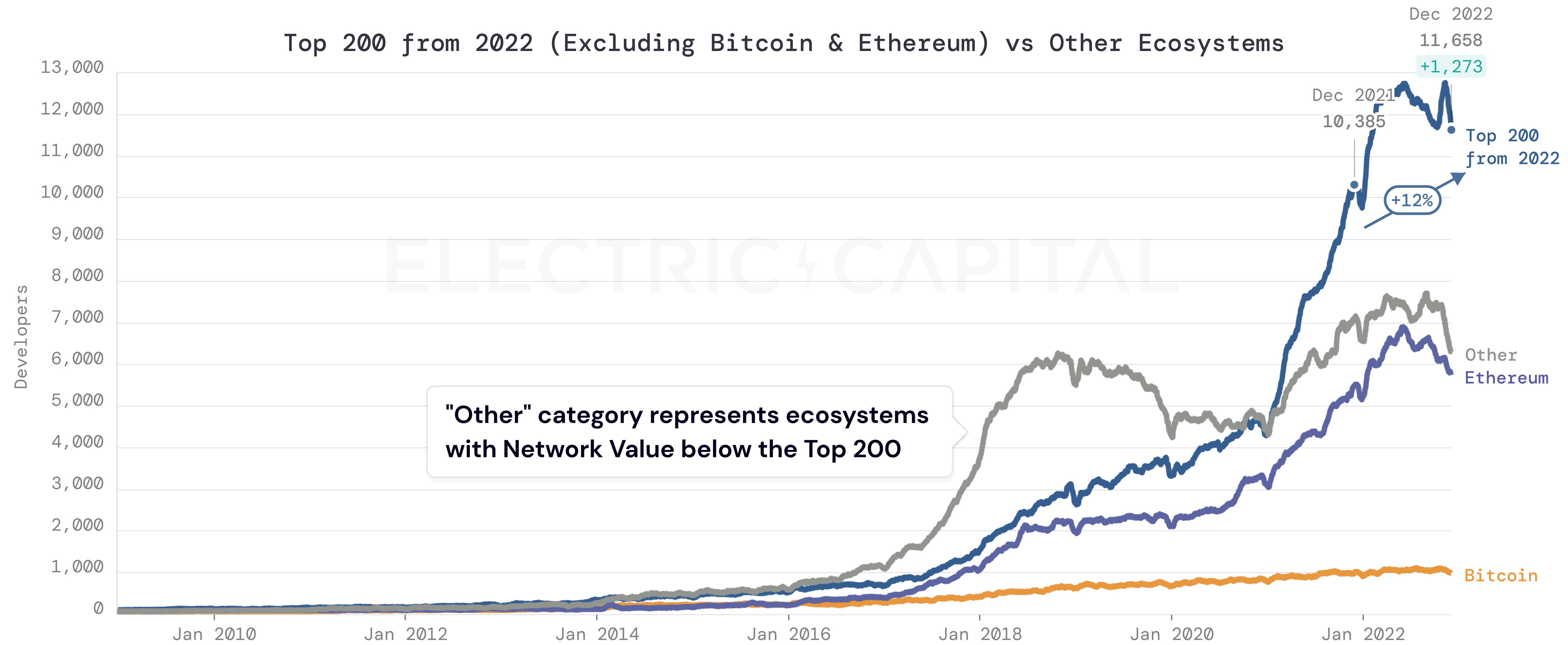
ELECTRIC CAPITAL

LET'S DIVE INTO THE TOP 200 ECOSYSTEMS BY NETWORK VALUE
OUTSIDE OF BITCOIN AND ETHEREUM...

WE CAN BREAK OUT ETHEREUM AND BITCOIN FROM THE TOP 200: THE TOP 200 GREW +12% YEAR OVER YEAR

Top 200 from 2022 (Excluding Bitcoin & Ethereum) vs Other Ecosystems

ELECTRIC CAPITAL

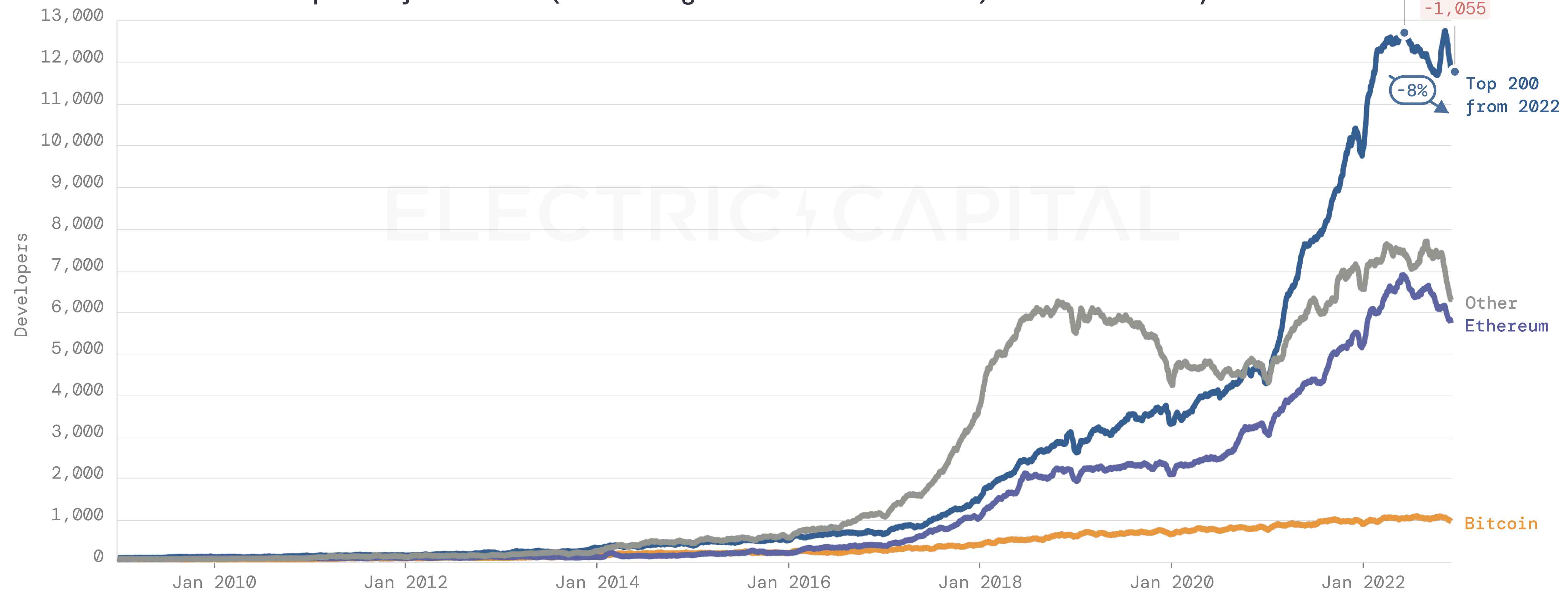


"Other" category represents ecosystems with Network Value below the Top 200

Top 200 determined based on "Network Value" measurement as of 1/1/23 combining CoinMarketCap, CoinGecko, and private market valuations.

SINCE PEAK: IN THE TOP 200, MONTHLY ACTIVE DEVELOPERS DECLINED -8%

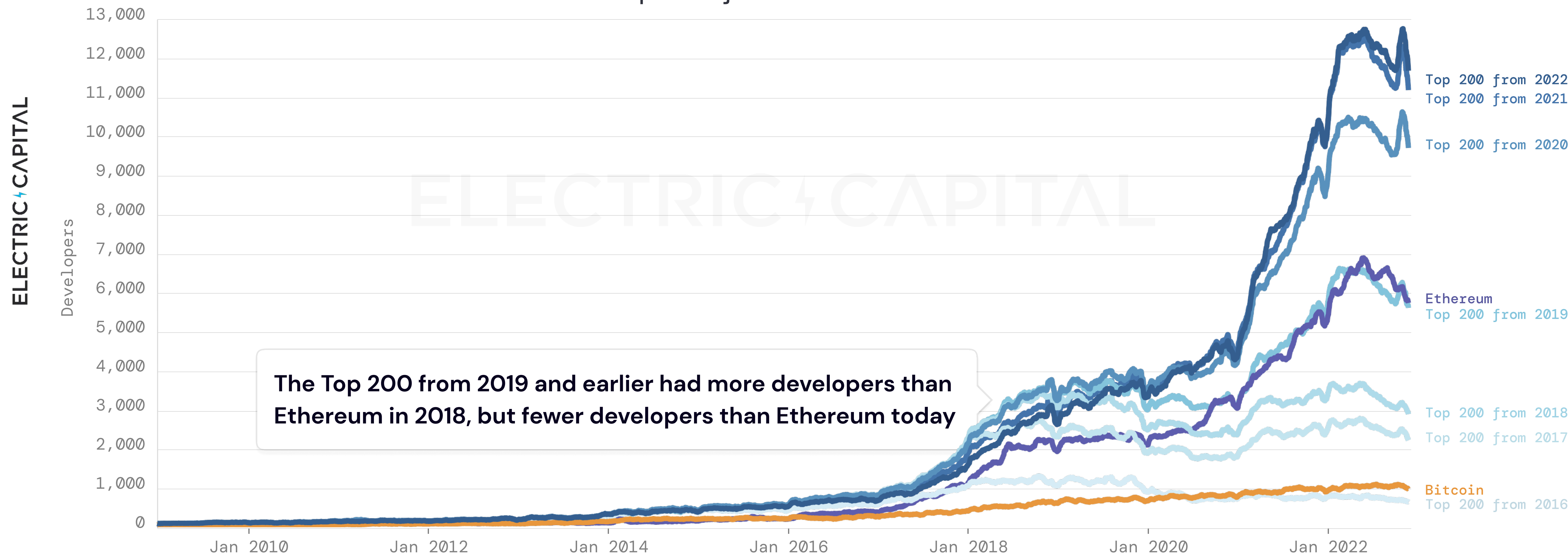
Top 200 from 2022 (Excluding Bitcoin & Ethereum) vs Other Ecosystems



Top 200 determined based on "Network Value" measurement as of 1/1/23 combining CoinMarketCap, CoinGecko, and private market valuations.

PRIOR TOP 200 COHORTS ARE NOT AS RETENTIVE AS ETHEREUM

Top 200 from 2016 to 2022



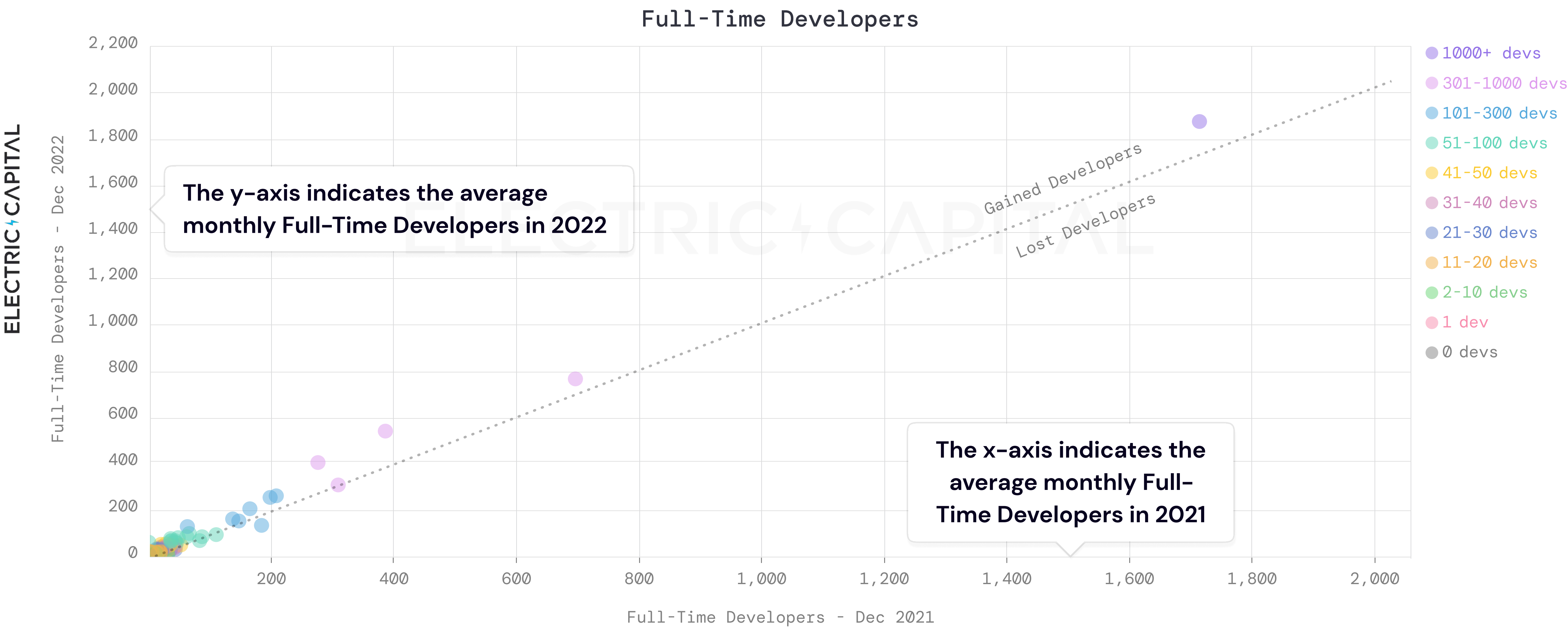
The Top 200 from 2019 and earlier had more developers than Ethereum in 2018, but fewer developers than Ethereum today

Top 200 determined based on "Network Value" measurement as of 1/1/23 combining CoinMarketCap, CoinGecko, and private market valuations.

HOW DO INDIVIDUAL ECOSYSTEMS
COMPARE YEAR OVER YEAR?

LET'S COMPARE
DECEMBER 2021 VS DECEMBER 2022

WE CAN COMPARE DECEMBER 2021 VS DECEMBER 2022 TO VISUALIZE YEAR OVER YEAR DEVELOPER GROWTH FOR EACH ECOSYSTEM

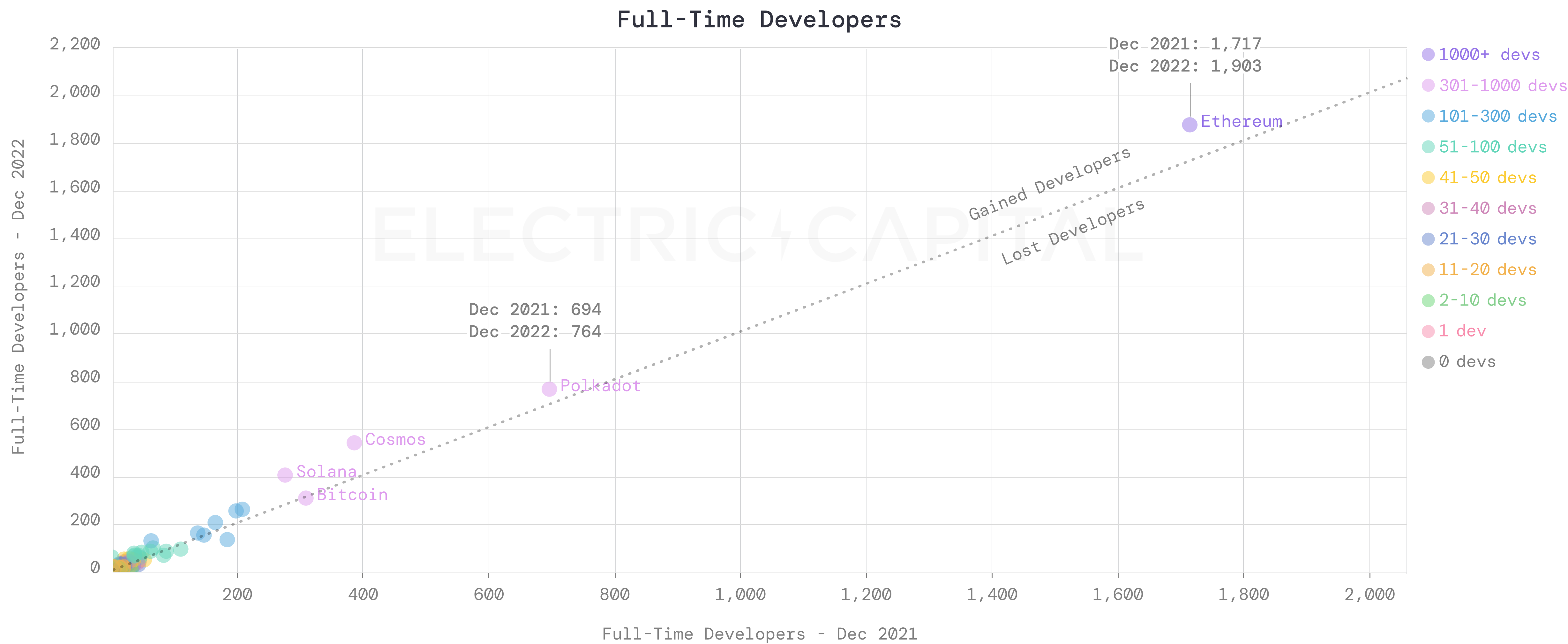


We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

LET'S START WITH THE MOST IMPORTANT DEVELOPER SEGMENT:
FULL-TIME DEVELOPERS

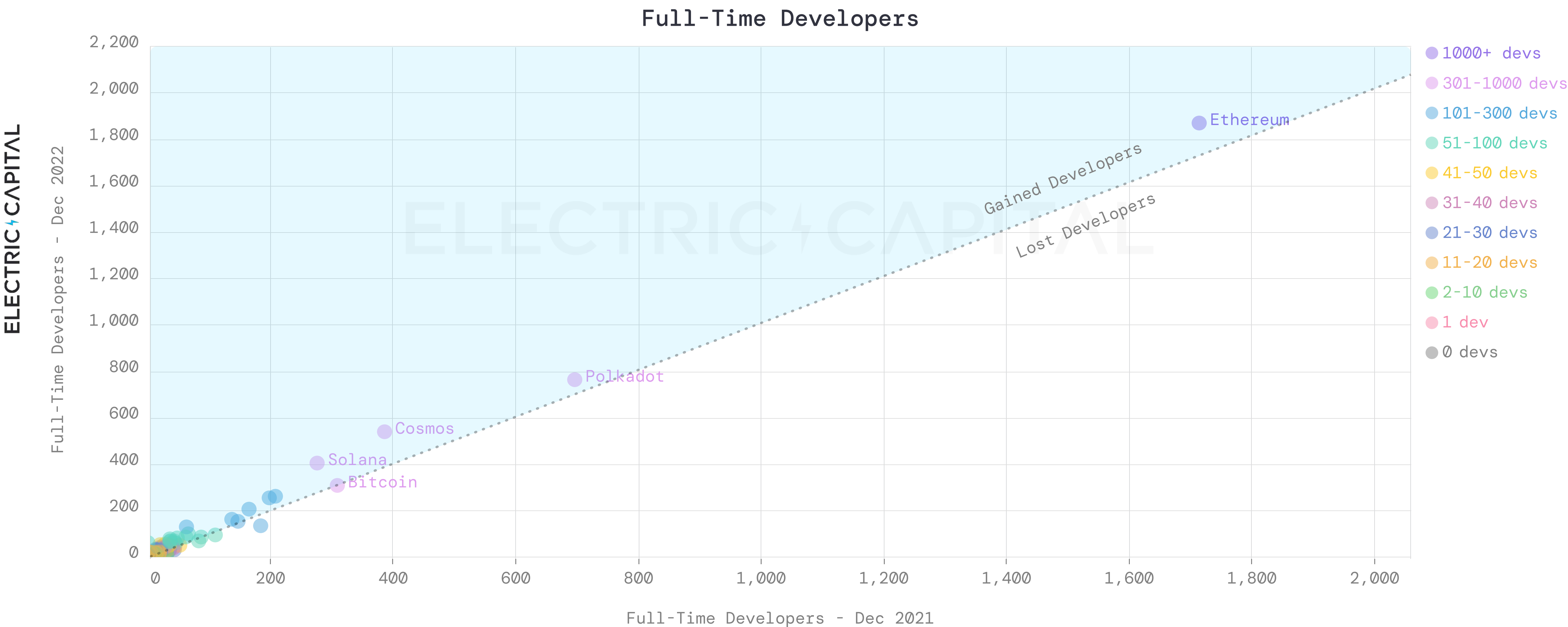
ETHEREUM FULL-TIME DEV COMMUNITY IS 2.5X THE NEXT LARGEST COMMUNITY

ELECTRIC CAPITAL



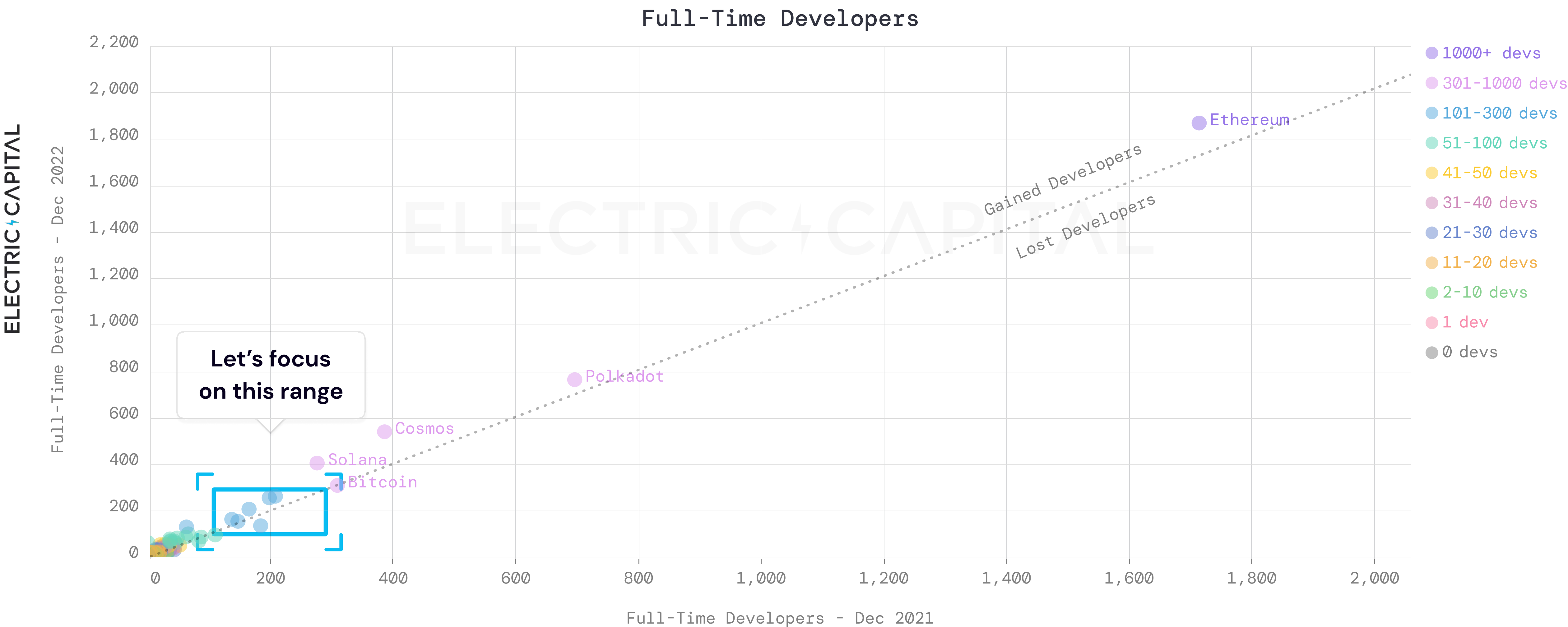
We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

ECOSYSTEMS WITH 300+ FULL-TIME DEVS ALL GREW: ETHEREUM, POLKADOT, COSMOS, SOLANA, & BITCOIN



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

LET'S ZOOM IN TO BETTER VISUALIZE CHANGE YEAR OVER YEAR FOR OTHER ECOSYSTEMS

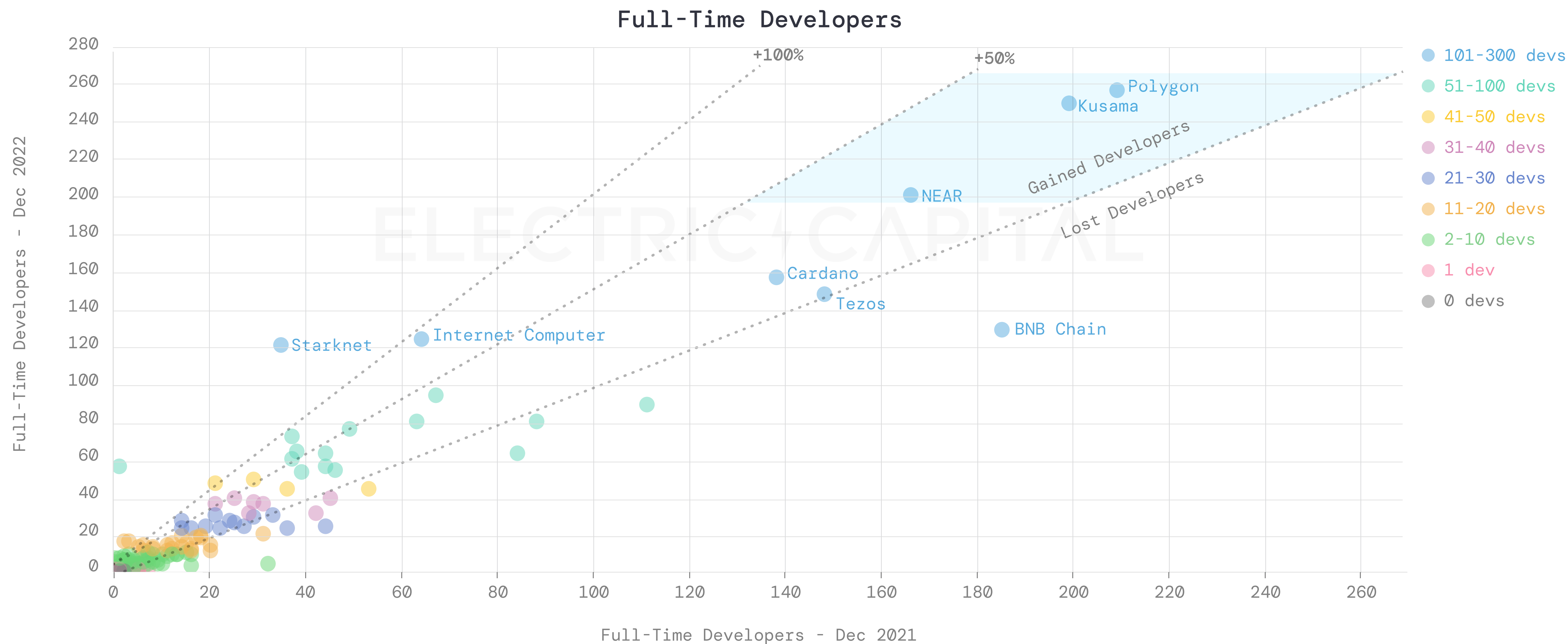


We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

ZOOMING IN ON ECOSYSTEMS WITH 100 TO 300 FULL-TIME DEVELOPERS...

ECOSYSTEMS WITH 200+ FULL-TIME DEVELOPERS: KUSAMA +25%, POLYGON +22%, AND NEAR +22% GREW YEAR OVER YEAR

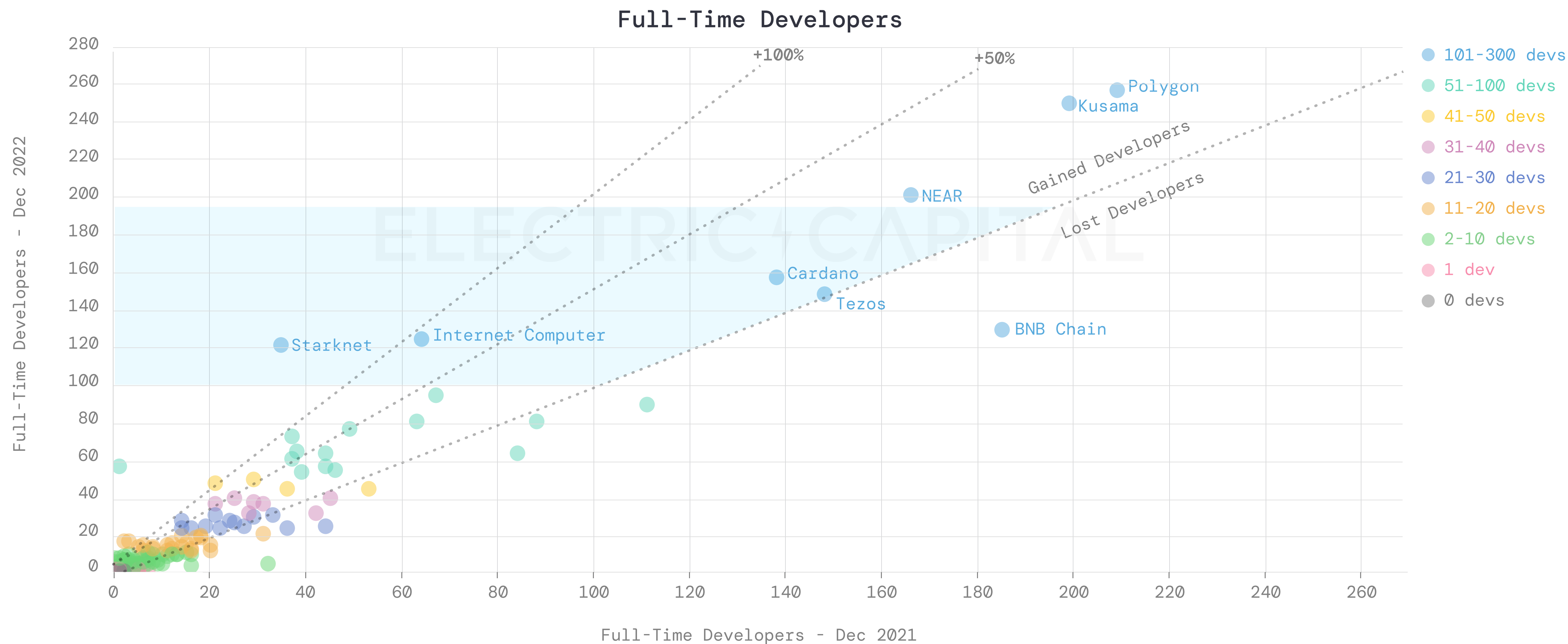
ELECTRIC CAPITAL



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

ECOSYSTEMS WITH 100+ FULL-TIME DEVELOPERS: STARKNET +243%, INTERNET COMPUTER +94%, & CARDANO +14% GREW YOY WHILE TEZOS STAYED FLAT

ELECTRIC CAPITAL

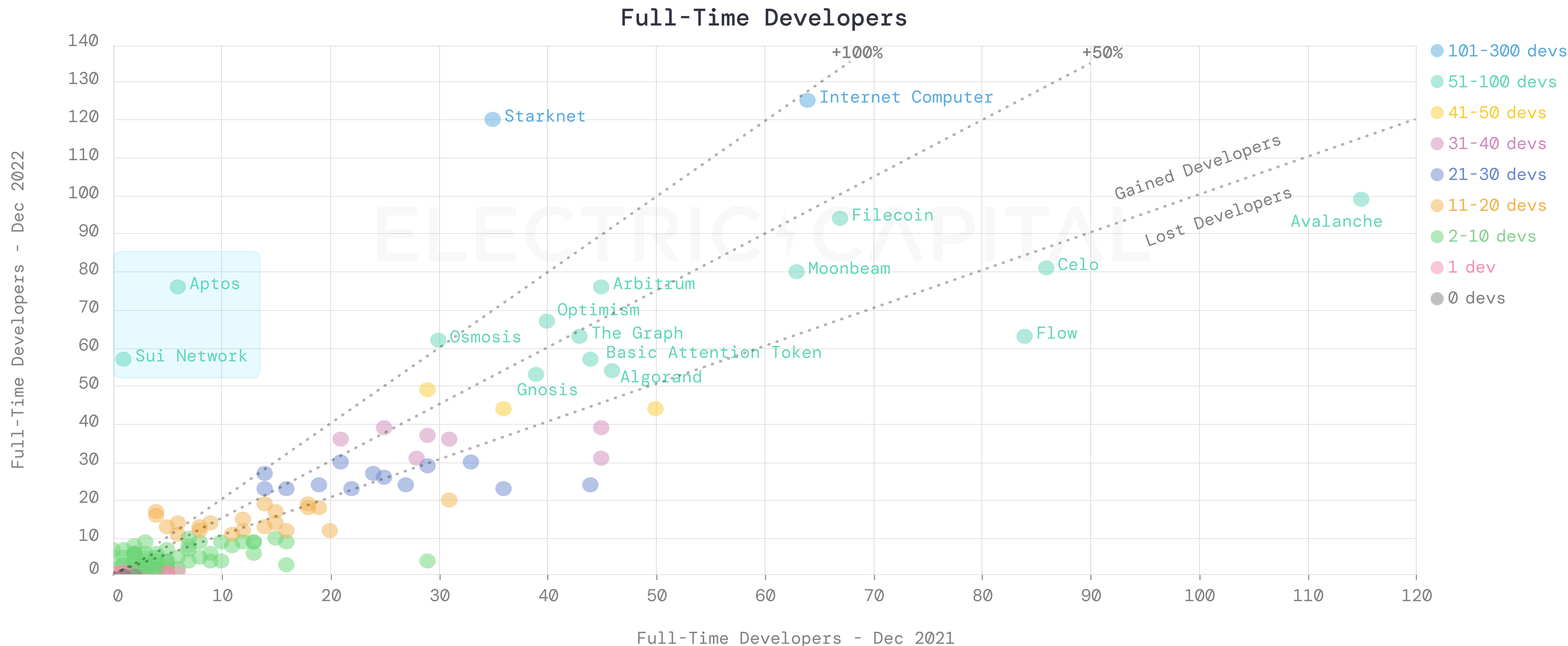


We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

ZOOMING IN ON ECOSYSTEMS WITH 50 TO 100 FULL-TIME DEVELOPERS...

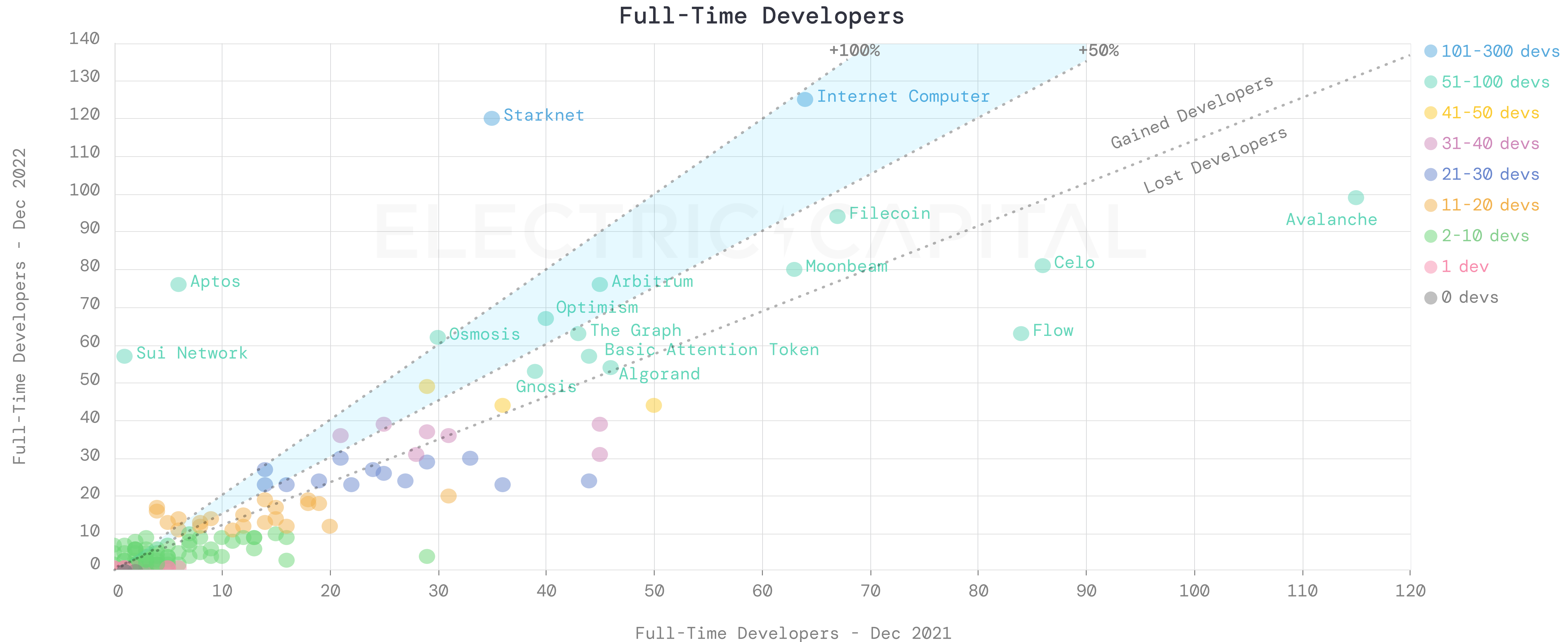
APTOS & SUI ARE THE FASTEST GROWING FULL-TIME DEVELOPER ECOS OF 2022

ELECTRICCAPITAL



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

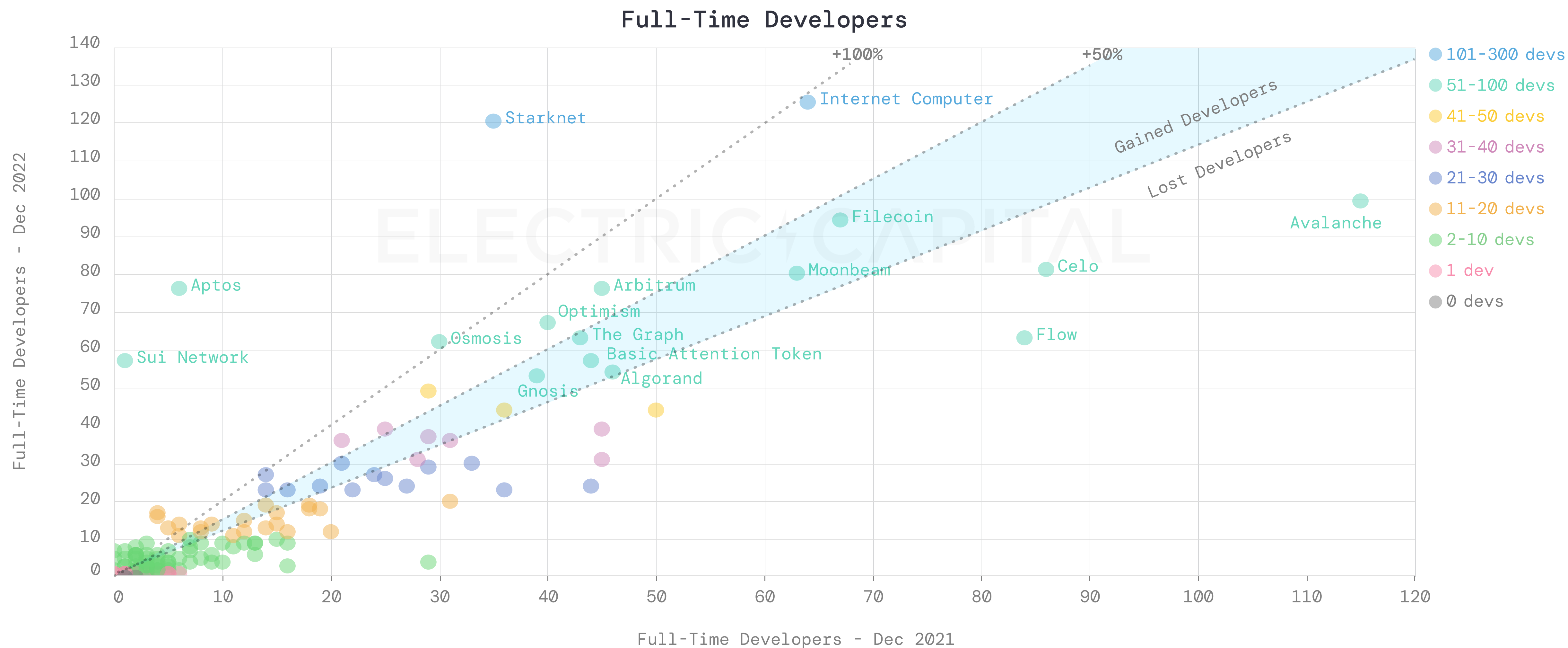
ECOSYSTEMS WITH 50+ FULL-TIME DEVS: OSMOSIS +107%, ARBITRUM +68%, AND OPTIMISM +68% GREW YEAR OVER YEAR



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

THE GRAPH +47%, FILECOIN +40%, GNOSIS +36%, BASIC ATTENTION TOKEN +30%, MOONBEAM +27%, ALGORAND +17% GAINED DEVS YOY

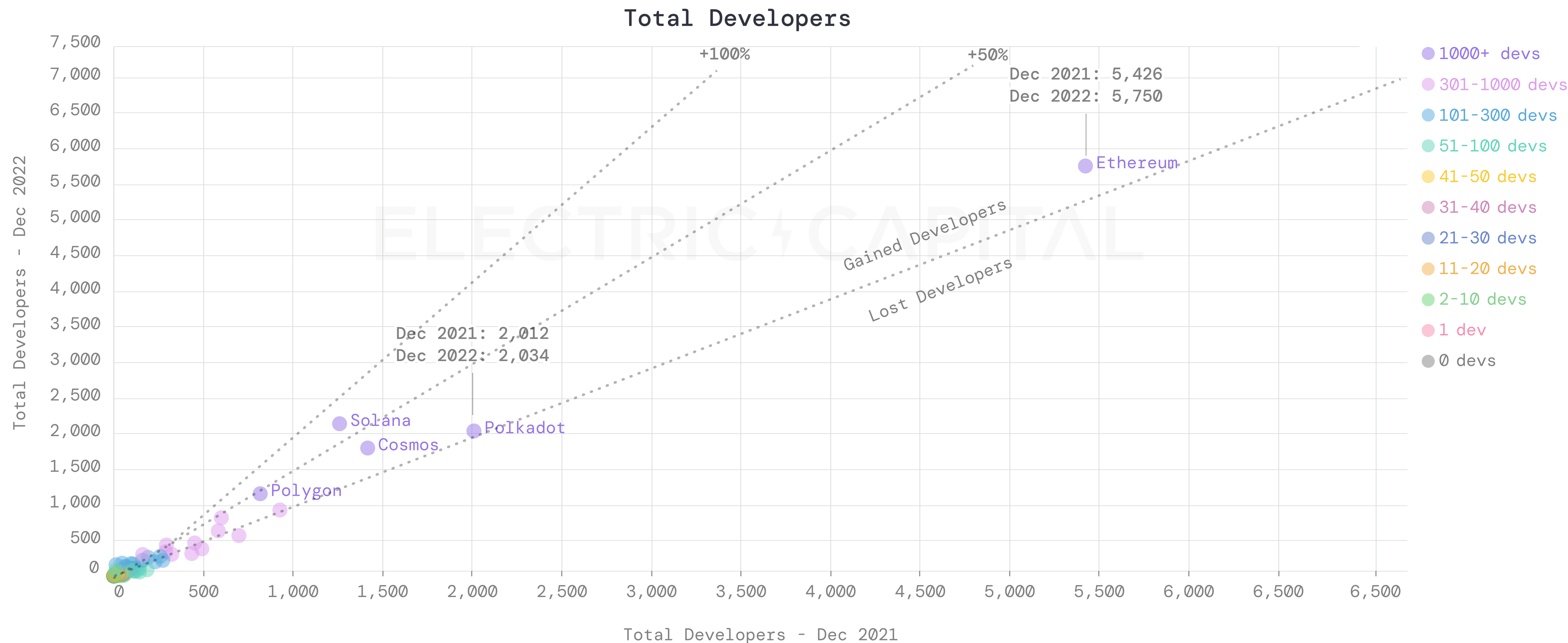
ELECTRIC CAPITAL



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

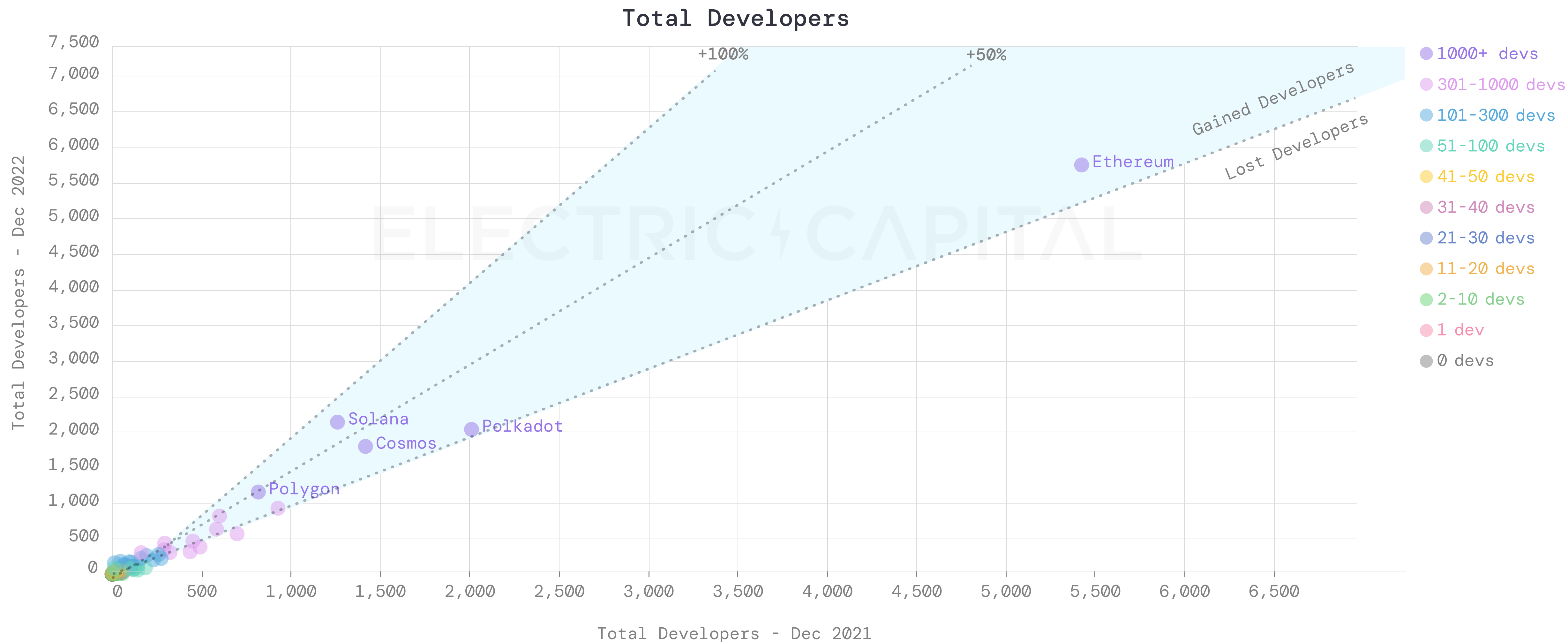
BY TOTAL DEVELOPERS...

ETHEREUM IS THE LARGEST TOTAL (FULL-TIME + PART-TIME + ONE-TIME) DEVELOPER ECOSYSTEM AND 2.8X LARGER THAN THE NEXT



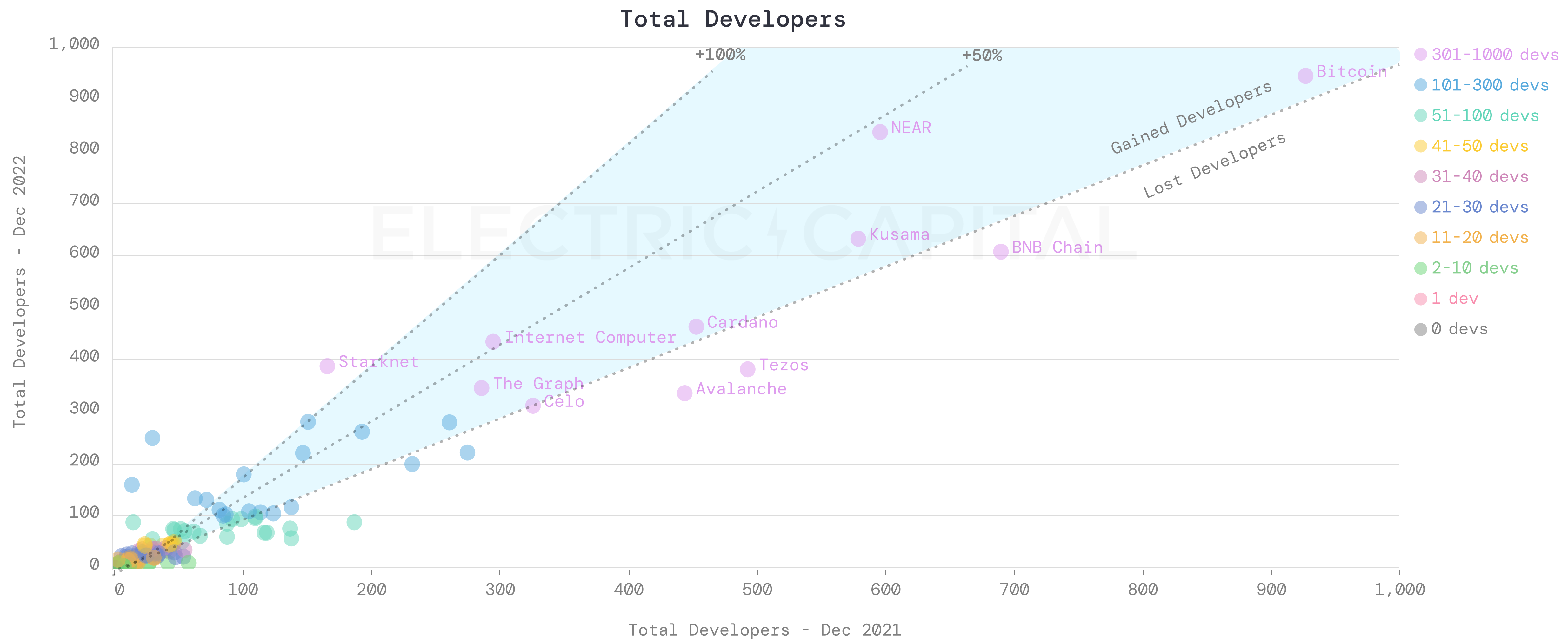
We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

ECOSYSTEMS WITH 1,000+ TOTAL DEVELOPERS GREW: SOLANA +83%, POLYGON +40%, COSMOS +25%, AND POLKADOT +2%



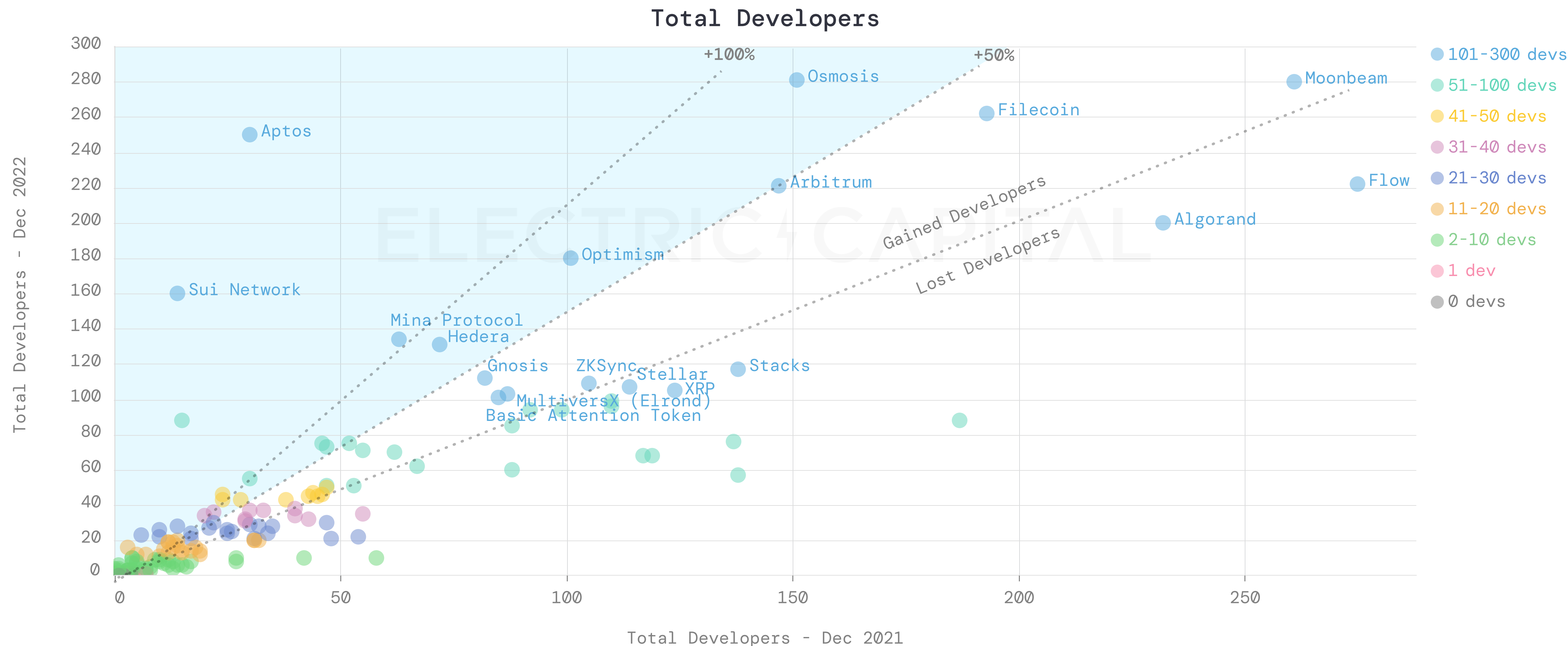
We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

ECOSYSTEMS WITH 300+ TOTAL DEVS: STARKNET +134%, ICP +48%, NEAR +41%, THE GRAPH +21%, KUSAMA +9%, BITCOIN +2%, CARDANO +2%, & CELO FLAT



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

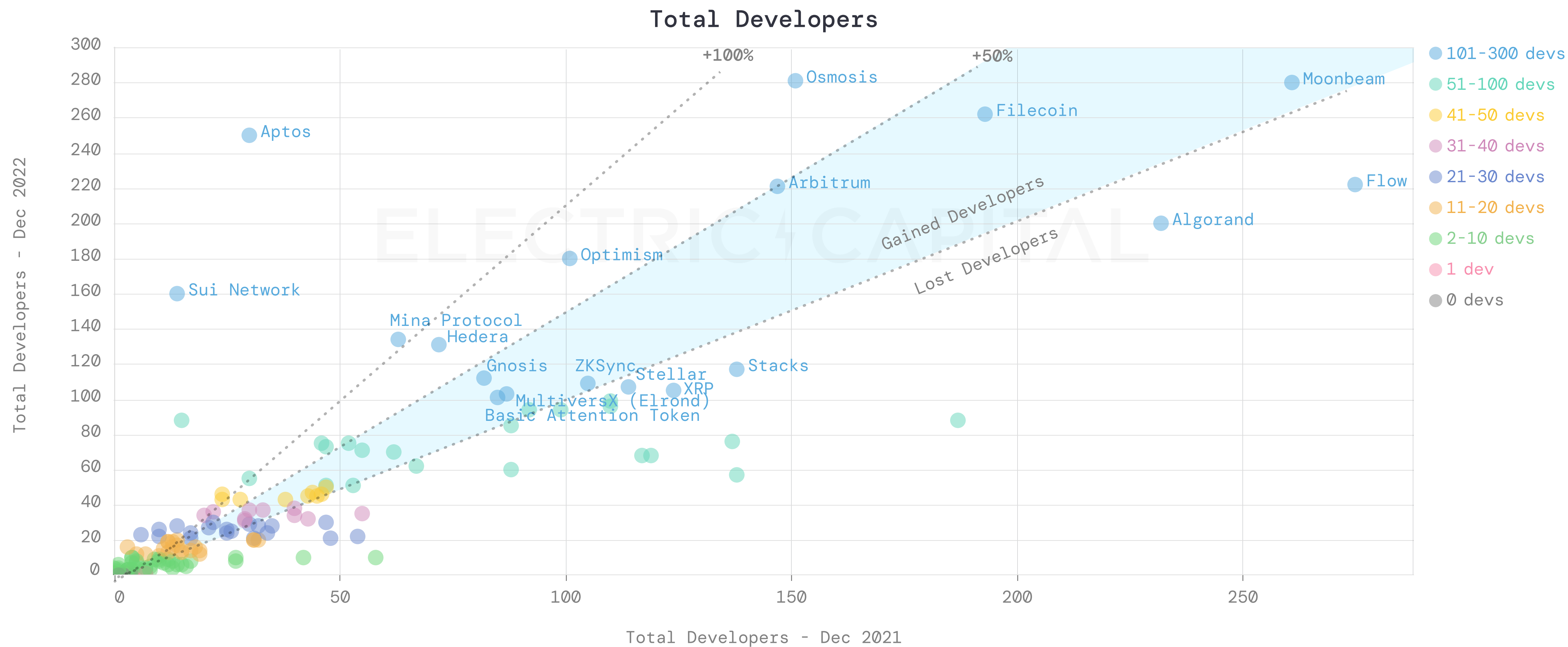
ECOSYSTEMS WITH 100+ TOTAL DEVS: SUI +1,043%, APTOS +733%, MINA +113%, OSMOSIS +86%, HEDERA +82%, OPTIMISM +78%, & ARBITRUM +50%



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

ECOSYSTEMS WITH 100+ TOTAL DEVS: GNOSIS +37%, FILECOIN +36%, BASIC ATTENTION TOKEN +19%, MULTIVERSX +18%, MOONBEAM +7%, & ZKSYNC +4%

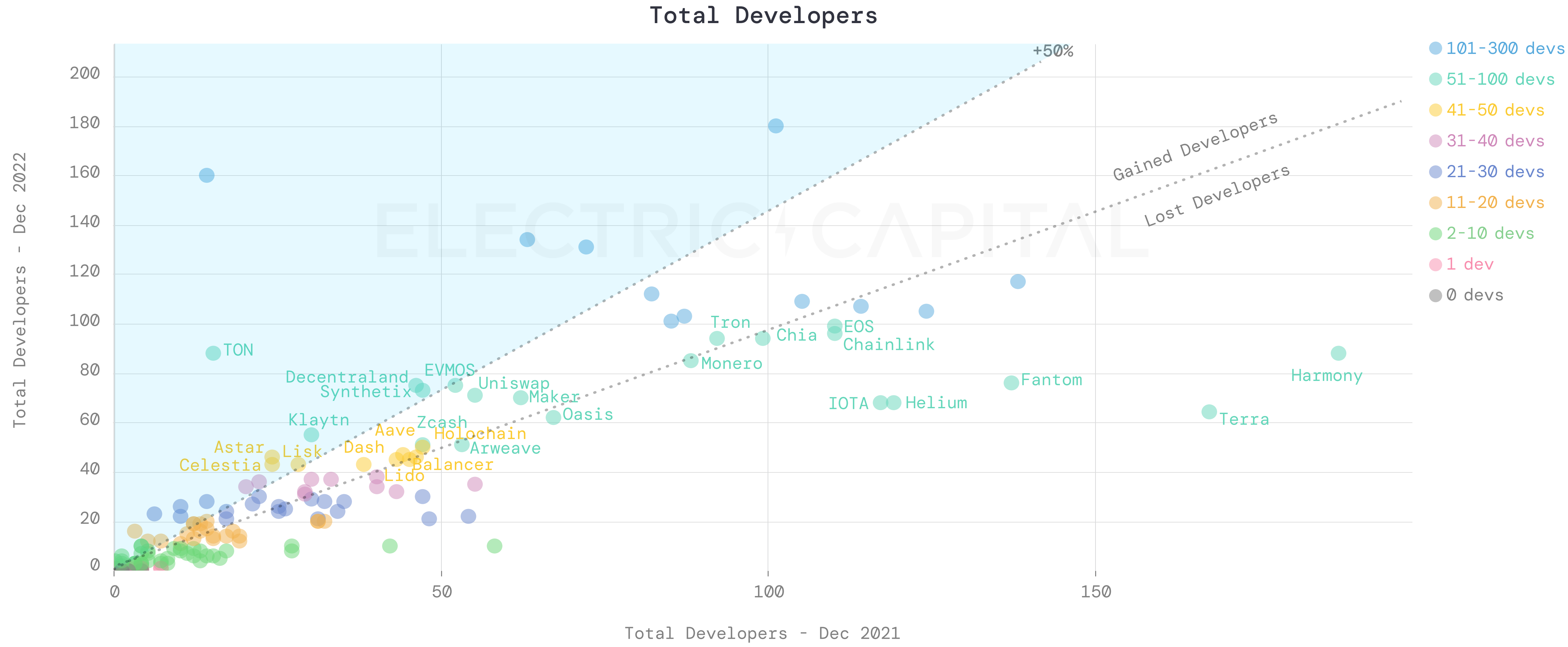
ELECTRIC CAPITAL



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

ECOSYSTEMS WITH 40+ TOTAL DEVS: TON +487%, ASTAR +92%, KLAYTN +83%, CELESTIA +79%, DECENTRALAND +63%, SNX +55%, & LISK +55%

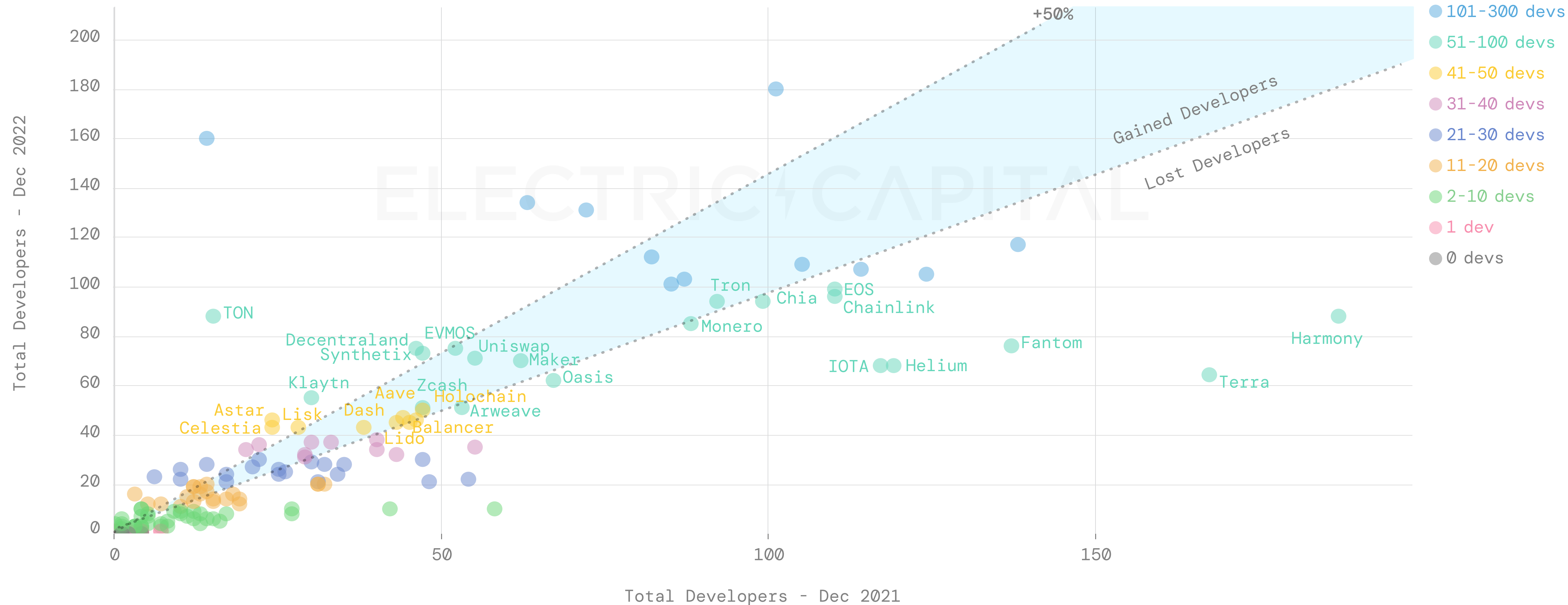
ELECTRICCAPITAL



ECOS WITH 40+ TOTAL DEVS CONT'D: EVMOS +44%, UNISWAP +29%, DASH +13%, MAKER +13%, ZCASH +9%, HOLOCHAIN +7%, AAVE +6%, LIDO +5%, TRON +2%, BALANCER & WAVES FLAT

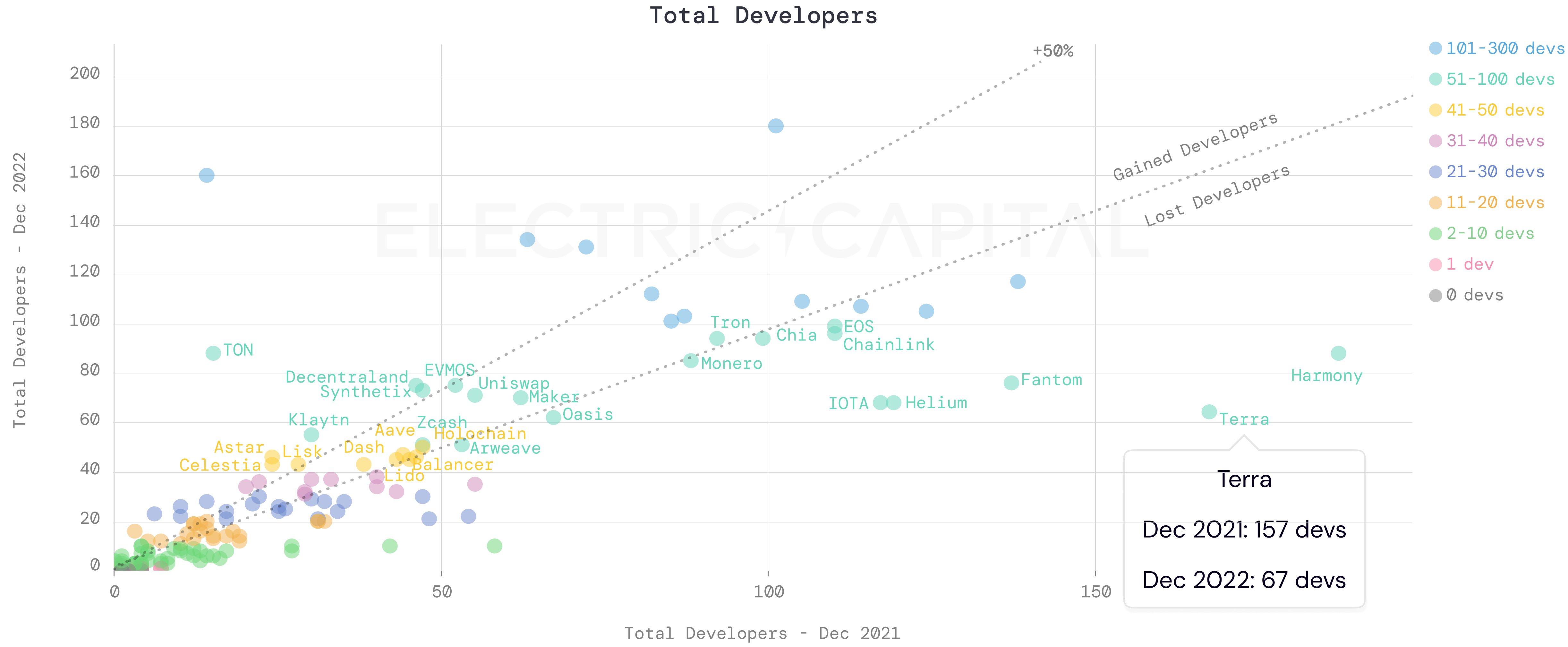
Total Developers

ELECTRIC CAPITAL



TERRA IS DOWN **-57%** TOTAL DEVELOPERS...WHAT HAPPENED TO TERRA?

ELECTRIC CAPITAL



Terra
Dec 2021: 157 devs
Dec 2022: 67 devs

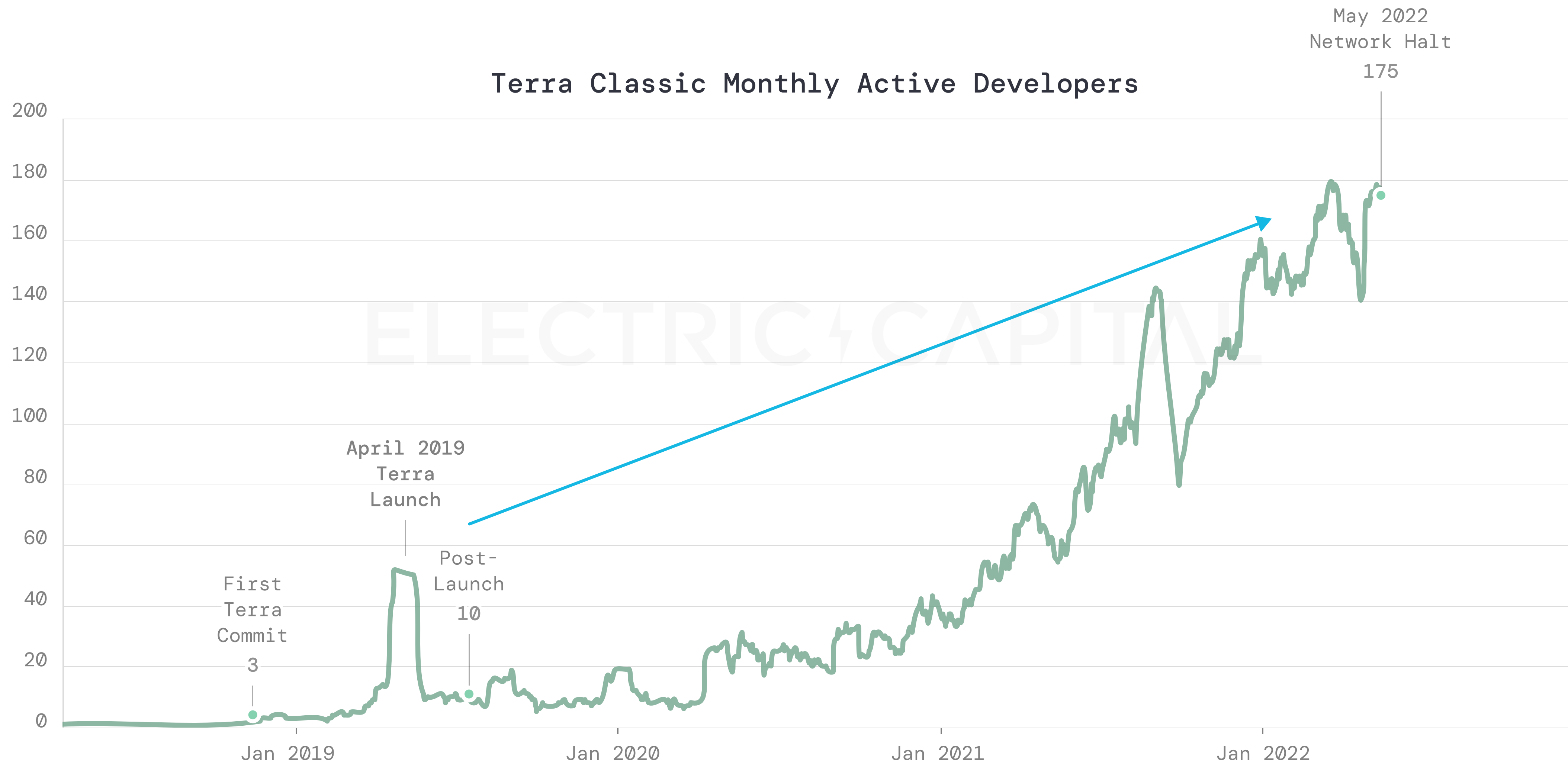
WHAT HAPPENED TO TERRA?

TERRA GREW TO 175 DEVELOPERS IN 3.5 YRS FROM LAUNCH TO NETWORK HALT

Terra Classic Monthly Active Developers

ELECTRIC⚡CAPITAL

Developers

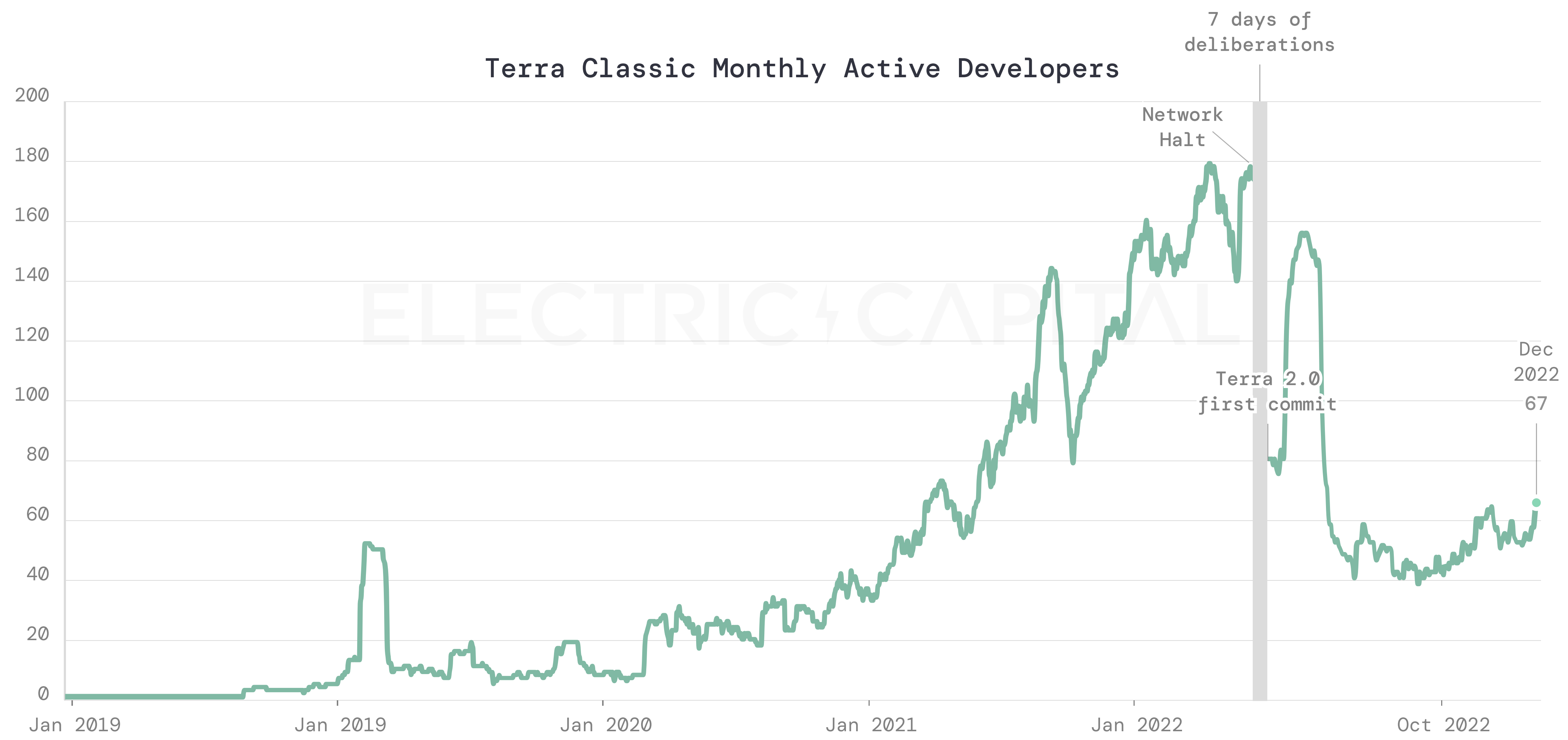


7 DAYS AFTER THE NETWORK HALTED, TERRA 2.0 LAUNCHED

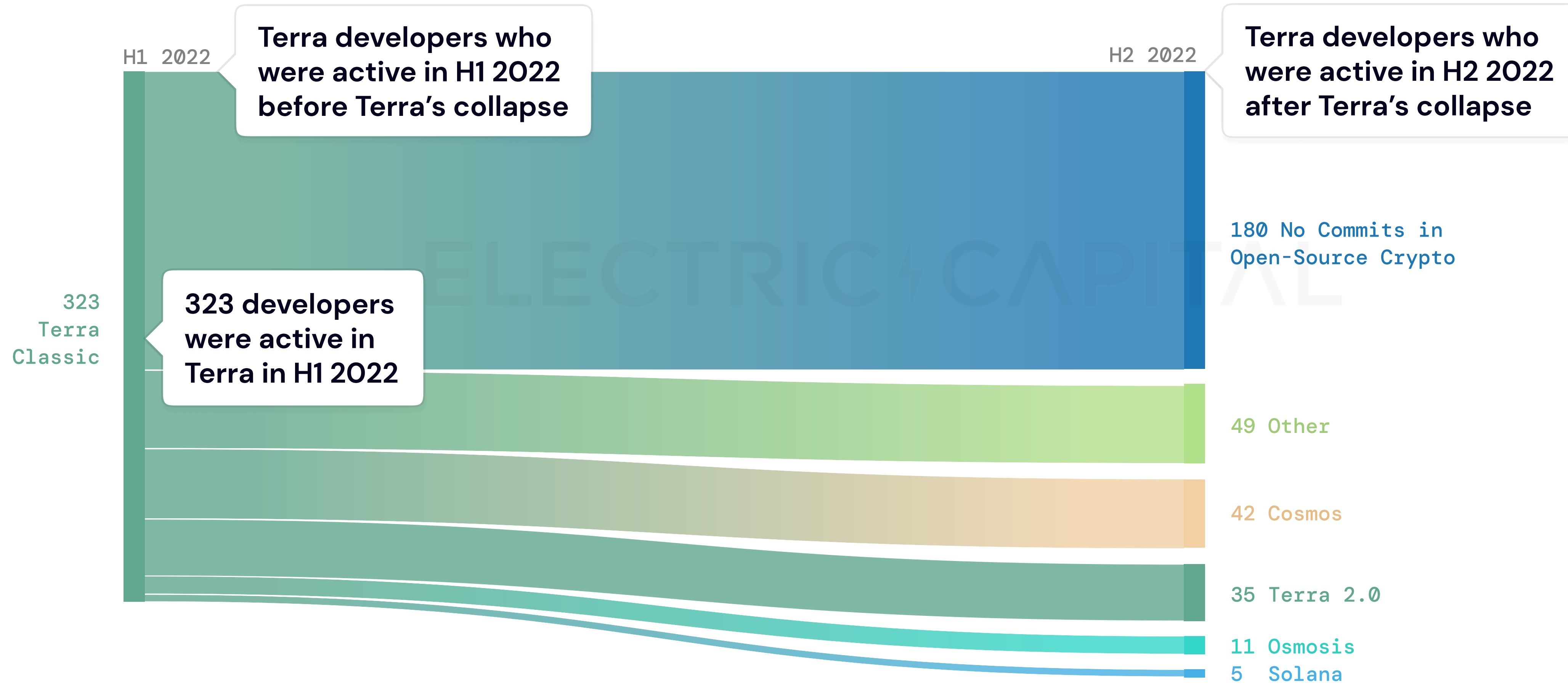
Terra Classic Monthly Active Developers

ELECTRIC⚡CAPITAL

Developers

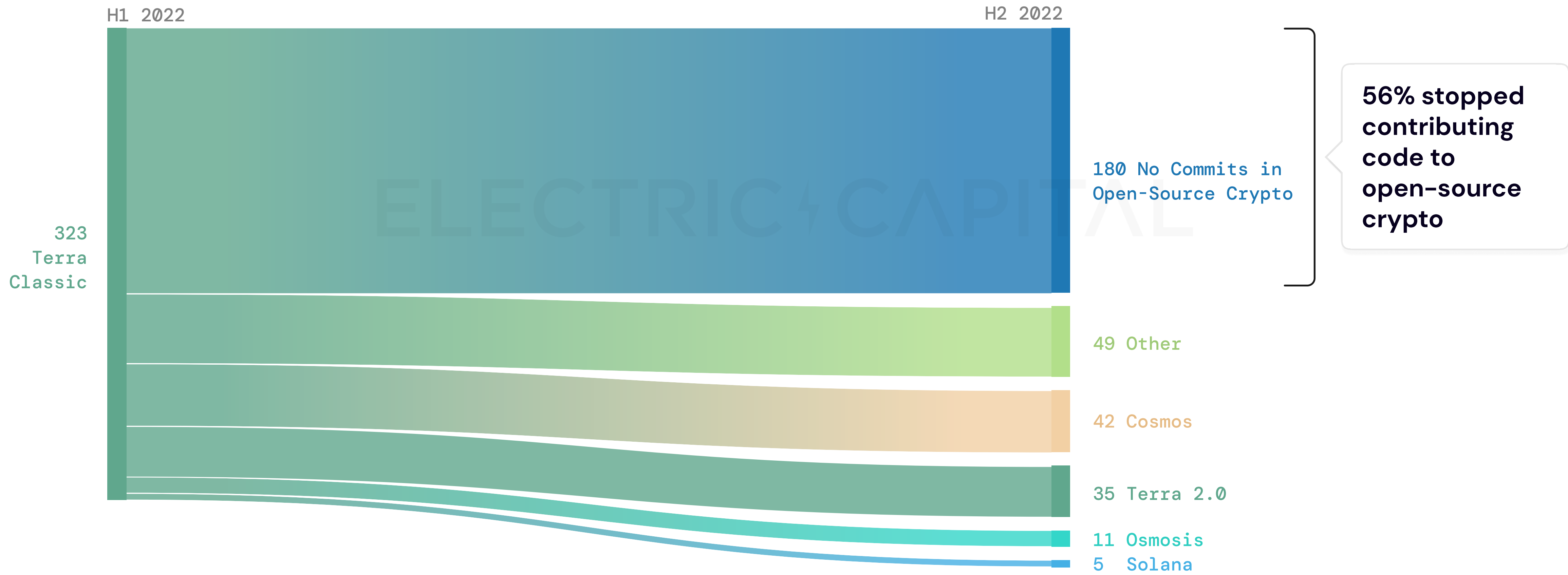


LET'S LOOK AT WHERE ACTIVE TERRA DEVELOPERS WENT AFTER TERRA'S COLLAPSE

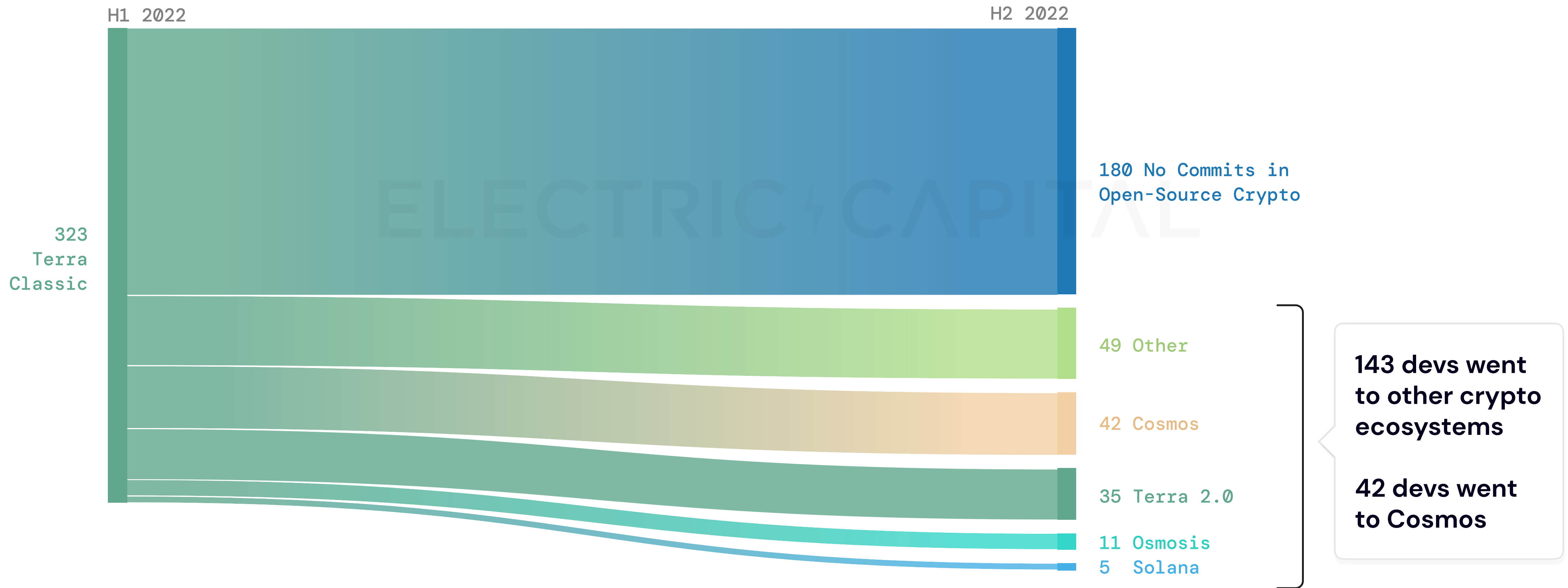


ELECTRIC+CAPITAL

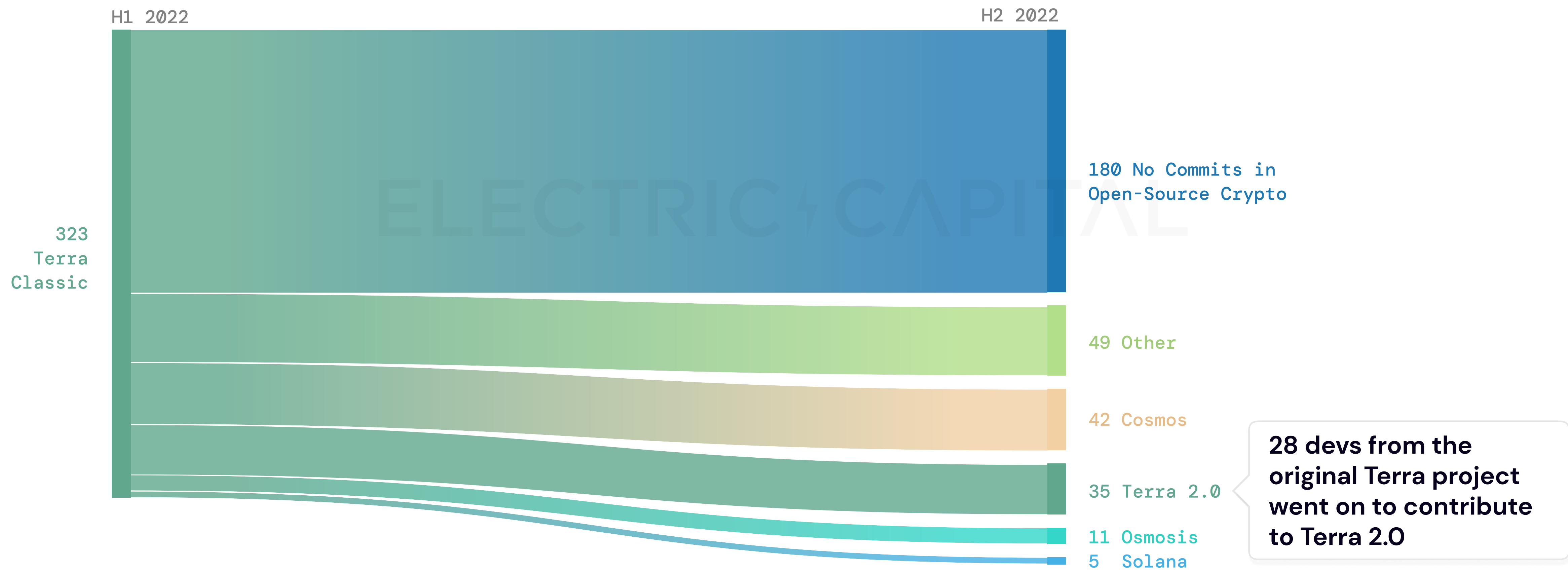
56% OF TERRA DEVS ACTIVE IN H1 2022 STOPPED CONTRIBUTING TO OPEN SOURCE CRYPTO REPOSITORIES



42% OF TERRA DEVELOPERS MIGRATED TO ANOTHER CRYPTO ECOSYSTEM: THE LARGEST SHARE WENT TO COSMOS (13%)



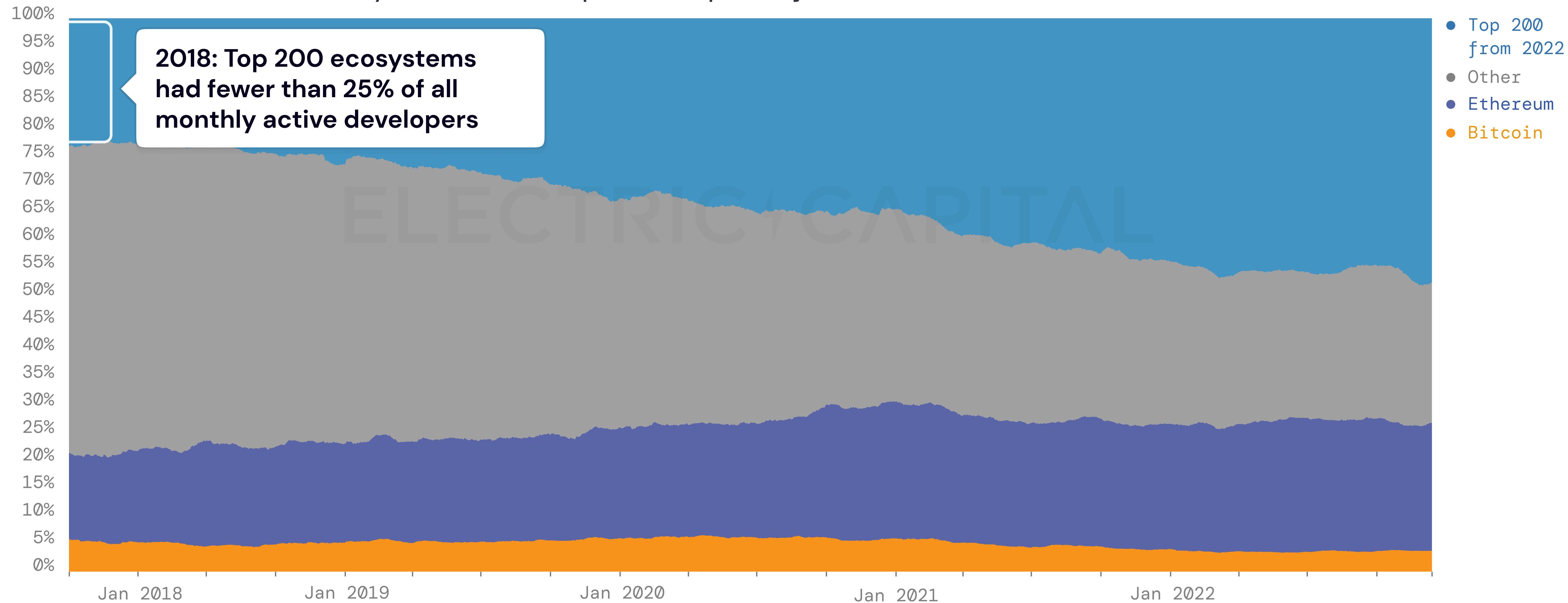
9% OF TERRA DEVS BEGAN CONTRIBUTING TO TERRA 2.0



ZOOMING OUT, LET'S COMPARE TODAY'S BEAR MARKET
TO THE PRIOR ONE IN 2018...

IN 2018, THE TOP 200 ECOSYSTEMS HAD FEWER THAN 25% OF TOTAL MONTHLY ACTIVE DEVELOPERS...

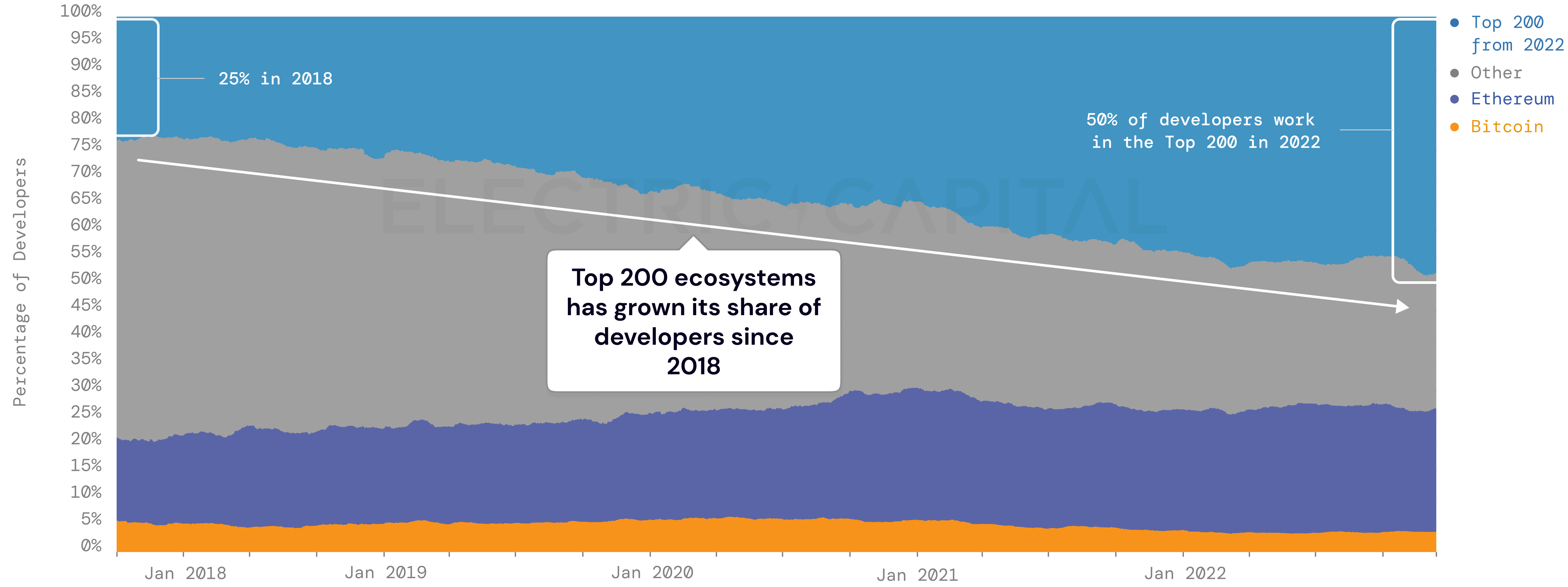
Normalized Monthly Active Developers - Top 200 from 2022 vs Ethereum vs Bitcoin vs Other



ELECTRIC CAPITAL

BUT THE TOP 200 ECOSYSTEMS HAVE GROWN TO 50% OF ALL ACTIVE DEVS

Normalized Monthly Active Developers - Top 200 from 2022 vs Ethereum vs Bitcoin vs Other

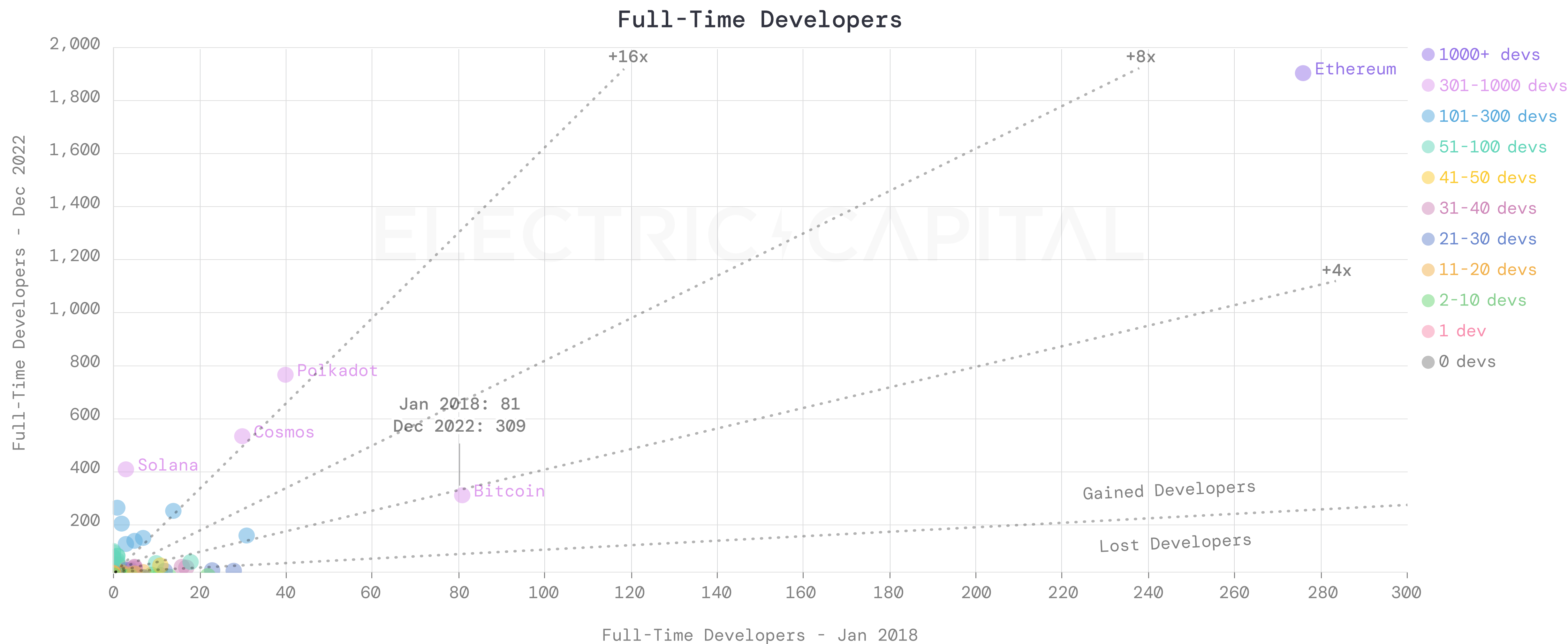


WHICH ECOSYSTEMS ACCOUNT FOR MOST OF THE DEVELOPER GROWTH?

LET'S COMPARE
JANUARY 2018 VS DECEMBER 2022

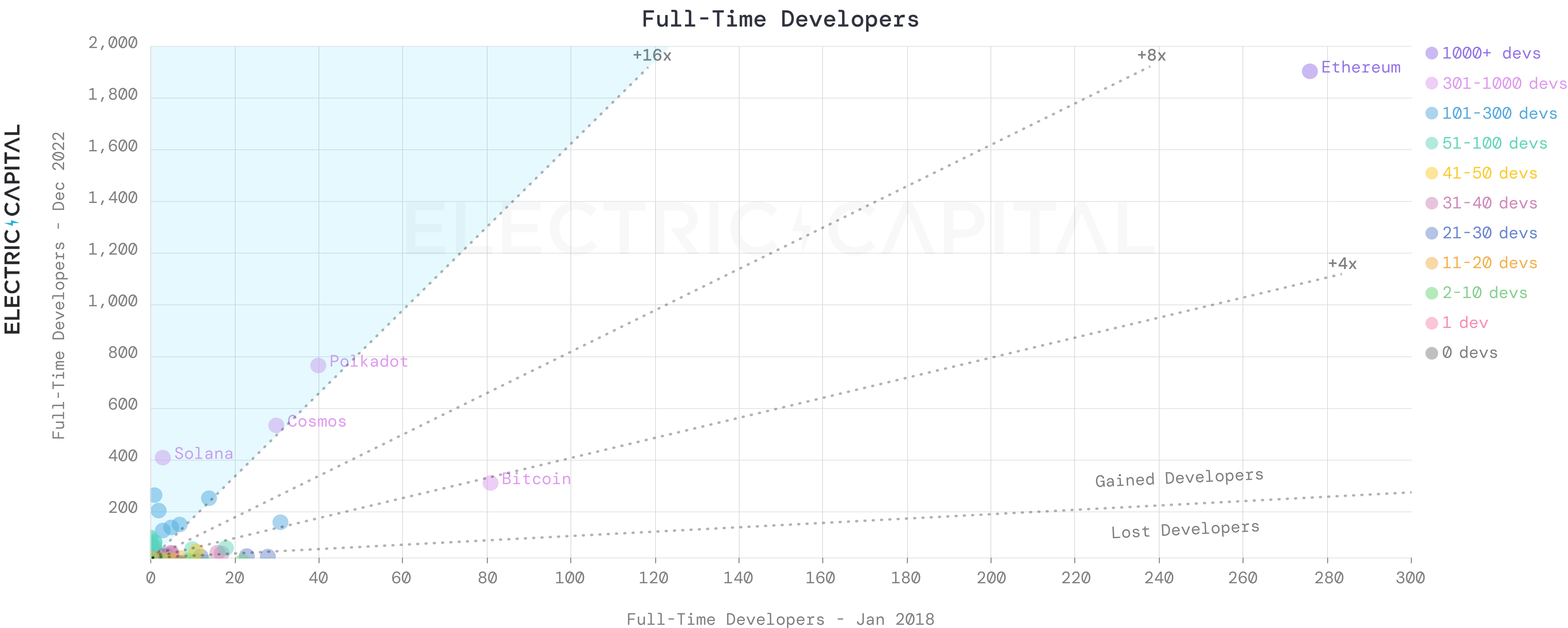
LET'S START WITH THE MOST IMPORTANT DEVELOPER SEGMENT:
FULL-TIME DEVELOPERS

SINCE 2018: BITCOIN +4X GROWTH IN FULL-TIME DEVELOPERS



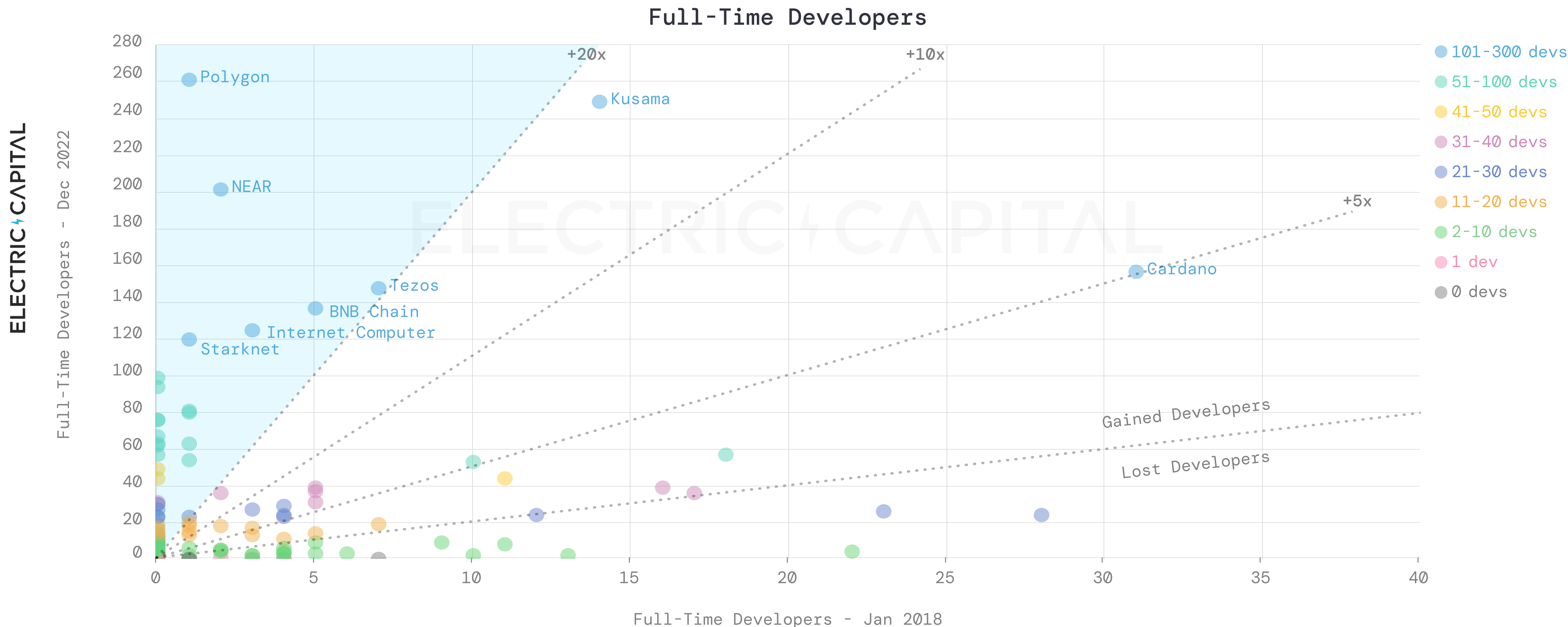
We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

SINCE 2018: POLKADOT, COSMOS, & SOLANA GREW 16X+ TO 400+ FULL-TIME DEVS



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

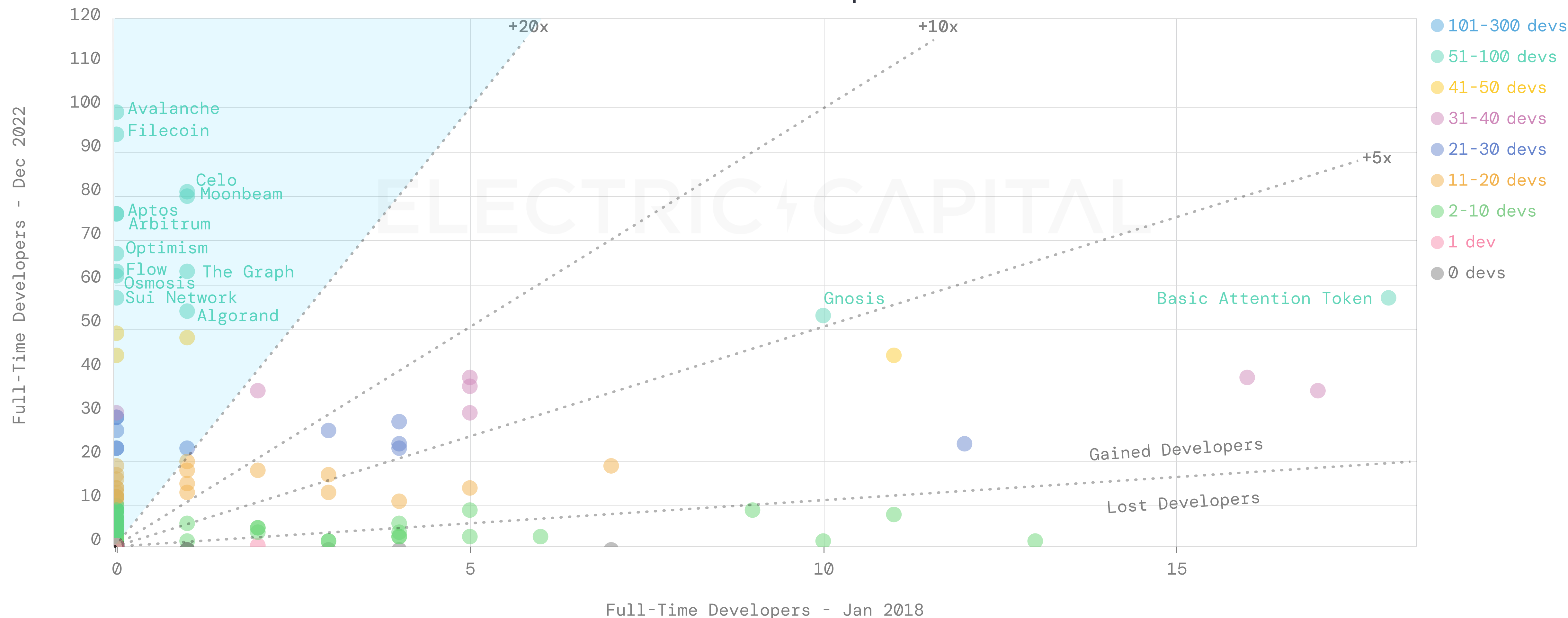
SINCE 2018: POLYGON, NEAR, TEZOS, BNB, INTERNET COMPUTER, & STARKNET GREW 20X+ TO 120+ FULL-TIME DEVS



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

SINCE 2018: AVALANCHE, FILECOIN, CELO, MOONBEAM, APTOS, ARBITRUM, OPTIMISM, FLOW, THE GRAPH, OSMOSIS, SUI, & ALGORAND GREW TO 50+ FULL-TIME DEVS

Full-Time Developers

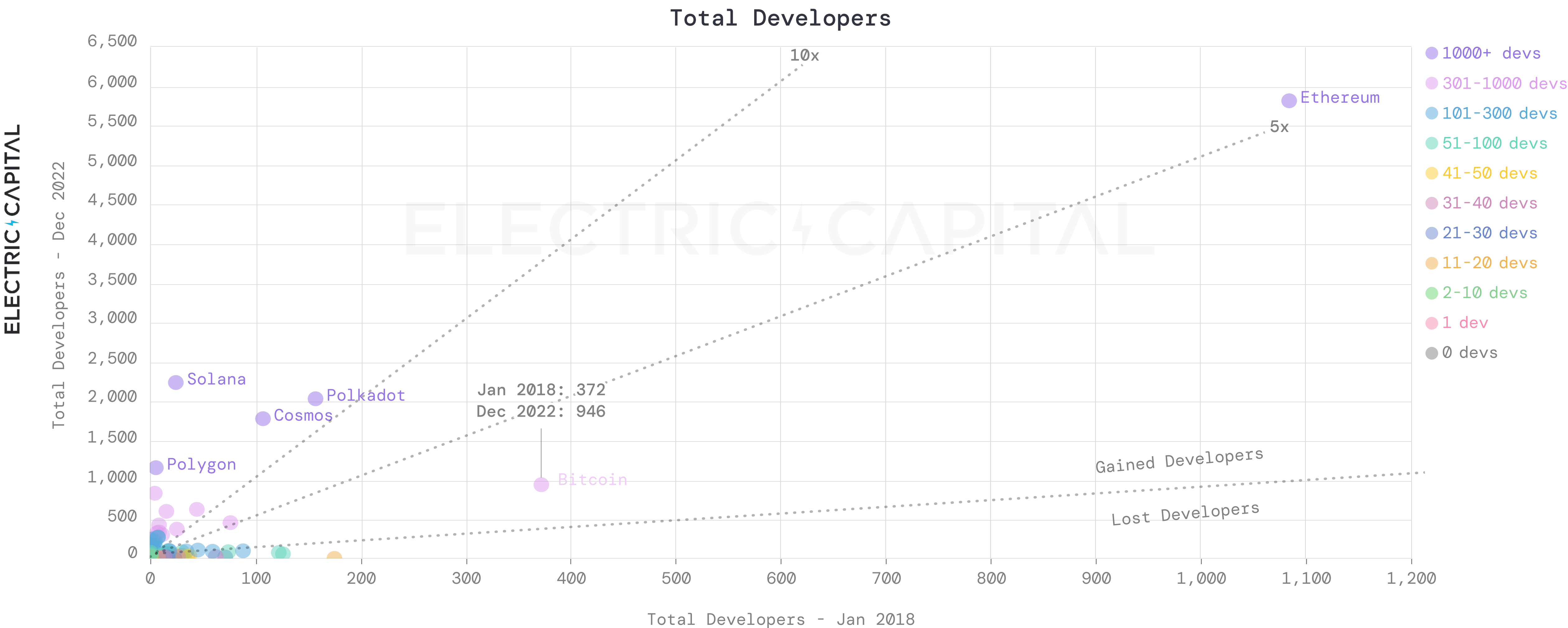


We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

BY TOTAL DEVELOPERS...

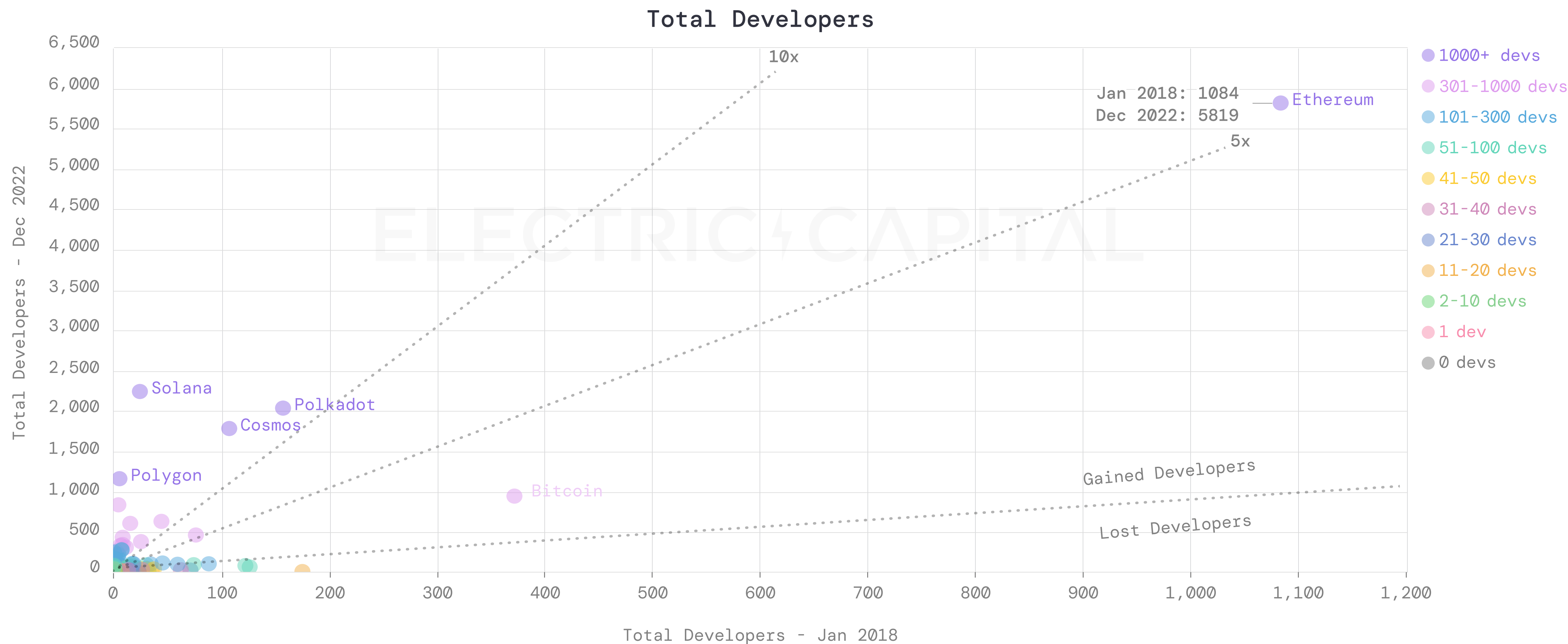
Top 200 determined based on "Network Value" measurement as of 1/1/23 combining CoinMarketCap, CoinGecko, and private market valuations.

SINCE JAN 2018: BITCOIN +3X GROWTH IN TOTAL DEVELOPERS



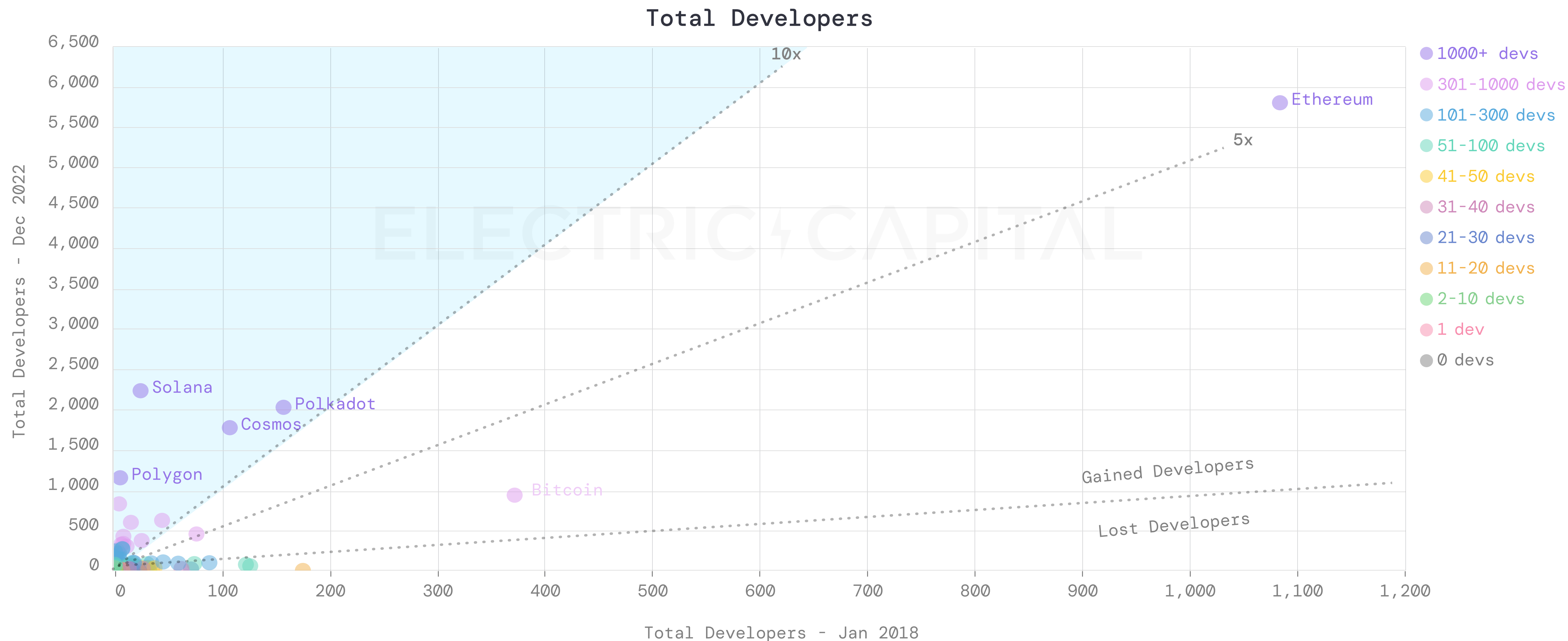
ETHEREUM WAS THE BIGGEST ECOSYSTEM IN 2018 AND GREW TOTAL DEVS +5X

ELECTRIC⚡CAPITAL



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

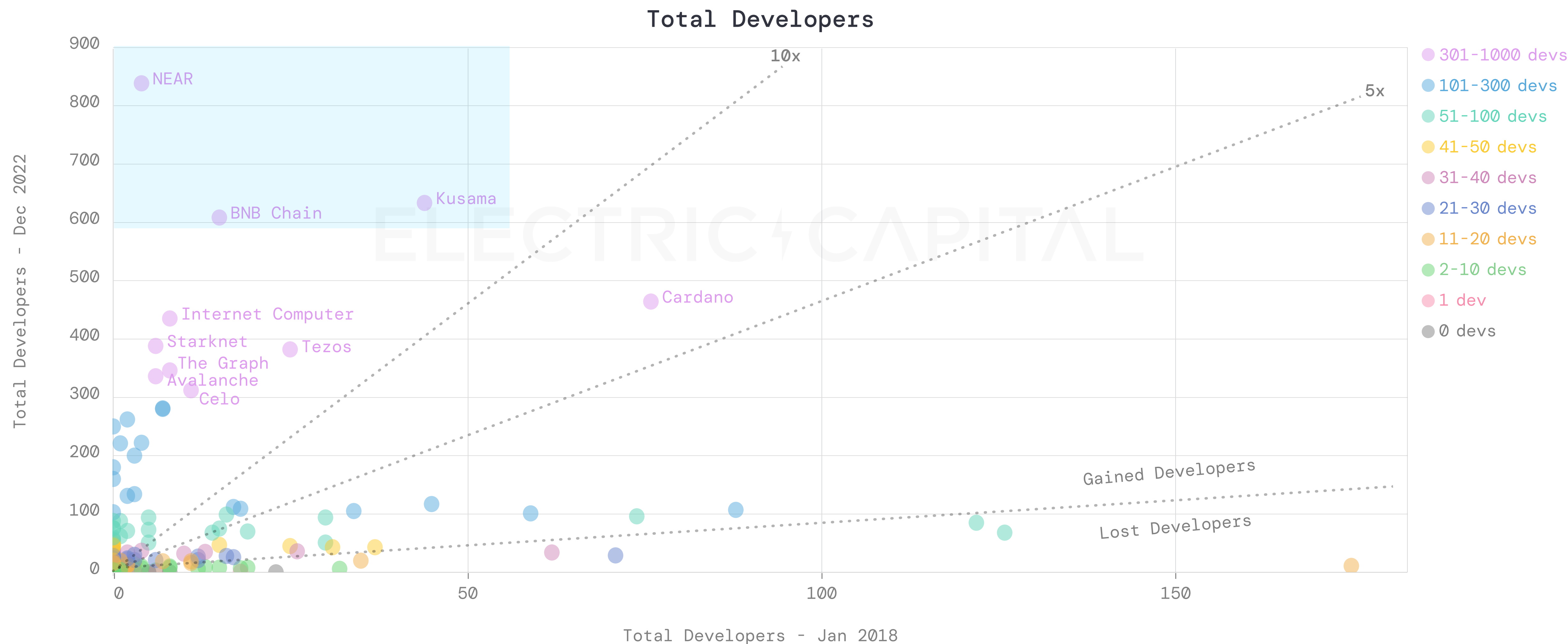
SOLANA, POLKADOT, COSMOS, & POLYGON GREW FROM <200 DEVS IN 2018 TO 1000+ TOTAL DEVS IN 2022



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

NEAR, KUSAMA & BNB HAD <50 DEVS IN 2018 AND NOW HAVE 600+ TOTAL DEVS

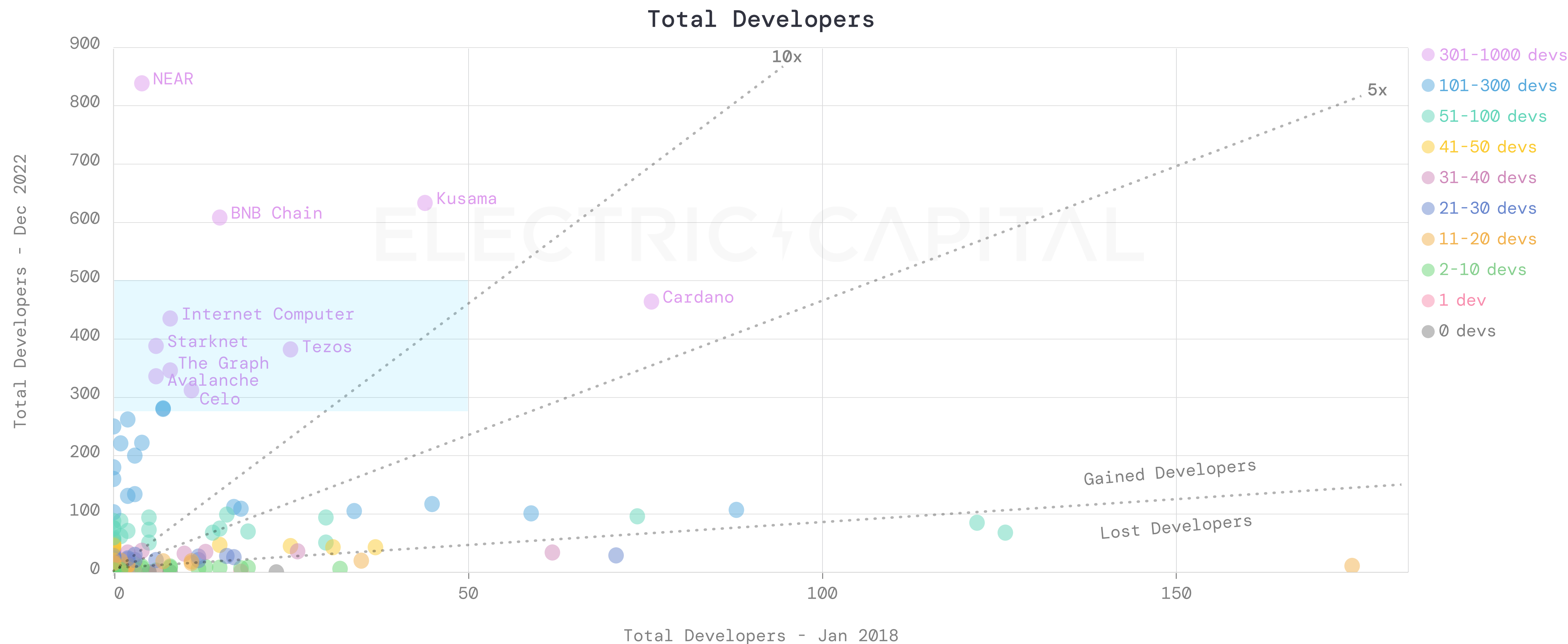
ELECTRIC⚡CAPITAL



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

INTERNET COMPUTER, STARKNET, TEZOS, THE GRAPH, AVALANCHE, & CELO HAD <50 DEVS AND NOW HAVE 300+ DEVS

ELECTRIC⚡CAPITAL

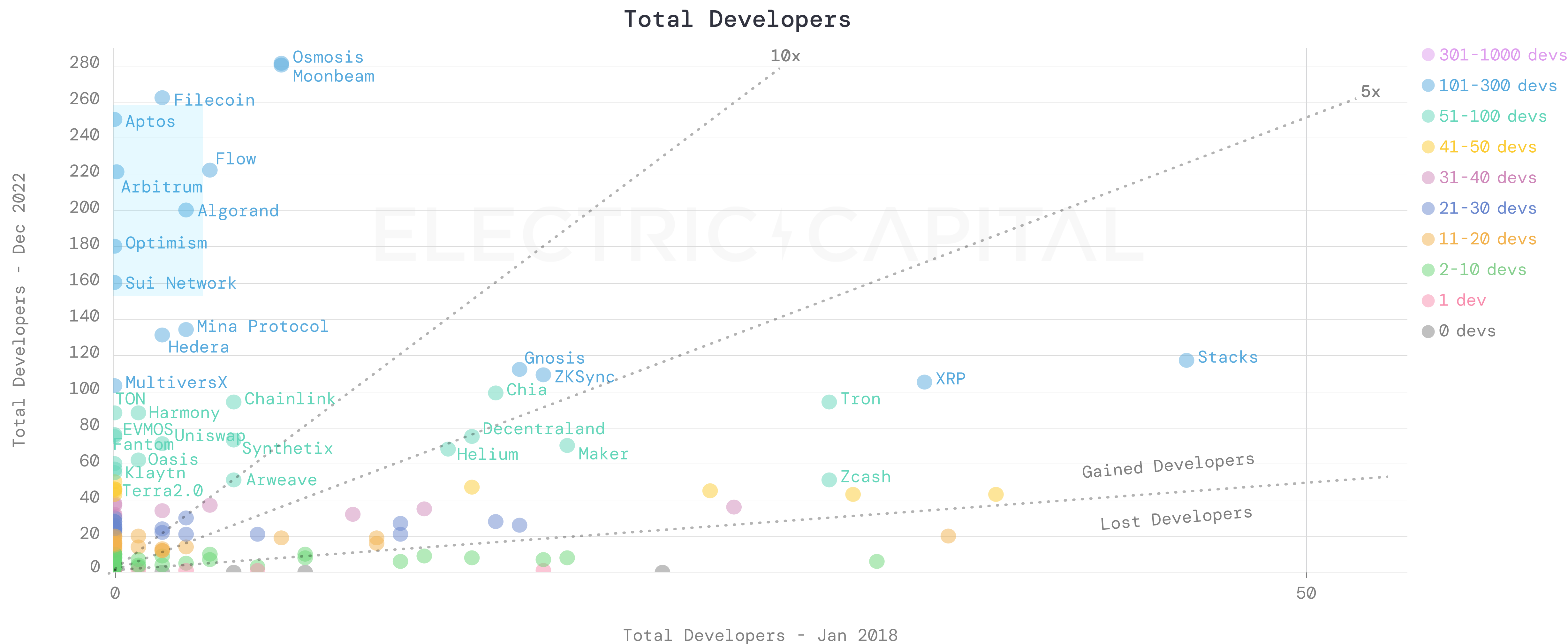


We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

ZOOMING IN ON ECOSYSTEMS WITH 40 TO 200 TOTAL DEVELOPERS...

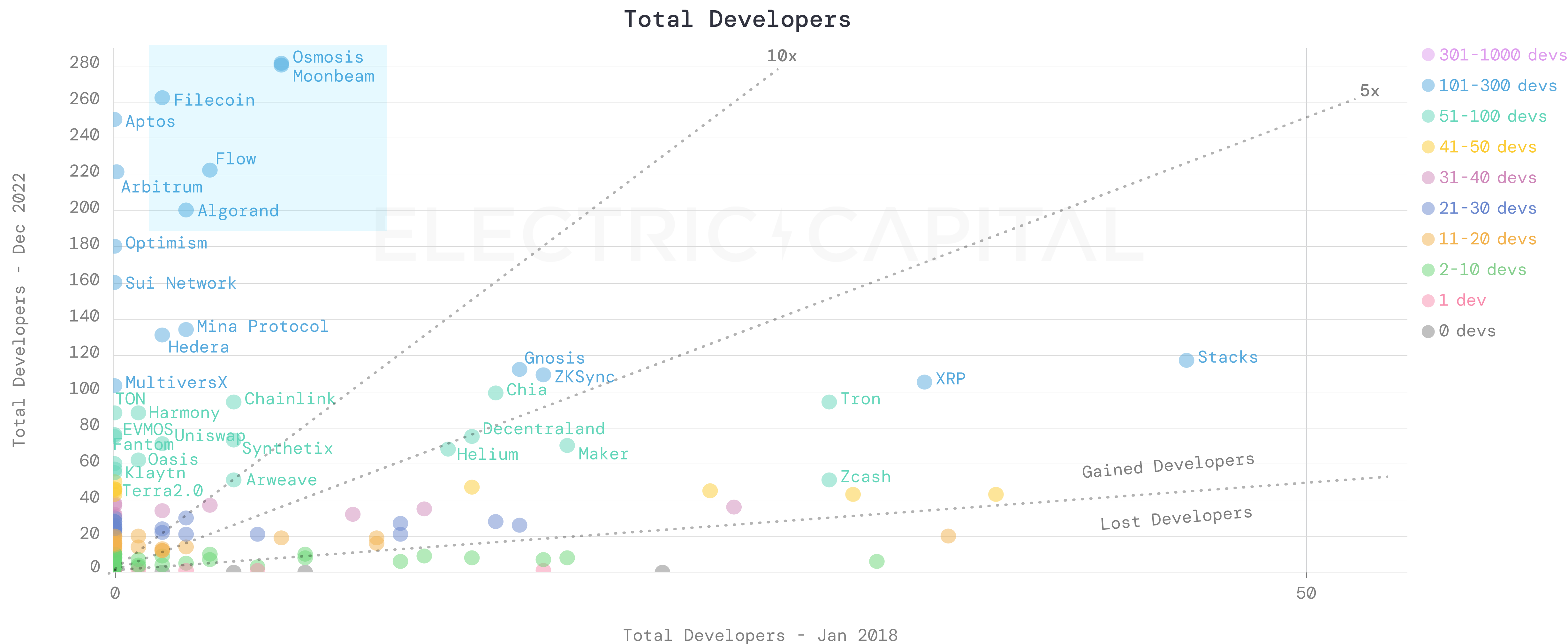
APTOS, ARBITRUM, OPTIMISM, AND SUI ARE ECOSYSTEMS THAT DID NOT EXIST IN 2018 & NOW HAVE 150+ TOTAL DEVS

ELECTRIC CAPITAL



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

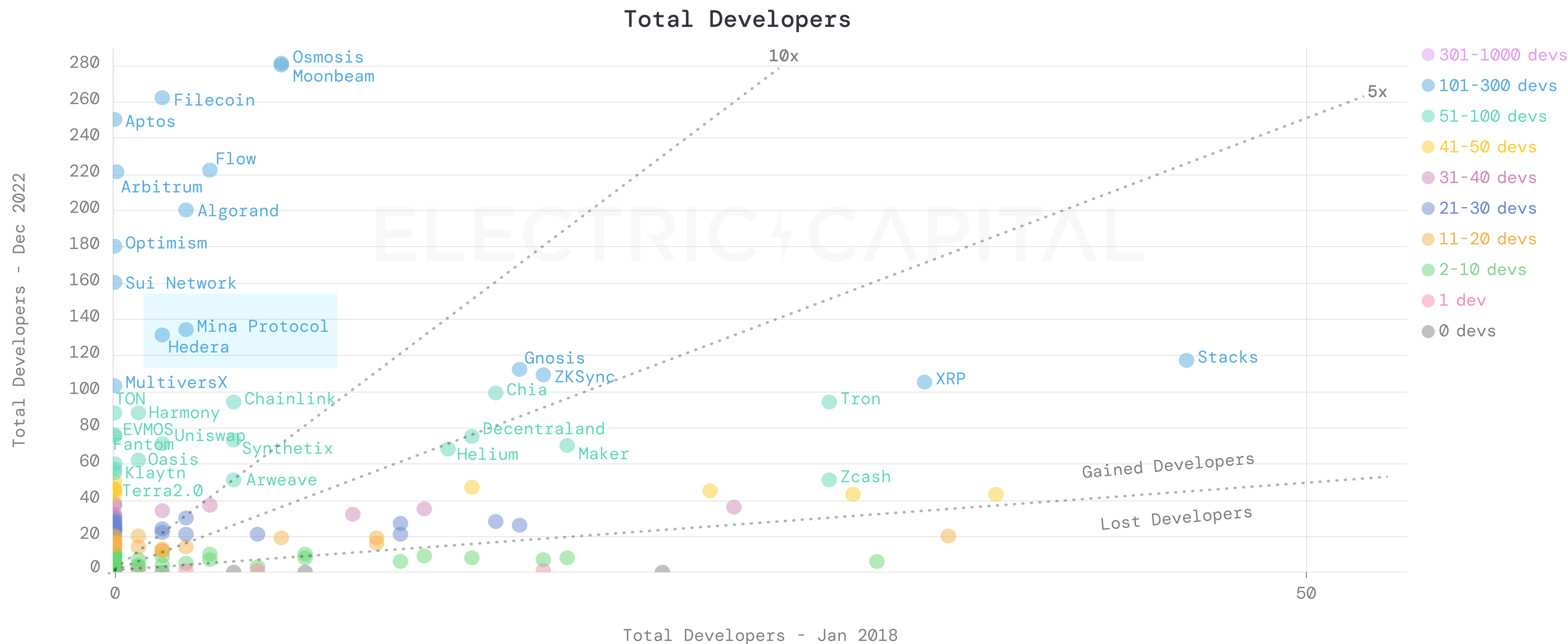
FILECOIN, ALGORAND, FLOW, OSMOSIS, & MOONBEAM HAVE 200+ TOTAL DEVS FROM FEWER THAN 10 DEVS IN JAN 2018



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

MINA & HEDERA HAVE 130+ TOTAL DEVS FROM FEWER THAN 5 DEVS IN JAN 2018

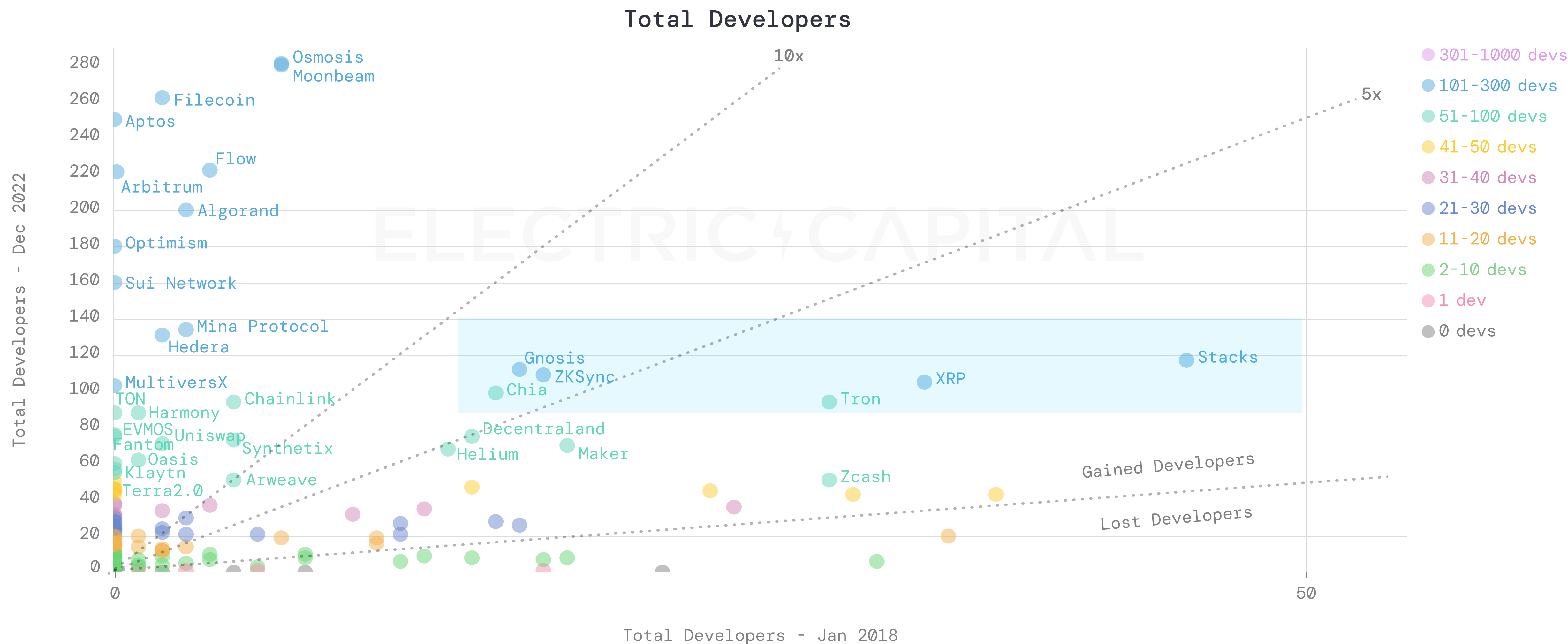
ELECTRIC CAPITAL



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

SINCE 2018: GNOSIS +7X, ZKSYNC +6X, XRP +3X, STACKS +3X TO 100+ TOTAL DEVS

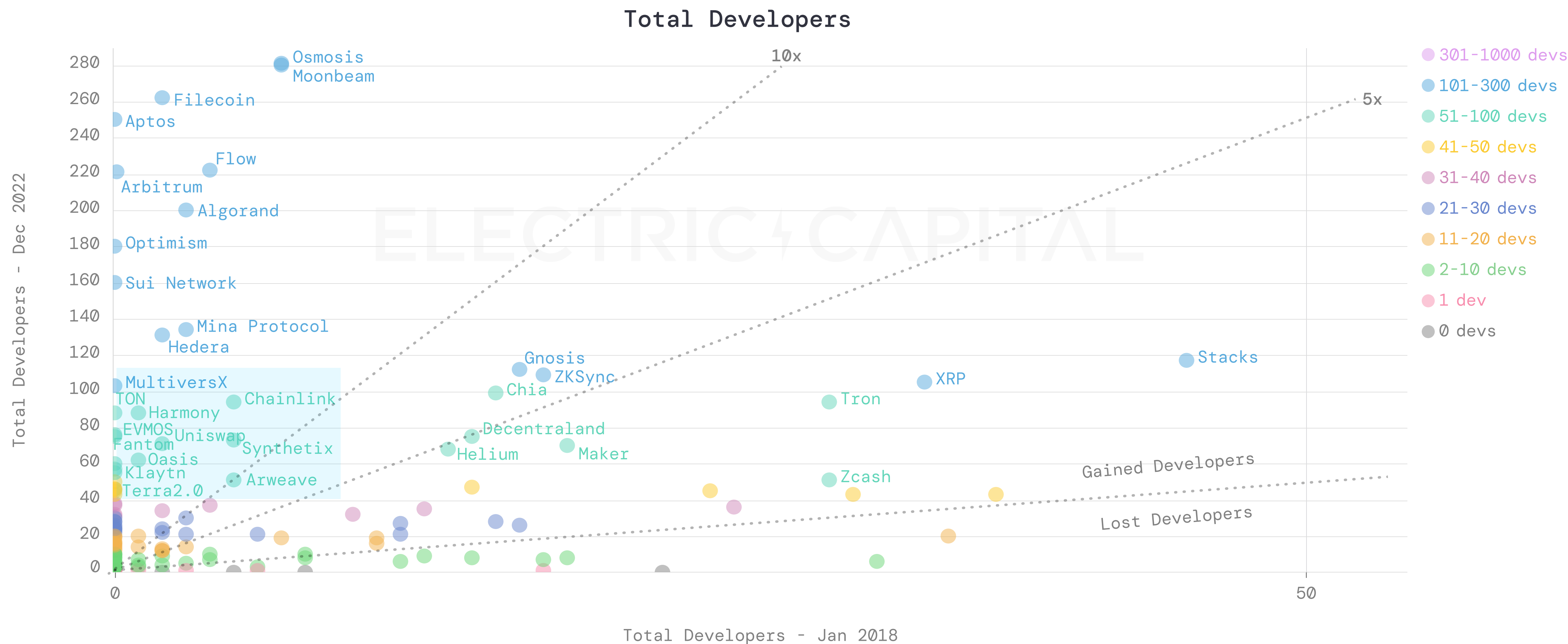
ELECTRIC CAPITAL



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

MANY ECOSYSTEMS GREW TO 40+ TOTAL DEVS FROM FEWER THAN 5 DEVS IN 2018

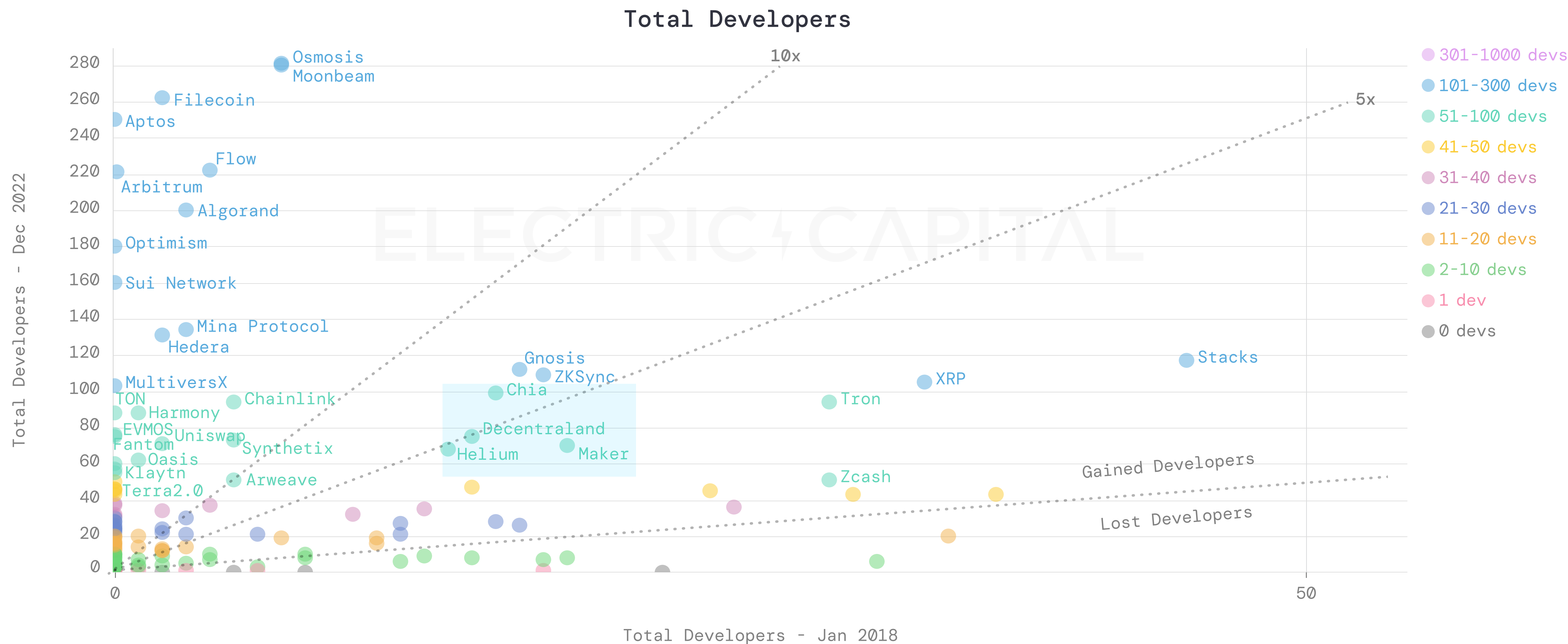
ELECTRIC CAPITAL



We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

CHIA, DECENTRALAND, HELIUM, & MAKER GREW 3X+ TO 60+ TOTAL DEVS

ELECTRIC CAPITAL



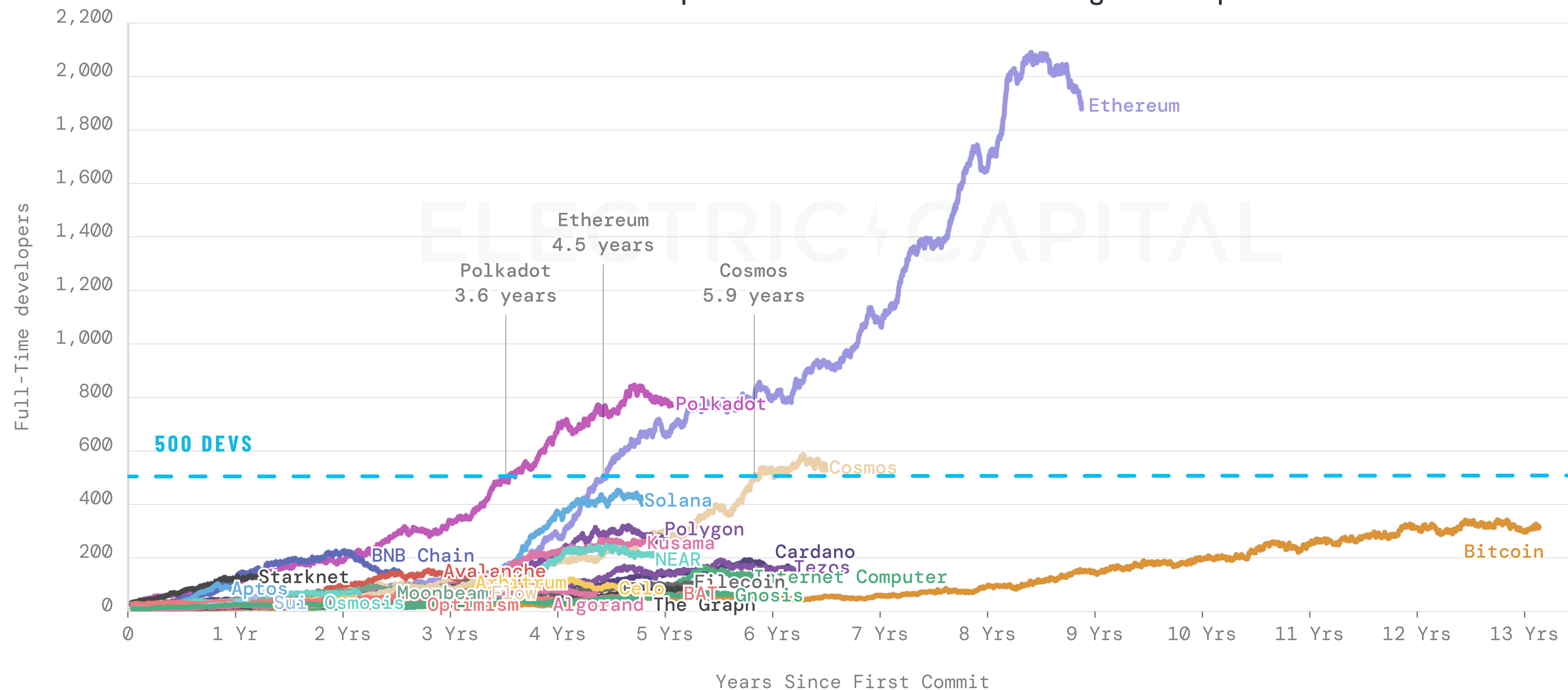
We only count open-source developers. The numbers are averages for the first 2 weeks of December before developers go on holiday at the end of the year and may differ from December numbers from earlier time series.

**BUT THESE ECOSYSTEMS BEGAN AT DIFFERENT TIMES.
LET'S NORMALIZE BY THE DAY OF THEIR FIRST COMMIT...**

LET'S FOCUS ON THE MOST IMPORTANT DEVELOPER SEGMENT:
FULL-TIME DEVELOPERS

ETHEREUM, POLKADOT, & COSMOS TOOK DIFFERENT PATHS TO GROW TO 500+ FULL-TIME DEVELOPERS

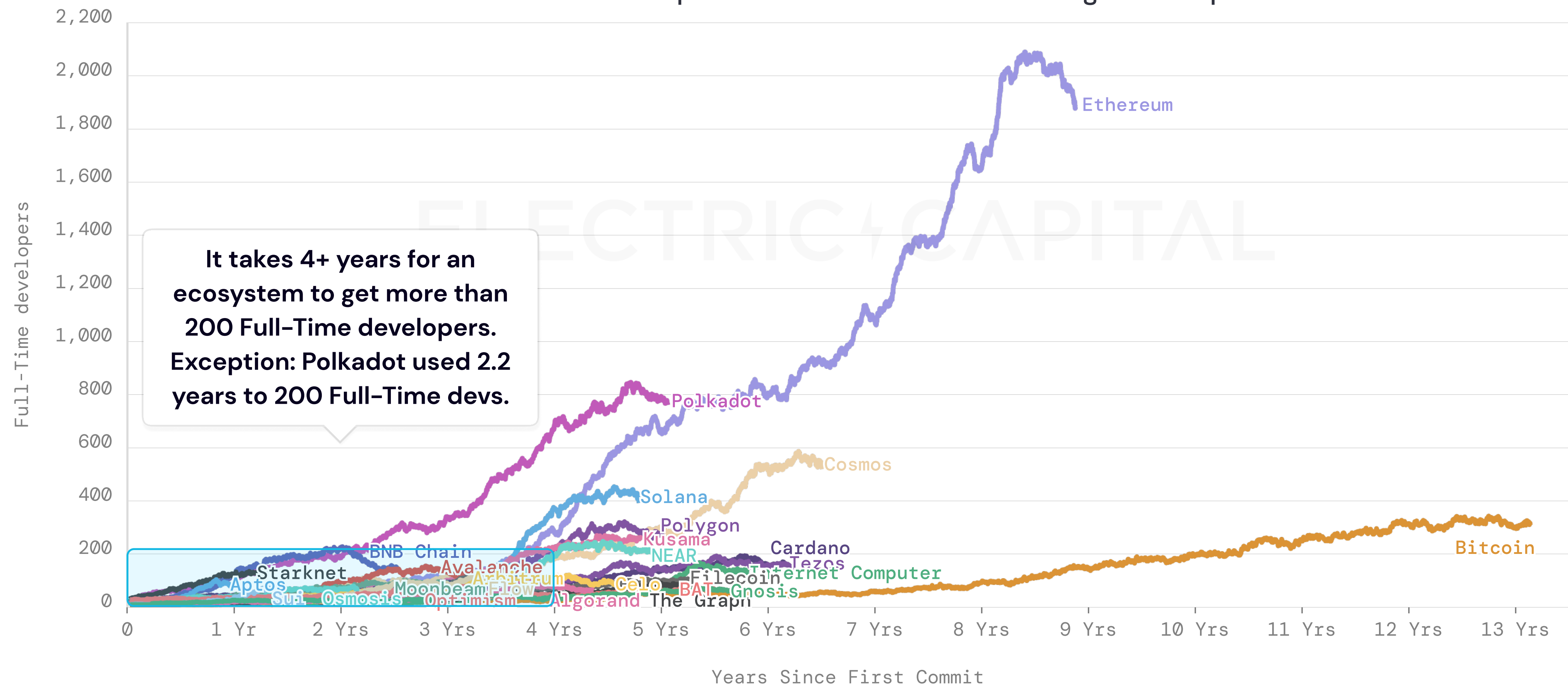
Full-Time Developers Since Launch | 50+ Avg Developers



IT USUALLY TAKES 4+ YEARS TO GROW TO 200+ FULL-TIME DEVS

Full-Time Developers Since Launch | 50+ Avg Developers

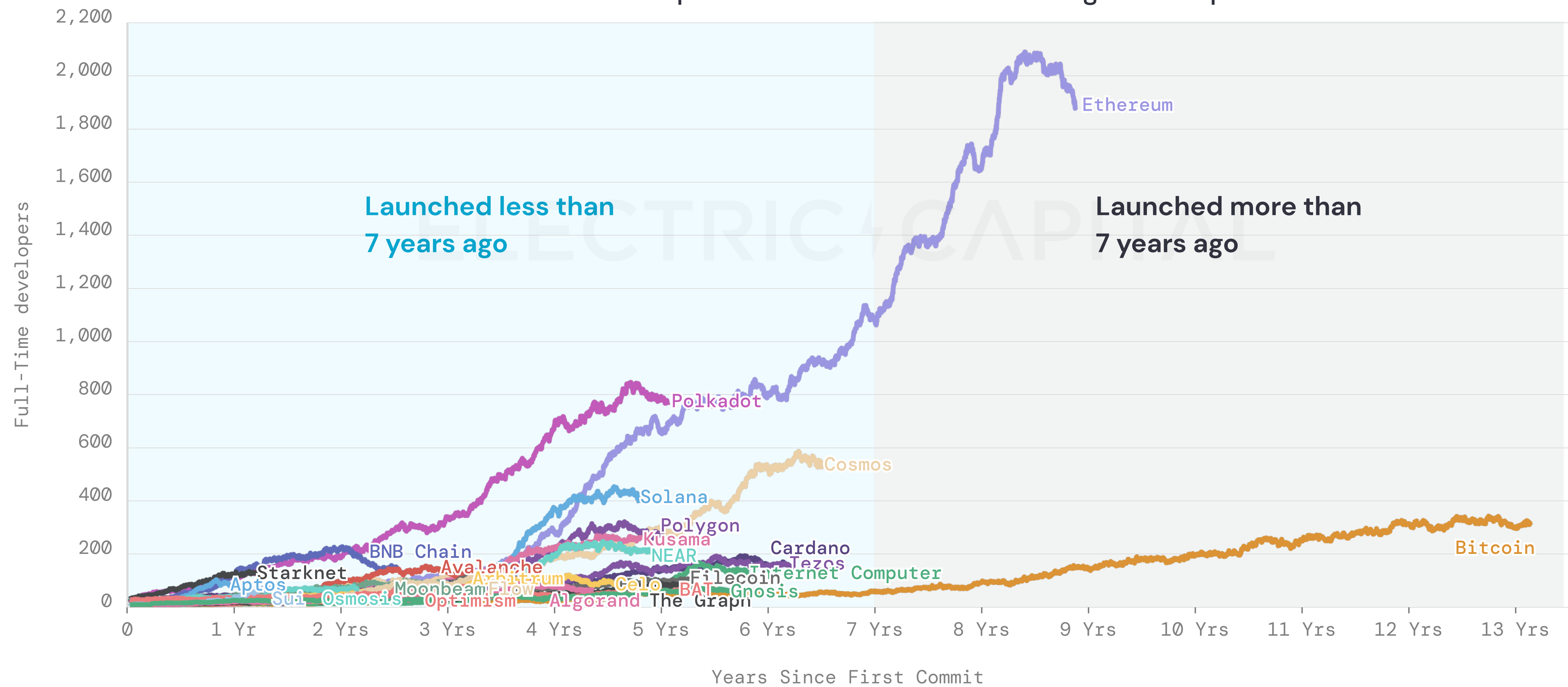
ELECTRICCAPITAL



EXCLUDING BTC & ETH, ALL TOP 200 ECOSYSTEMS WITH 50+ FULL-TIME DEVS LAUNCHED UNDER 7 YEARS AGO

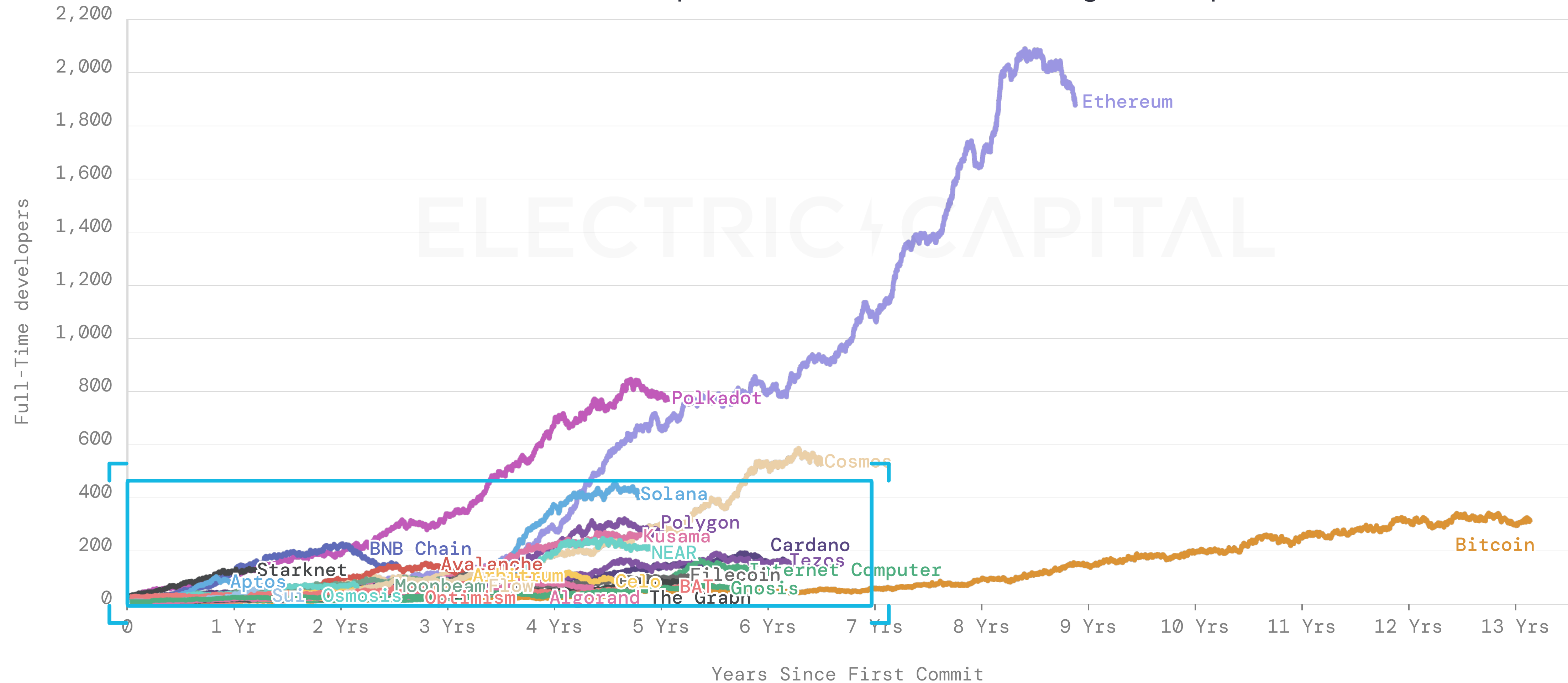
Full-Time Developers Since Launch | 50+ Avg Developers

ELECTRICCAPITAL



NEXT, LET'S ZOOM IN ON EMERGING ECOSYSTEMS

Full-Time Developers Since Launch | 50+ Avg Developers

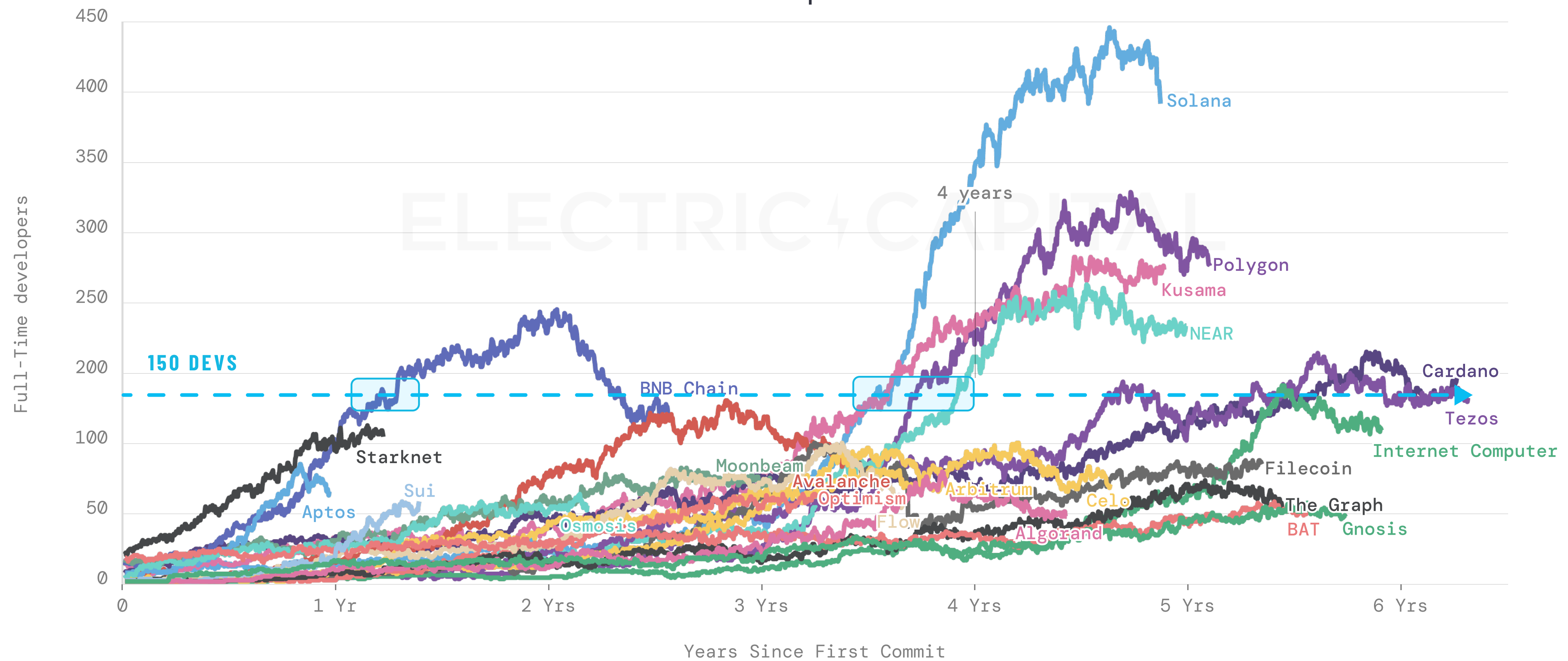


ZOOMING IN ON EMERGING ECOSYSTEMS...

SOLANA, POLYGON, KUSAMA, NEAR, & BNB TOOK FEWER THAN 4 YEARS TO GROW TO 150 FULL-TIME DEVS: THE FASTEST OF EMERGING ECOSYSTEMS

Full-Time Developers Since Launch

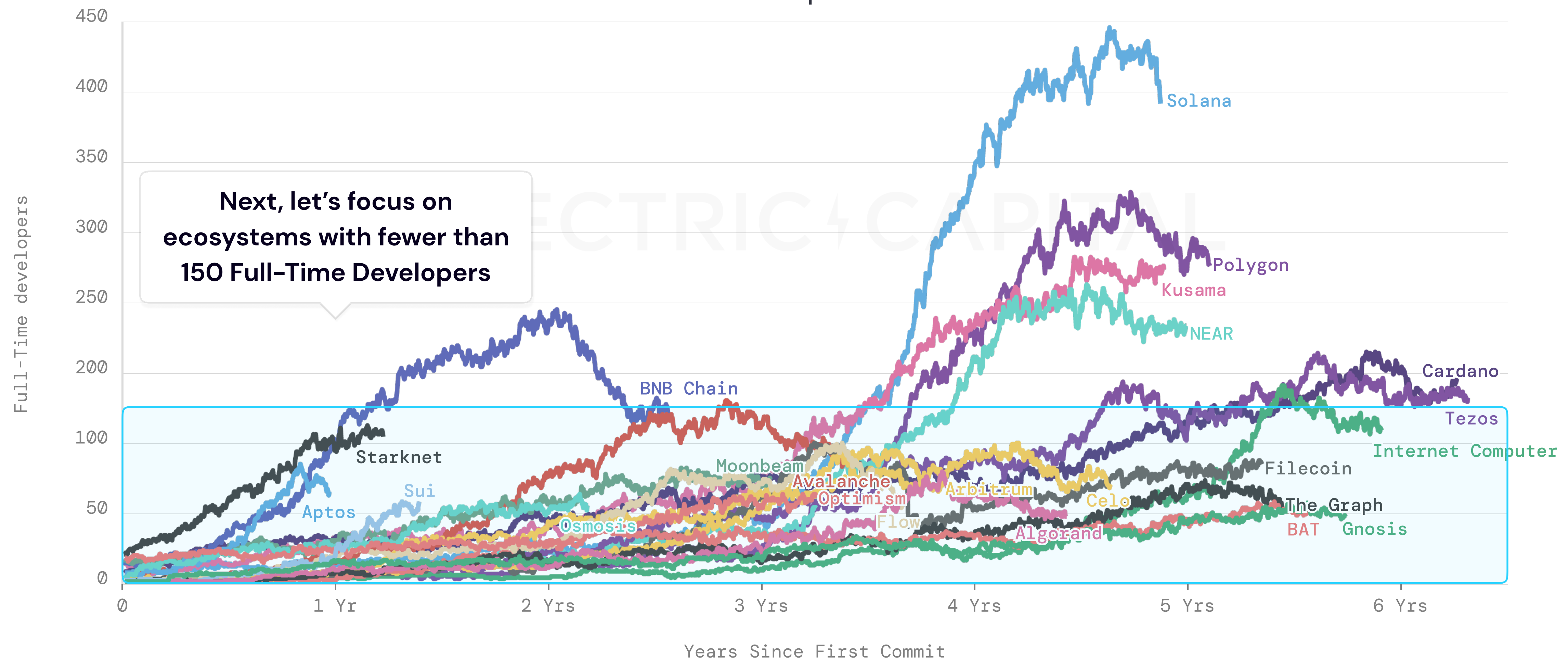
ELECTRIC CAPITAL



LET'S FOCUS ON ECOSYSTEMS UNDER 150 FULL-TIME DEVELOPERS

Full-Time Developers Since Launch

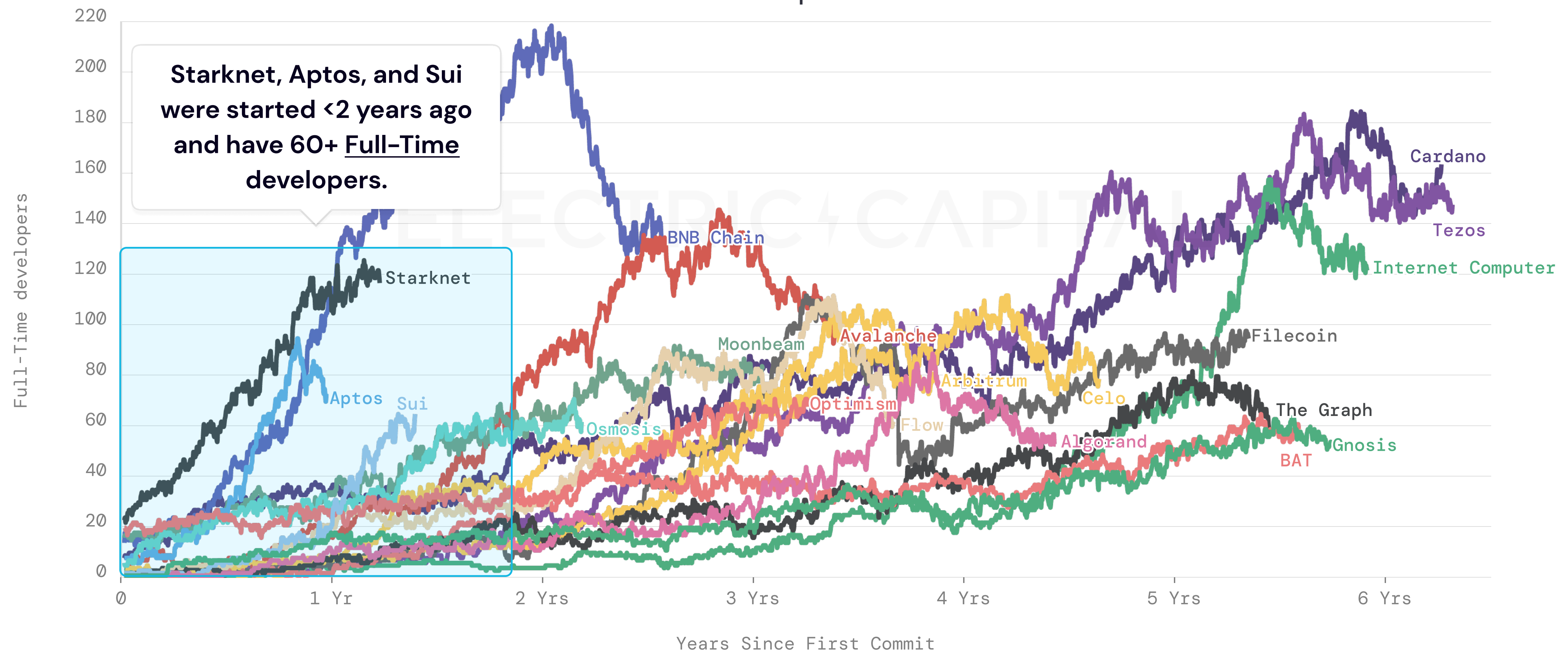
ELECTRIC⚡CAPITAL



ECOSYSTEMS UNDER 2 YEARS OLD: STARKNET, APTOS, & SUI HAVE 60+ FULL-TIME DEVELOPERS; STARKNET HAS THE MOST AT ALMOST 120 FULL-TIME DEVELOPERS

Full-Time Developers Since Launch

ELECTRIC CAPITAL

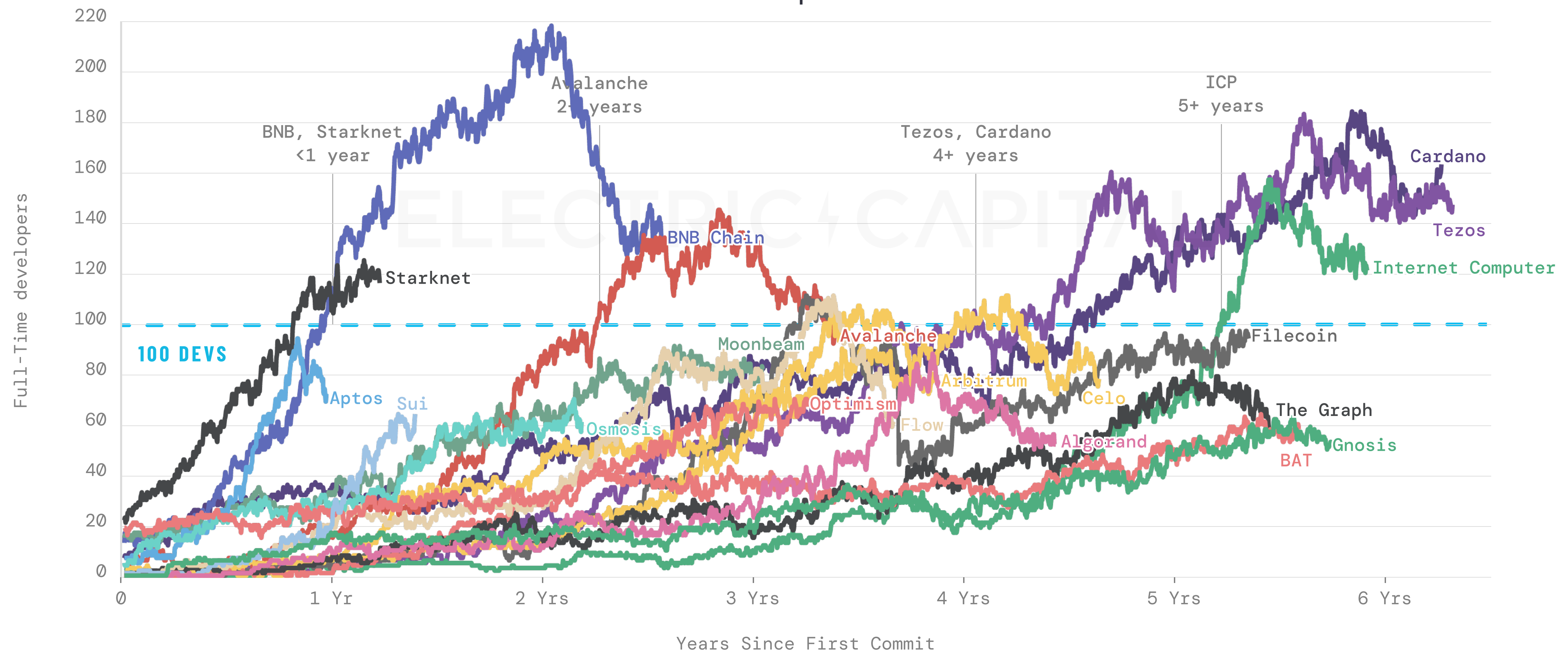


Starknet, Aptos, and Sui were started <2 years ago and have 60+ Full-Time developers.

STARKNET, BNB, AVALANCHE, CARDANO, TEZOS, & ICP TOOK DIFFERENT PATHS TO GROW TO 100+ FULL-TIME DEVELOPERS

Full-Time Developers Since Launch

ELECTRIC CAPITAL

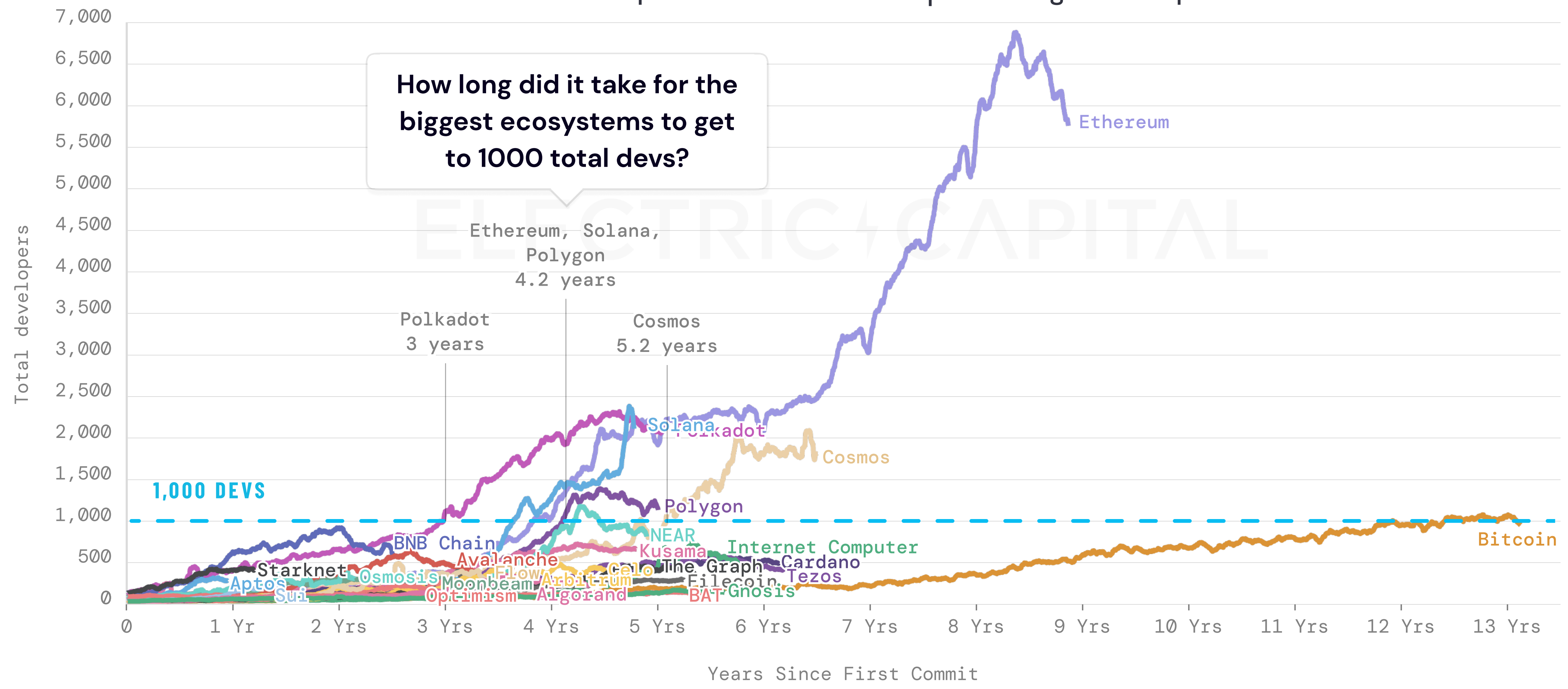


**WHAT ABOUT TOTAL DEVELOPERS
(FULL-TIME + PART-TIME + ONE-TIME)
ACROSS THESE ECOSYSTEMS?**

ETHEREUM, POLKADOT, SOLANA, POLYGON & COSMOS TOOK DIFFERENT PATHS TO GROW TO 1000+ TOTAL DEVELOPERS

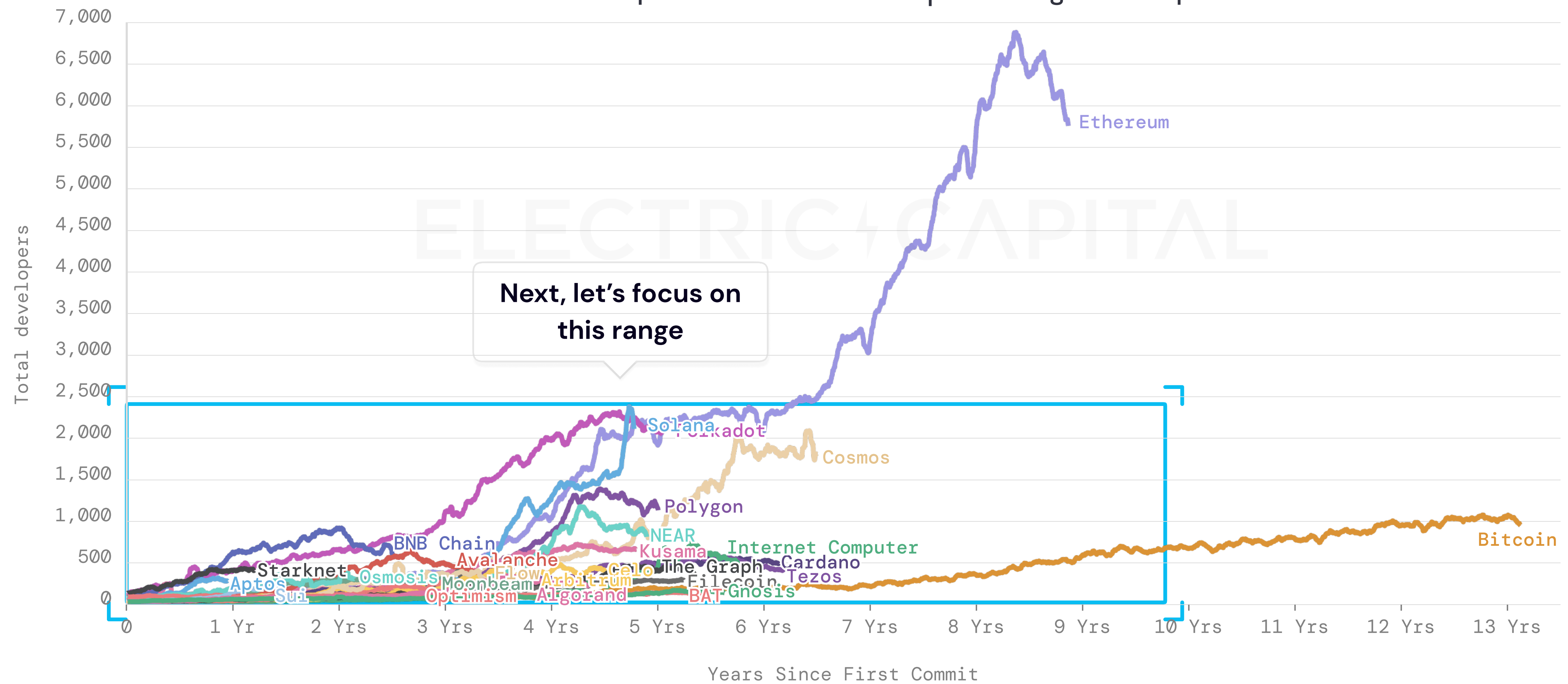
Total Developers Since Launch | 50+ Avg Developers

ELECTRIC CAPITAL



LET'S FOCUS ON EMERGING ECOSYSTEMS

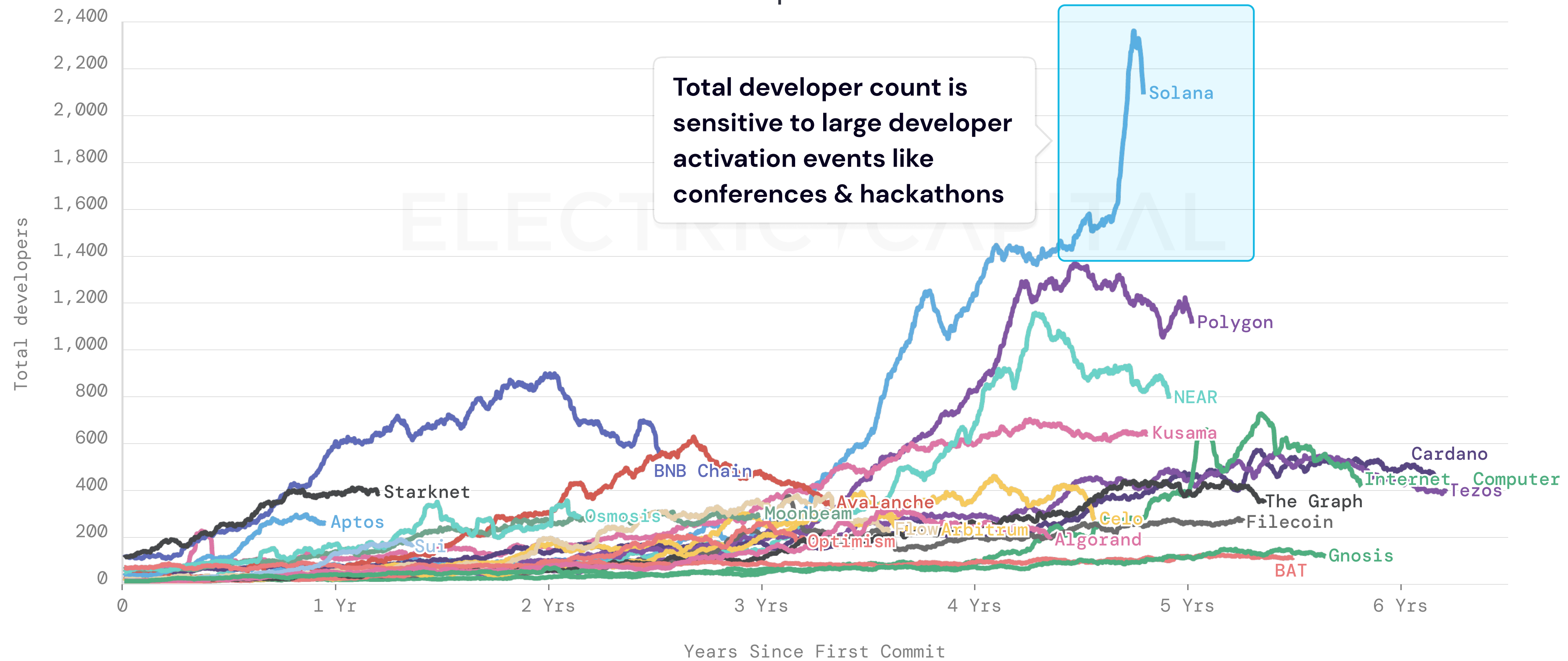
Total Developers Since Launch | 50+ Avg Developers



SOLANA SPIKED TO 2000+ TOTAL DEVS IN NOV 2022, DURING BREAKPOINT & WITH HACKATHON ACTIVITY. THIS IS WHY FULL-TIME DEVS IS A CRITICAL METRIC

Total Developers Since Launch

ELECTRIC CAPITAL

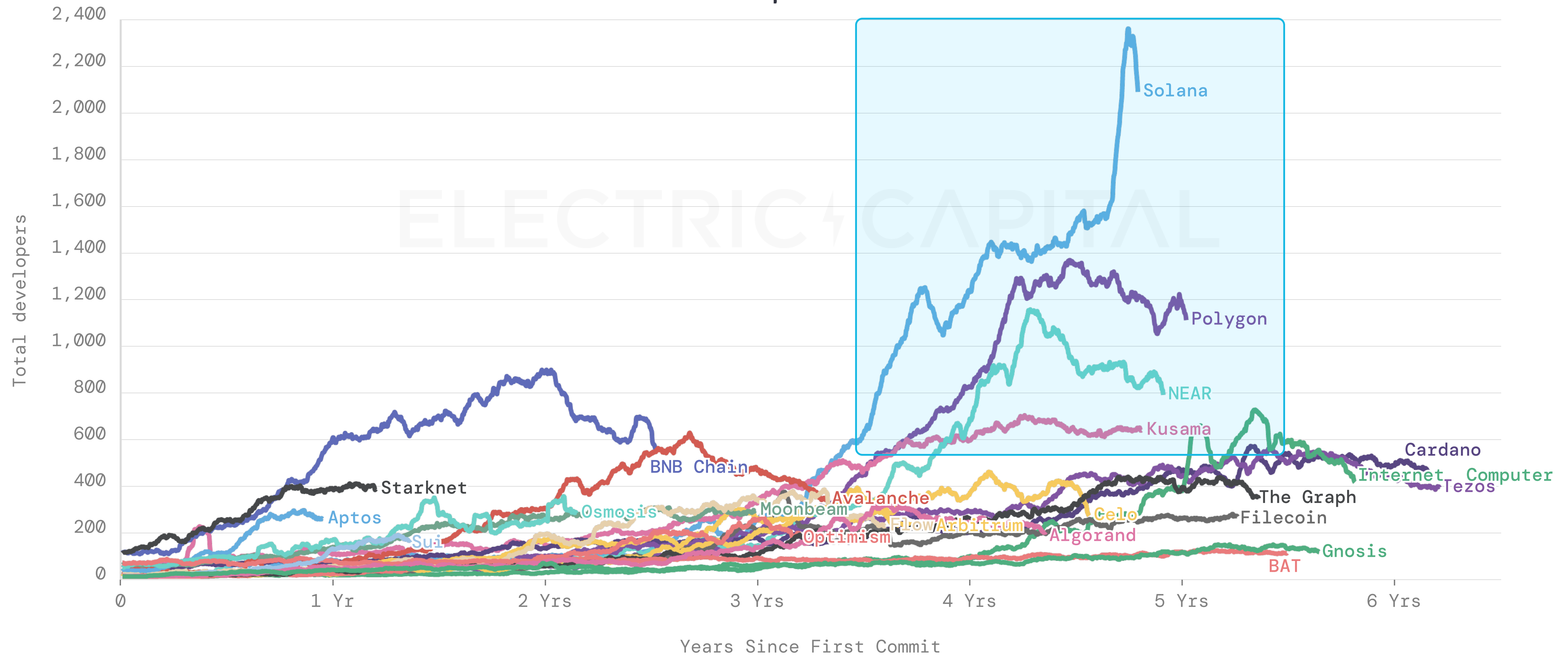


Total developer count is sensitive to large developer activation events like conferences & hackathons

Solana

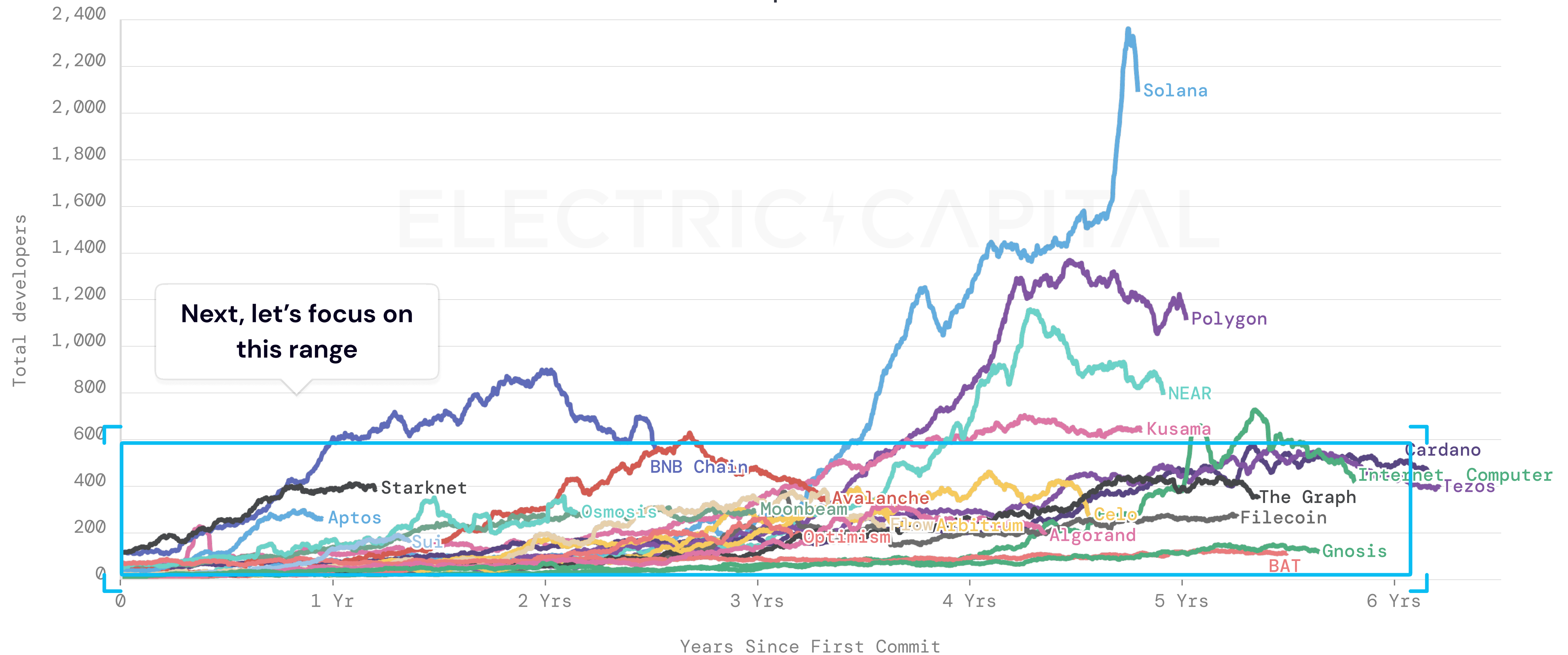
SOLANA, POLYGON, NEAR, & KUSAMA HAVE THE MOST TOTAL DEVS (600+)

Total Developers Since Launch



LET'S FOCUS ON EMERGING ECOSYSTEMS WITH UNDER 600 TOTAL DEVELOPERS

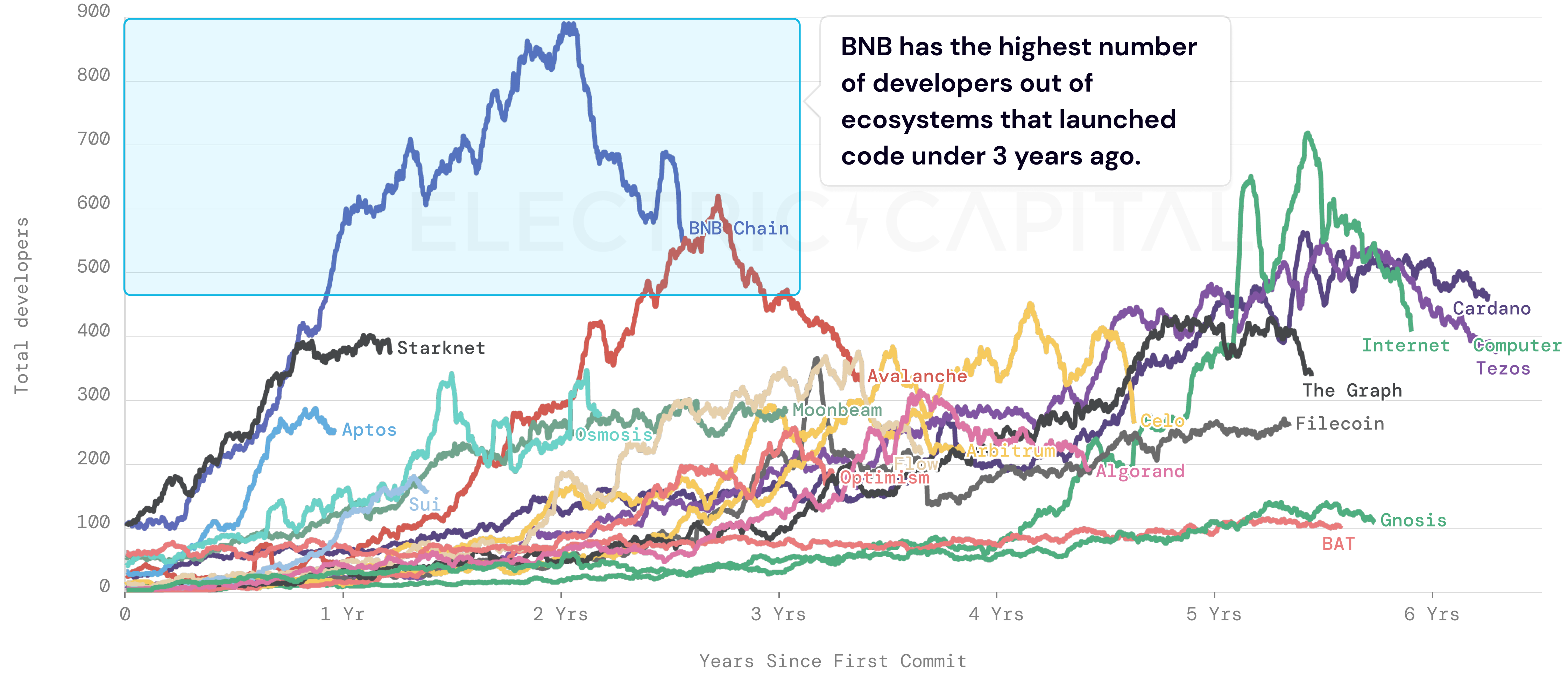
Total Developers Since Launch



BNB HAS THE MOST TOTAL DEVELOPERS FOR PROJECTS UNDER 3 YEARS OLD, DESPITE ITS RECENT DECLINE IN DEVELOPERS

Total Developers Since Launch

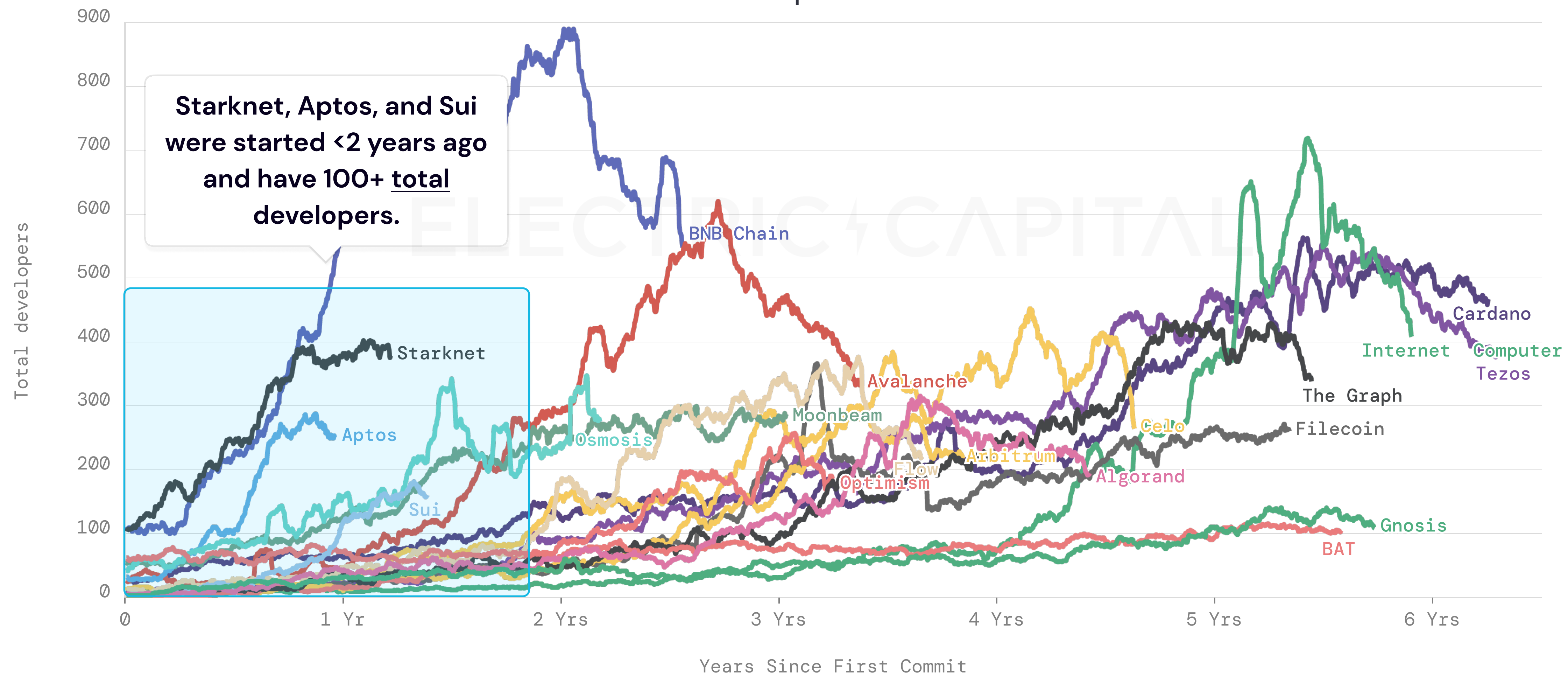
ELECTRIC CAPITAL



ECOSYSTEMS UNDER 2 YEARS OLD: STARKNET, APTOS, & SUI HAVE 100+ TOTAL DEVELOPERS; STARKNET HAS THE MOST AT ALMOST 400 TOTAL DEVS

Total Developers Since Launch

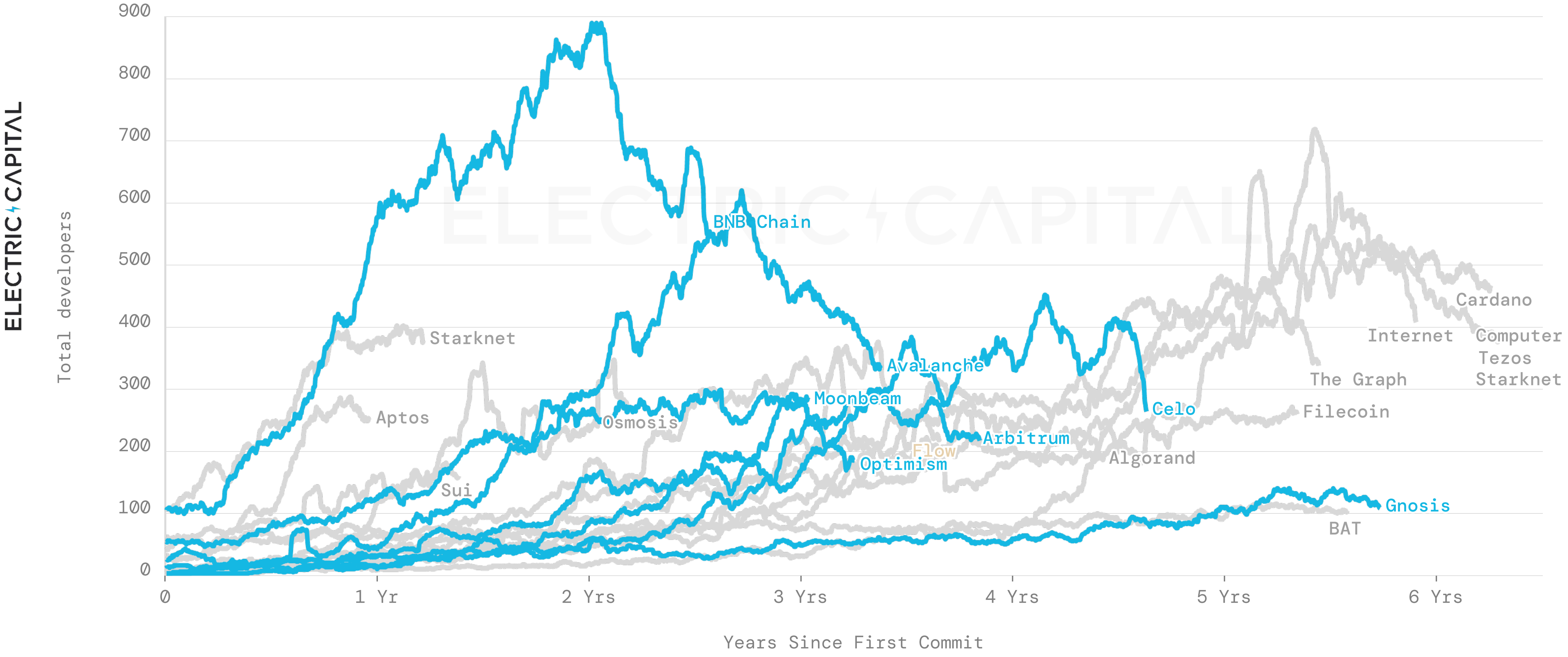
ELECTRIC CAPITAL



Starknet, Aptos, and Sui were started <2 years ago and have 100+ total developers.

MANY OF THE TOP EMERGING ECOSYSTEMS ARE EVM-COMPATIBLE: BNB, AVALANCHE, MOONBEAM, ARBITRUM, OPTIMISM, CELO, & GNOSIS

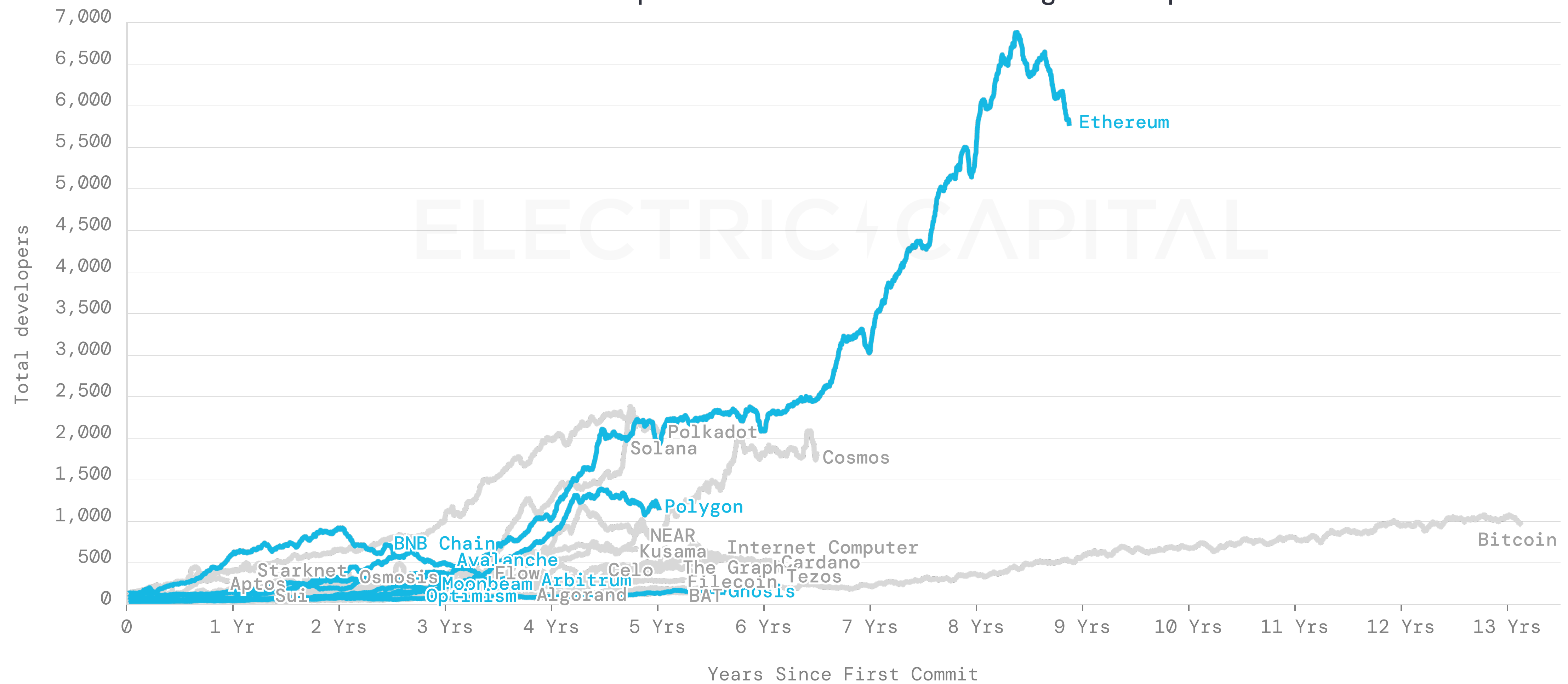
Total Developers Since Launch



ZOOMING BACK OUT...EMV-COMPATIBLE ECOSYSTEMS ARE 37% OF ALL ECOSYSTEMS WITH 50+ FULL-TIME DEVS

Total Developers Since Launch | 50+ Avg Developers

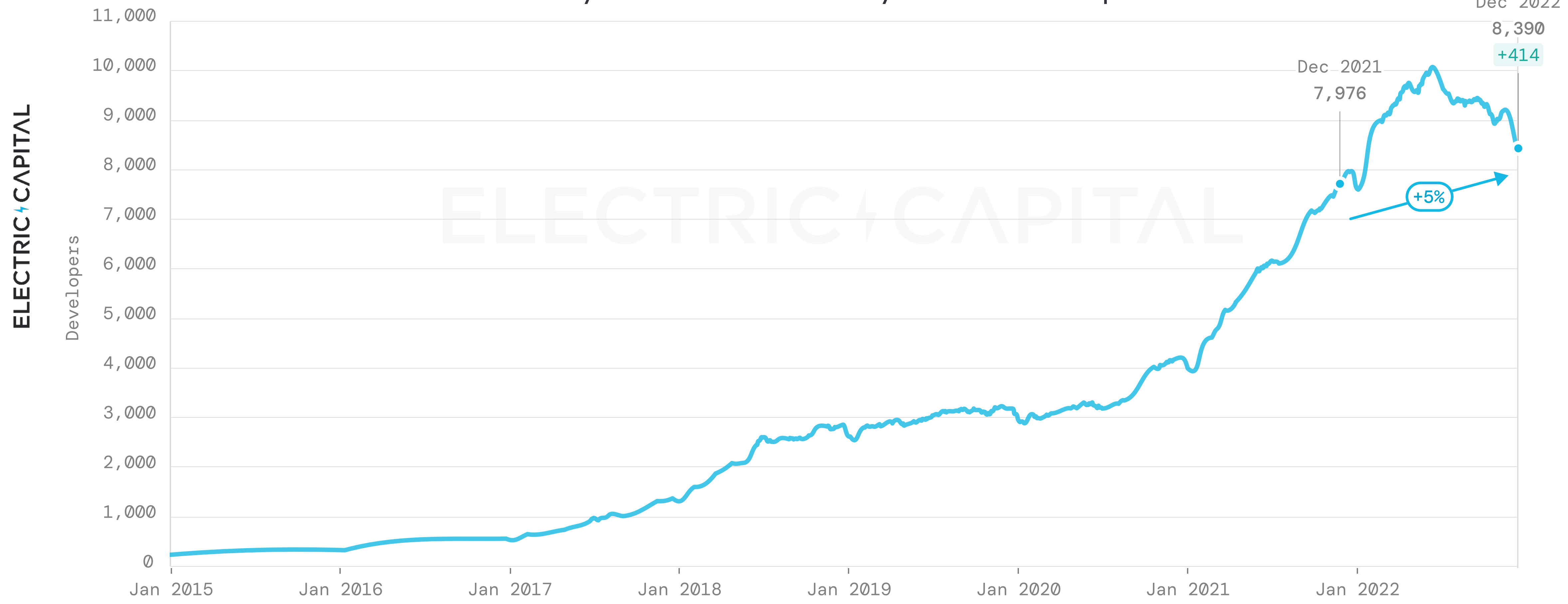
ELECTRIC+CAPITAL



**ETHEREUM VIRTUAL MACHINE HAS EMERGED AS A CORE TECHNOLOGY.
LET'S LOOK AT EVM-COMPATIBLE LAYER-1 AND LAYER-2 CHAINS...**

ACROSS EVM CHAINS: +414 MONTHLY TOTAL DEVELOPERS; +5% YEAR OVER YEAR

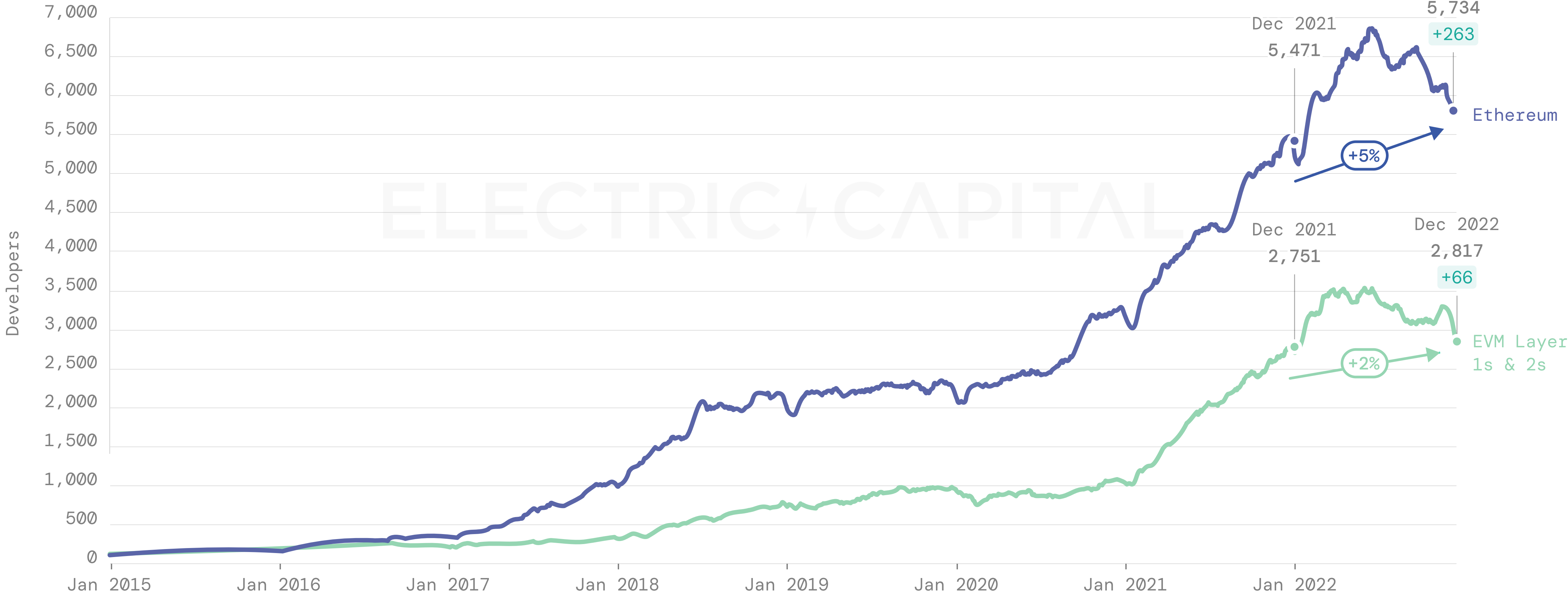
EVM Layer 1s and 2s Monthly Active Developers



ETHEREUM GREW BY +5% YEAR OVER YEAR; EVM-COMPATIBLE LAYER-1S AND L2S OUTSIDE ETHEREUM GREW BY +2%

Ethereum and Other EVM Layer 1s & 2s since 2015

ELECTRIC⚡CAPITAL



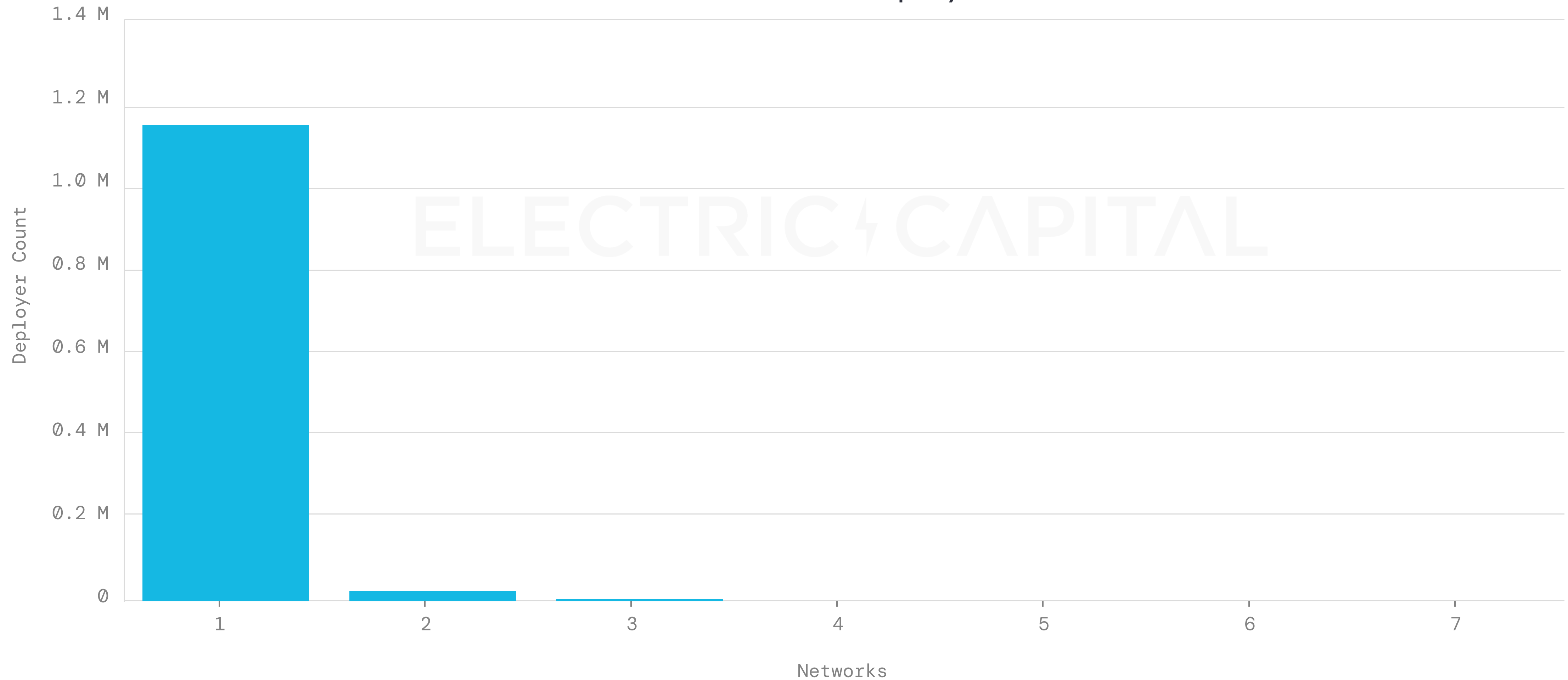
Some Developers work across EVM Layer-1s and Ethereum. The sum of these two lines will be greater than total developers in EVM-compatible chains.

DO DEVELOPERS IN EVM-COMPATIBLE ECOSYSTEMS
STAY IN ONE ECOSYSTEM OR WORK ACROSS MULTIPLE?

LET'S TAKE A LOOK AT CONTRACT DEPLOYMENTS
ON CHAIN...

ACROSS EVM ECOSYSTEMS: MOST ACCOUNTS ONLY DEPLOY CONTRACTS TO ONE CHAIN...

Multi-Chain Deployers

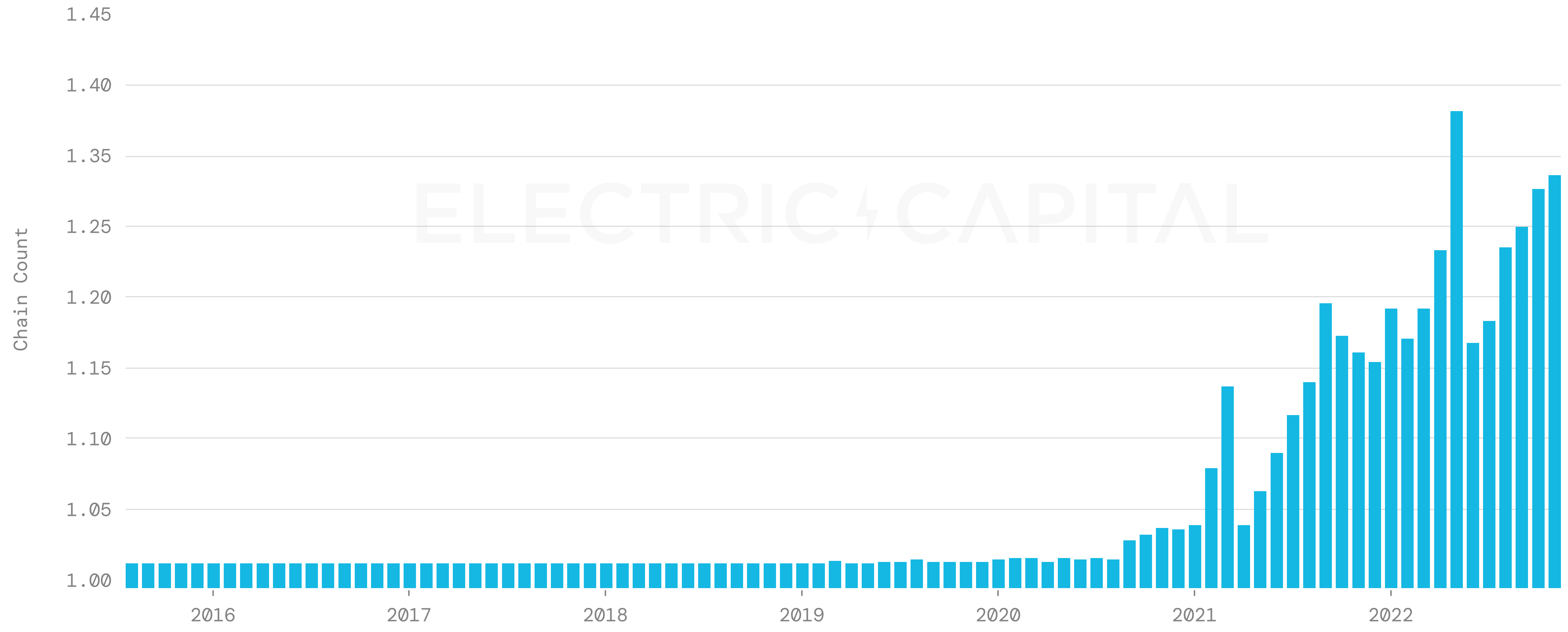


Source: Dune Analytics

...BUT THE AVERAGE NUMBER OF CHAINS THE DEPLOYER HAS DEPLOYED ON HAS INCREASED OVER TIME

Number of Chains Avg Deployer Has Deployed On

ELECTRIC⚡CAPITAL



Source: Dune Analytics

HOW CAN WE ACCOUNT FOR THE DEVELOPERS WORKING
ACROSS MULTIPLE CHAINS?

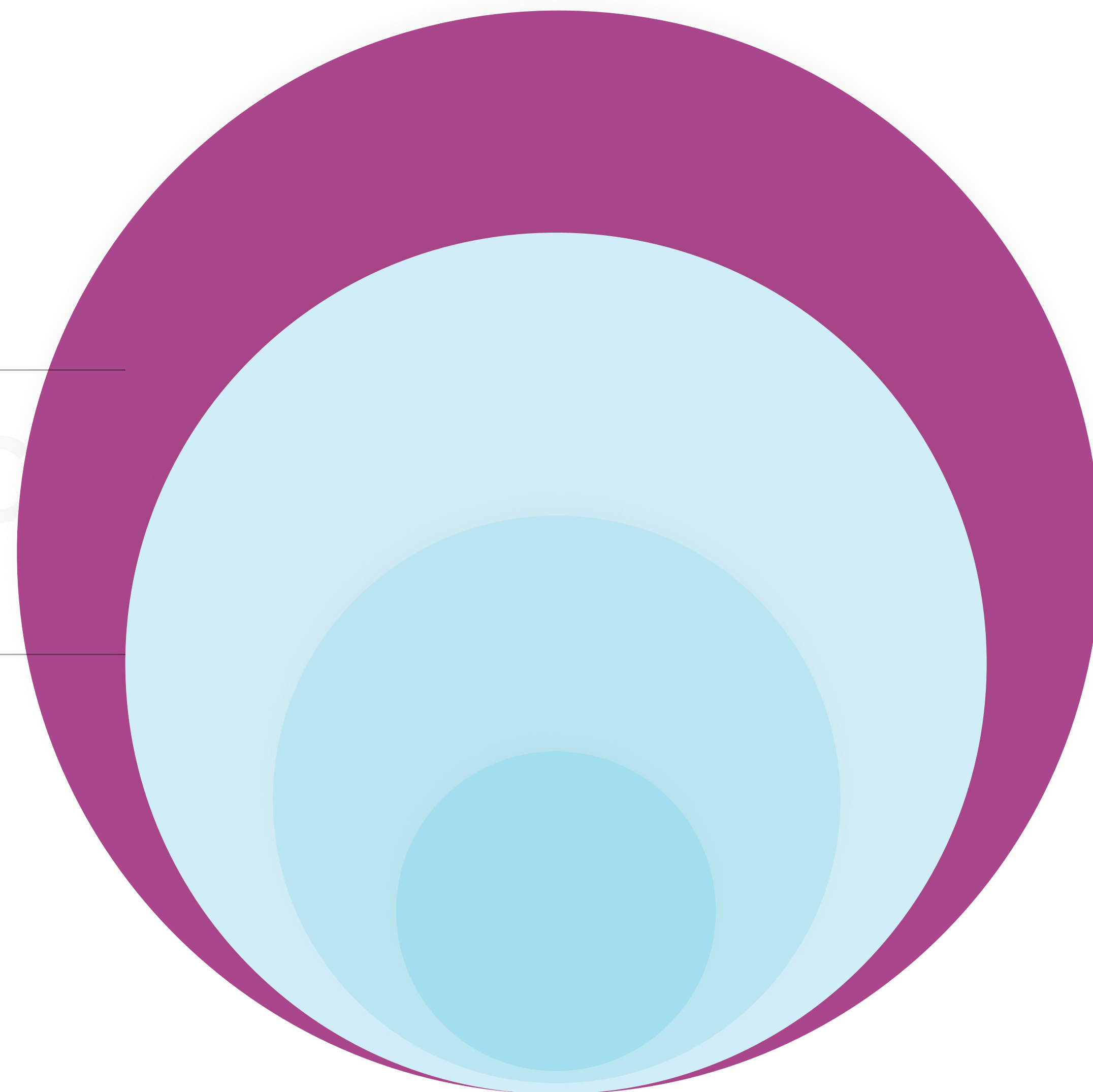
ECOSYSTEMS MAY INCLUDE MULTI-CHAIN DEVELOPERS

Multi-Chain Developers

Developers work on applications that are deployed across multiple ecosystems

Primary Developers

Developers working exclusively on an ecosystem



ELECTRIC CAPITAL

MULTI-ECOSYSTEM EXAMPLE: SUSHI

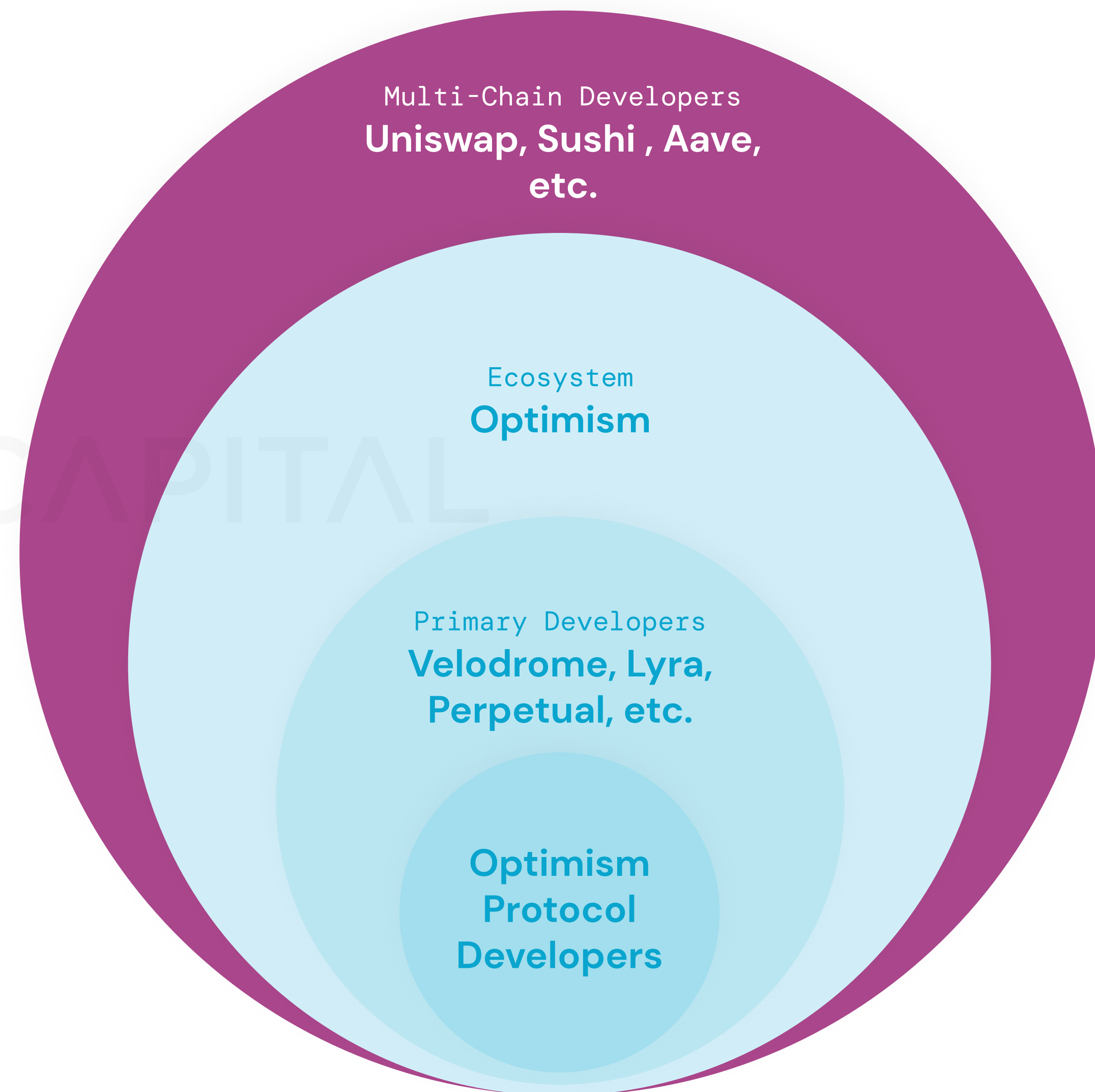
Many applications like Sushi build on Optimism and also build in other ecosystems. Sushi is part of Optimism’s multi-chain community.

Optimism Community

- Velodrome
- Lyra
- Perpetual Protocol
- Sonne Finance

Multi-Chain Community

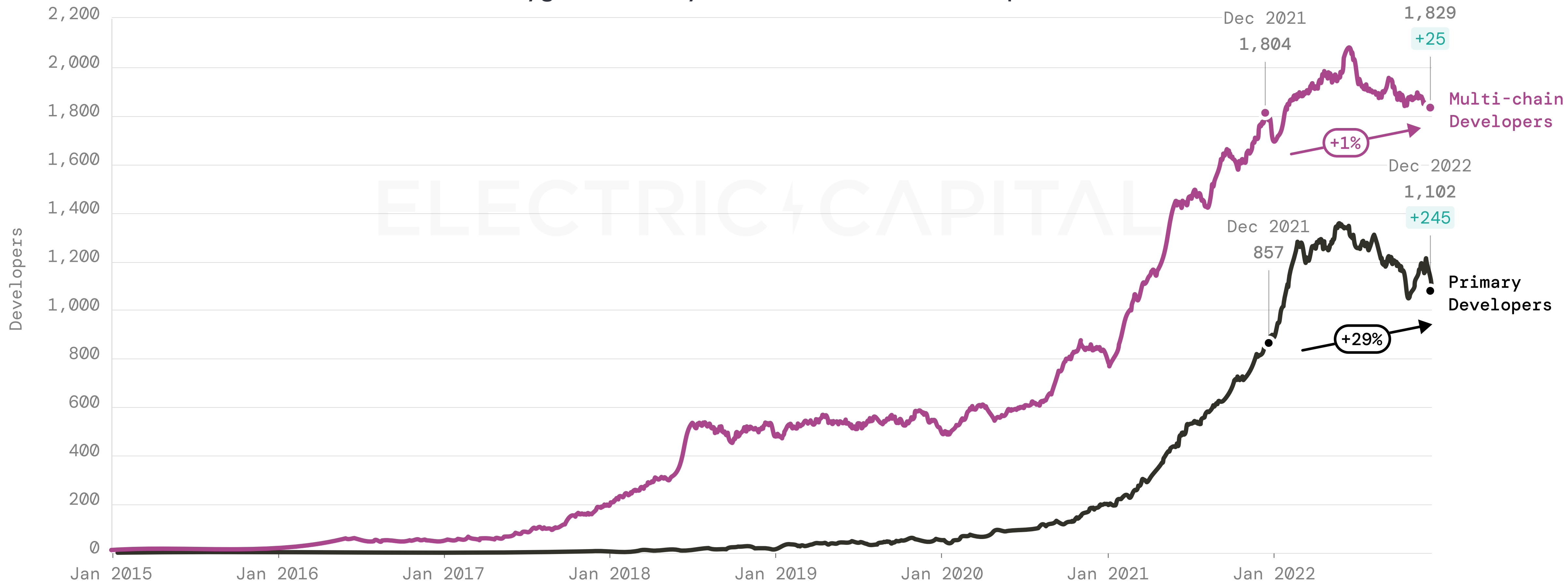
- Uniswap
- Sushi
- Aave
- Curve



**HOW ARE MULTI-CHAIN DEVS GROWING
IN COMPARISON TO PRIMARY DEVS?**

POLYGON PRIMARY DEVELOPER GROWTH (+29%) OUTPACES THE GROWTH OF MULTI-CHAIN DEVELOPERS BUILDING ON POLYGON (+1%) YEAR OVER YEAR

Polygon Primary & Multi-chain Developers

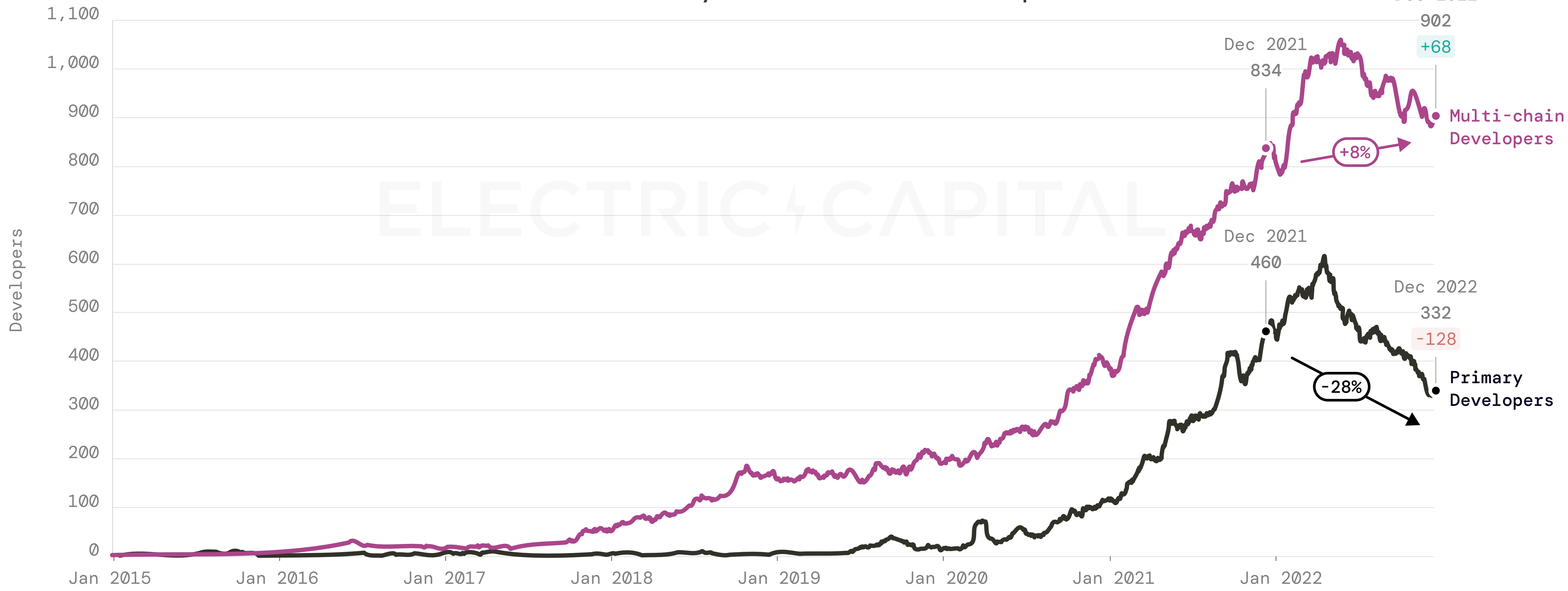


ELECTRIC CAPITAL

AVALANCHE LOST PRIMARY DEVELOPERS (-28%) WHILE MULTI-CHAIN DEVELOPERS BUILDING ON AVALANCHE GREW (+8%)

Avalanche Primary & Multi-chain Developers

ELECTRIC CAPITAL

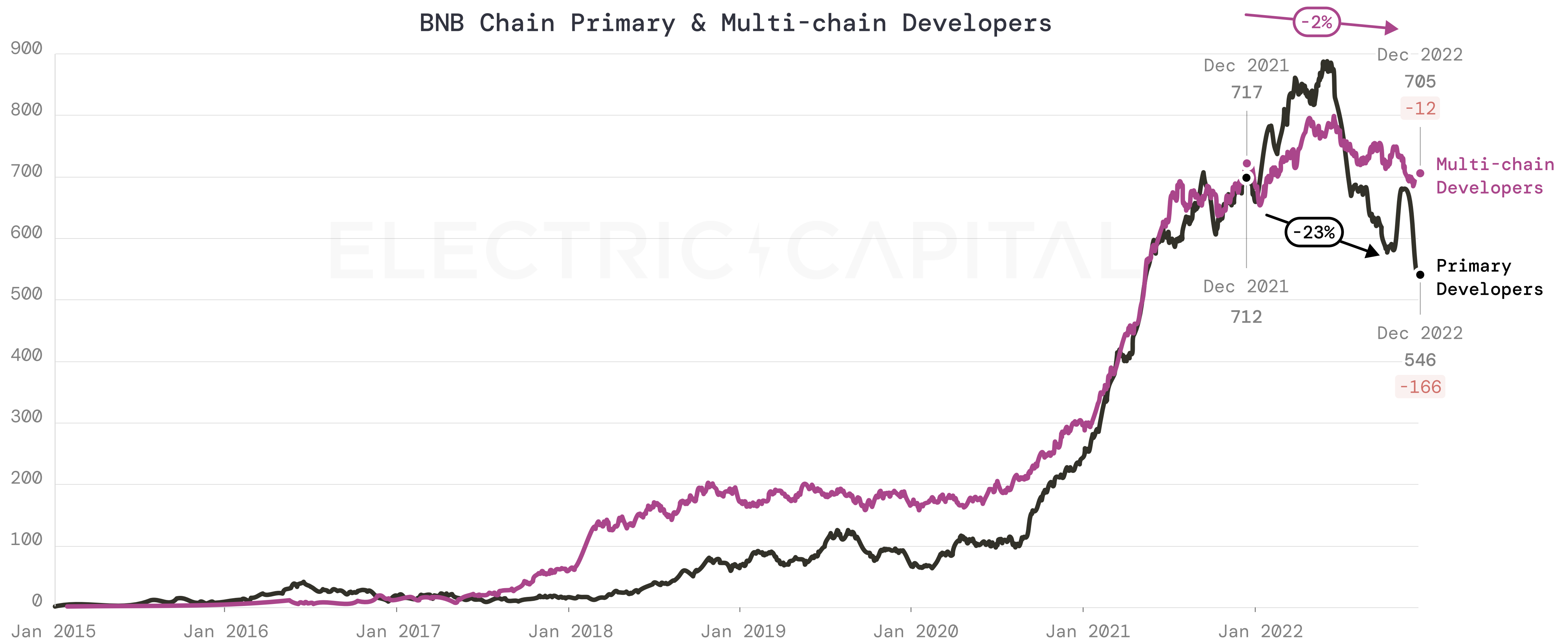


BNB CHAIN HAS STEADY MULTI-CHAIN DEVELOPERS DESPITE -23% DECREASE IN PRIMARY DEVELOPERS

BNB Chain Primary & Multi-chain Developers

ELECTRIC CAPITAL

Developers

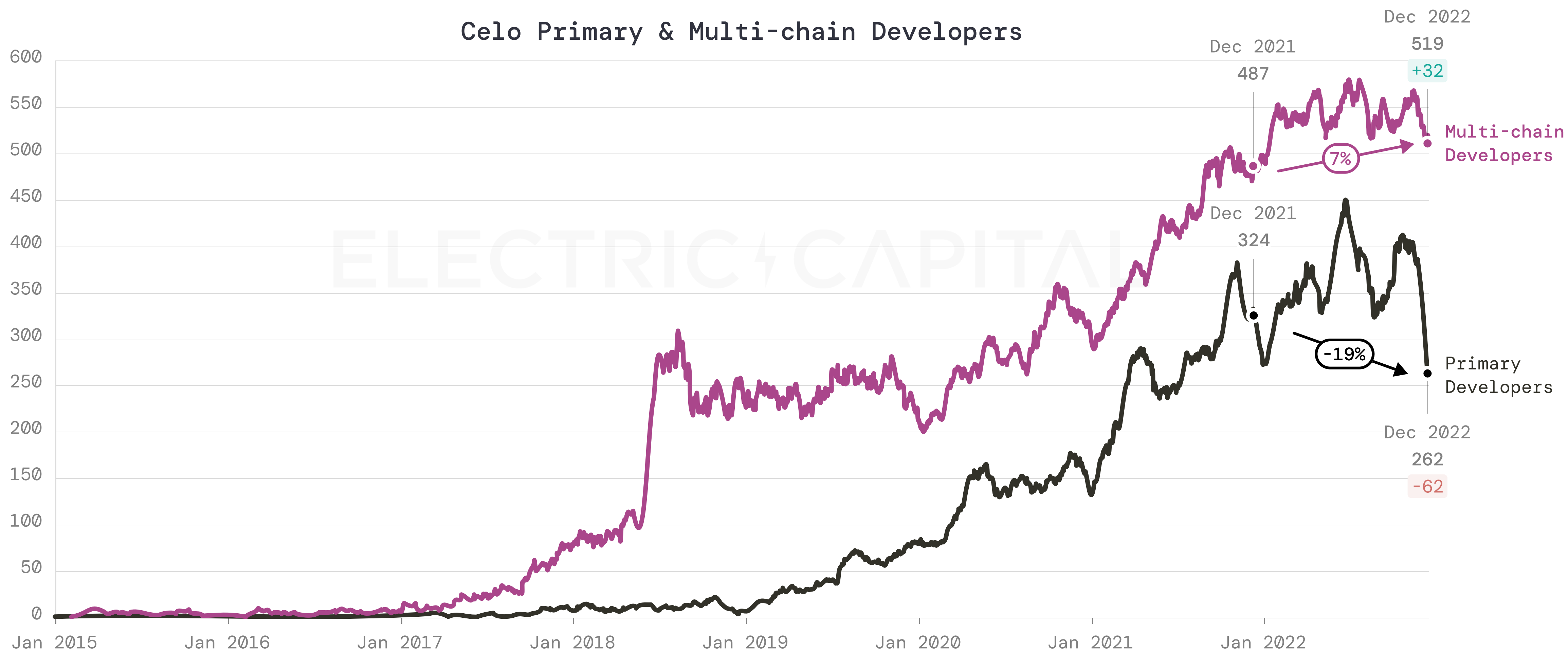


CELO LOST PRIMARY DEVELOPERS (-19%) WHILE MULTI-CHAIN DEVELOPERS BUILDING ON CELO GREW (+7%)

Celo Primary & Multi-chain Developers

ELECTRIC⚡CAPITAL

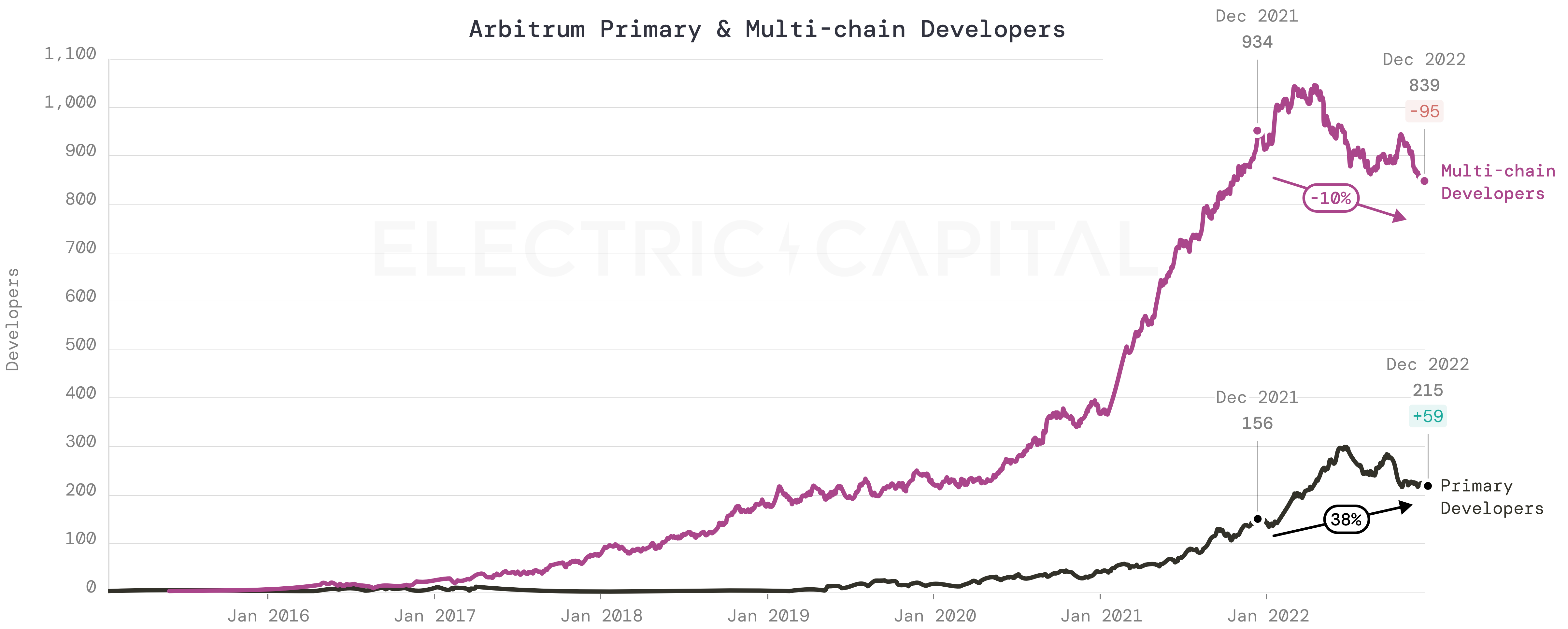
Developers



ARBITRUM HAS 4X MORE MULTI-CHAIN DEVS THAN PRIMARY DEVS; ARBITRUM GAINED PRIMARY DEVELOPERS (+38%) WHILE MULTI-CHAIN FELL (-10%)

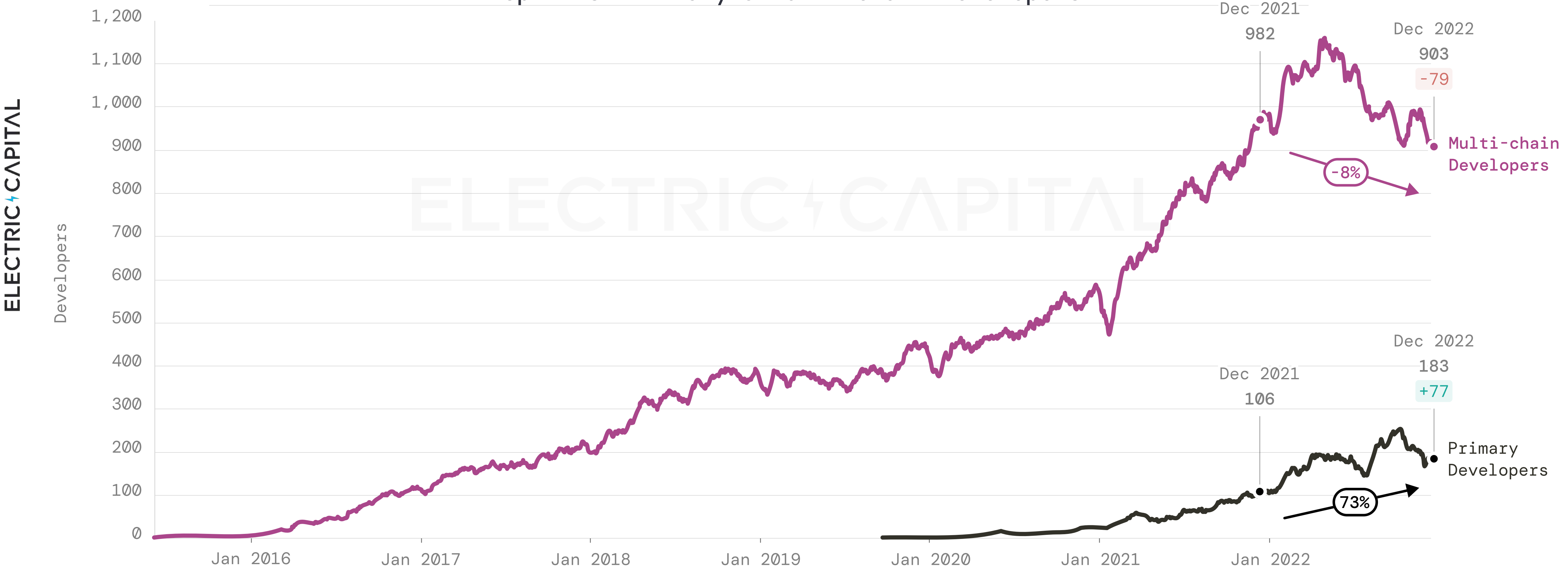
Arbitrum Primary & Multi-chain Developers

ELECTRIC CAPITAL



OPTIMISM HAS 5X MORE MULTI-CHAIN DEVELOPERS THAN PRIMARY DEVS; PRIMARY DEVELOPERS GREW (+73%) WHILE MULTI-CHAIN FELL (-8%)

Optimism Primary & Multi-chain Developers



03

CRYPTO USE CASES

WHICH TYPES OF CONTRACTS HAVE THE MOST USAGE? WE CAN LOOK AT THE TOP 10 CONTRACTS ON ETHEREUM AS A PROXY

Ethereum Top Gas Spenders 2022

Contract	Total Gas Used
OpenSea	4,334,117,632,808
Uniswap	3,919,697,333,356
Tether USD	1,405,935,751,040
Metamask Swap	609,881,691,496
USD Coin	568,398,116,132
StrongBlock	536,836,567,423
Ethereum Name Service	512,870,655,513
CoinTool: XEN Batch Minter	500,994,713,214
linch	481,029,227,108
XEN Crypto	406,036,682,483
Gem	388,856,356,641
Wrapped Ether	245,957,059,556
Coinbase	215,425,749,000
Optimism: Canonical Transaction Chain	189,456,150,997

Gas is the amount a user is willing to pay for a service on Ethereum.

ELECTRIC CAPITAL

ELECTRIC CAPITAL

DEFI & NFTS ARE THE MOST POPULAR USE CASES: DEFI & NFTS CONTRACTS ARE 7 OF THE TOP 10 CONTRACTS BY GAS USAGE

Ethereum Top Gas Spenders 2022

Contract	Total Gas Used
OpenSea	4,334,117,632,808
Uniswap	3,919,697,333,356
Tether USD	1,405,935,751,040
Metamask Swap	609,881,691,496
USD Coin	568,398,116,132
StrongBlock	536,836,567,423
Ethereum Name Service	512,870,655,513
CoinTool: XEN Batch Minter	500,994,713,214
linch	481,029,227,108
XEN Crypto	406,036,682,483
Gem	388,856,356,641
Wrapped Ether	245,957,059,556
Coinbase	215,425,749,000
Optimism: Canonical Transaction Chain	189,456,150,997

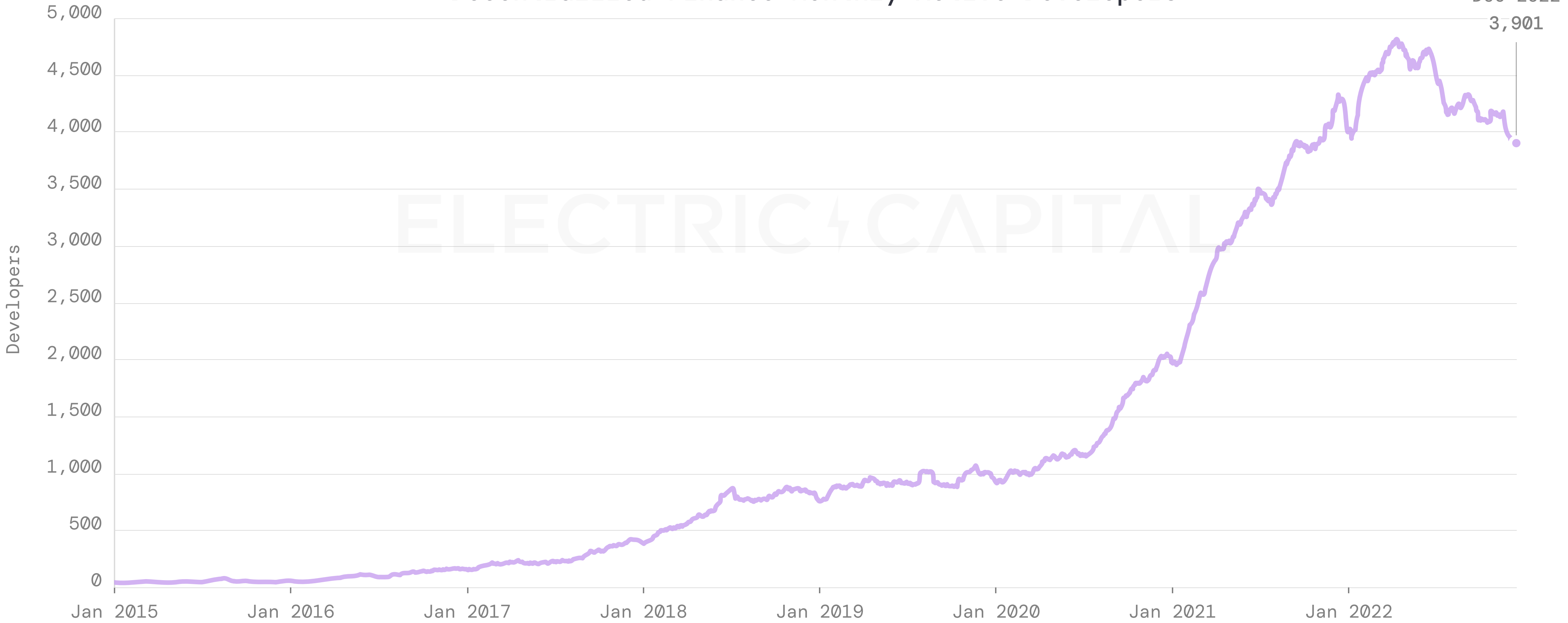


HOW IS DEFI DOING?

3,901 MONTHLY ACTIVE DEVELOPERS WORK IN DEFI ACROSS L1 AND L2 ECOSYSTEMS

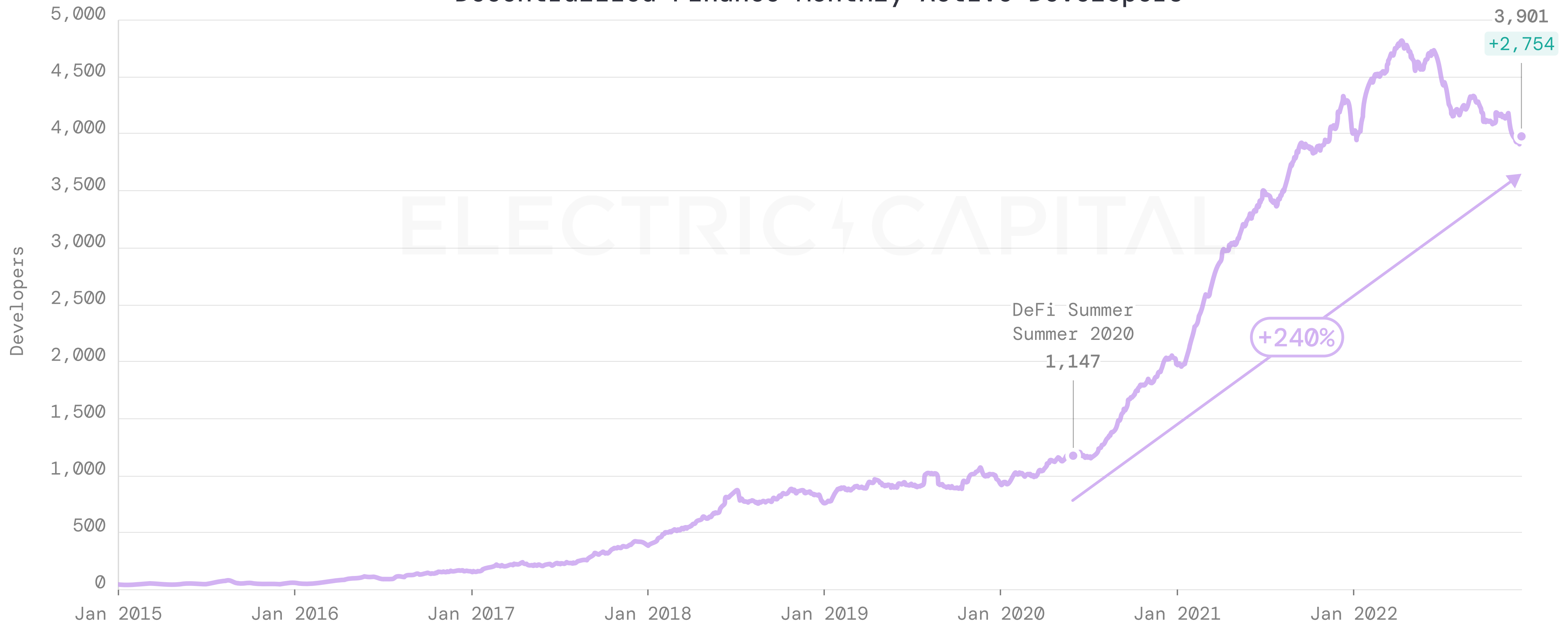
Decentralized Finance Monthly Active Developers

ELECTRIC⚡CAPITAL



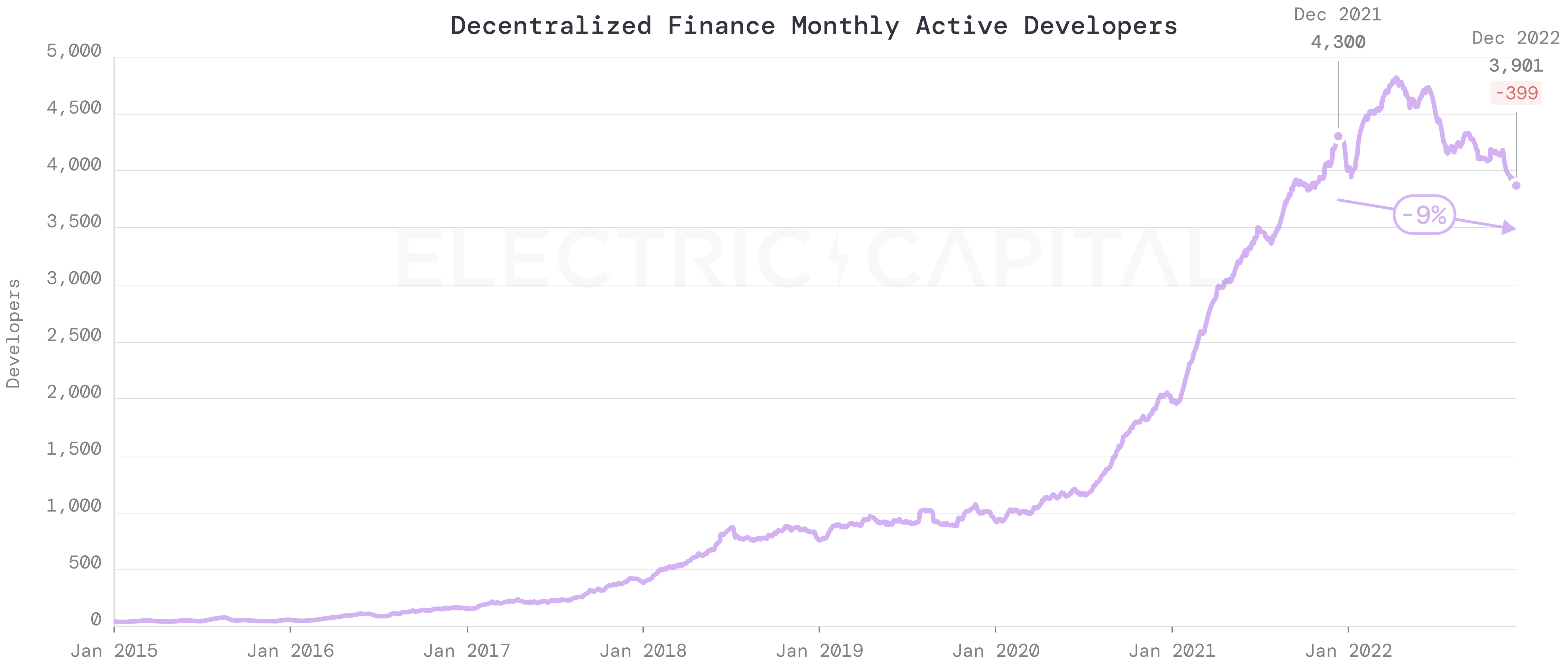
+240% MONTHLY DEVELOPERS SINCE DEFI SUMMER 2020

Decentralized Finance Monthly Active Developers



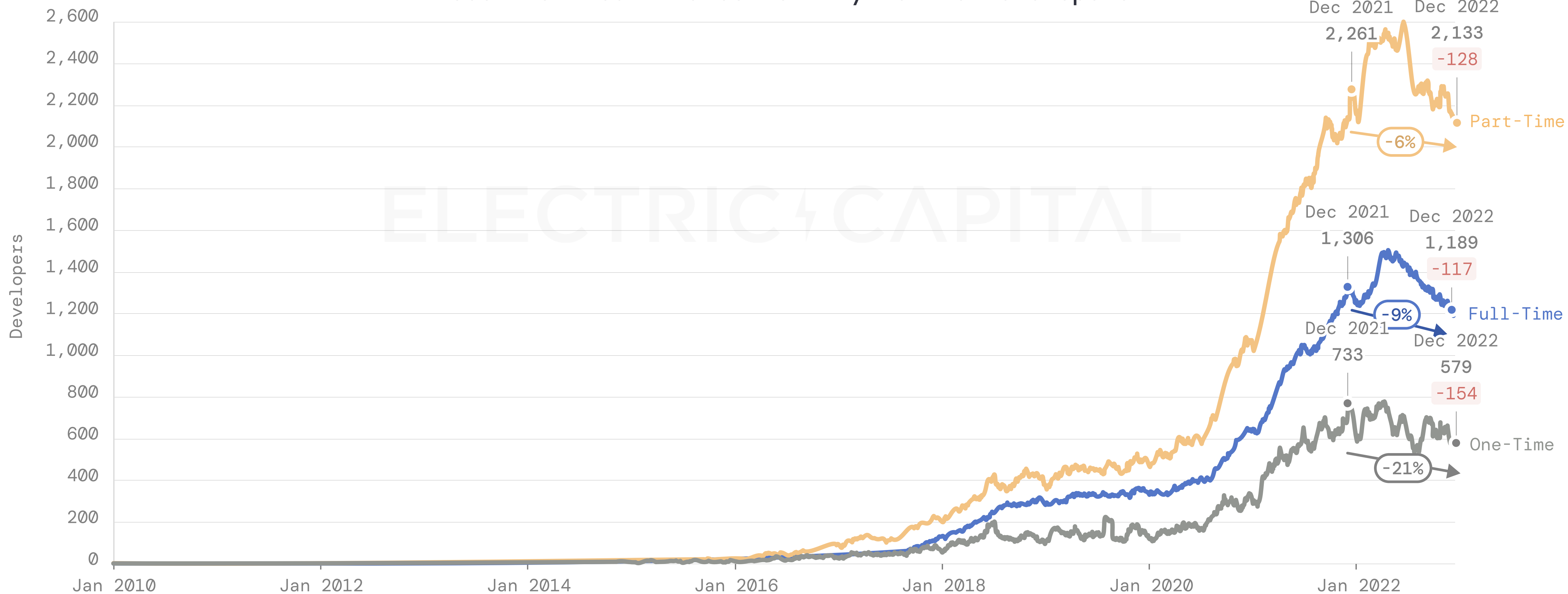
-9% DEFI MONTHLY ACTIVE DEVELOPERS FROM DECEMBER 2021 TO DECEMBER 2022

ELECTRIC⚡CAPITAL



ONE-TIME (-21%), FULL-TIME (-9%), & PART-TIME (-6%) DEVS DOWN ACROSS DEFI

Decentralized Finance Monthly Active Developers

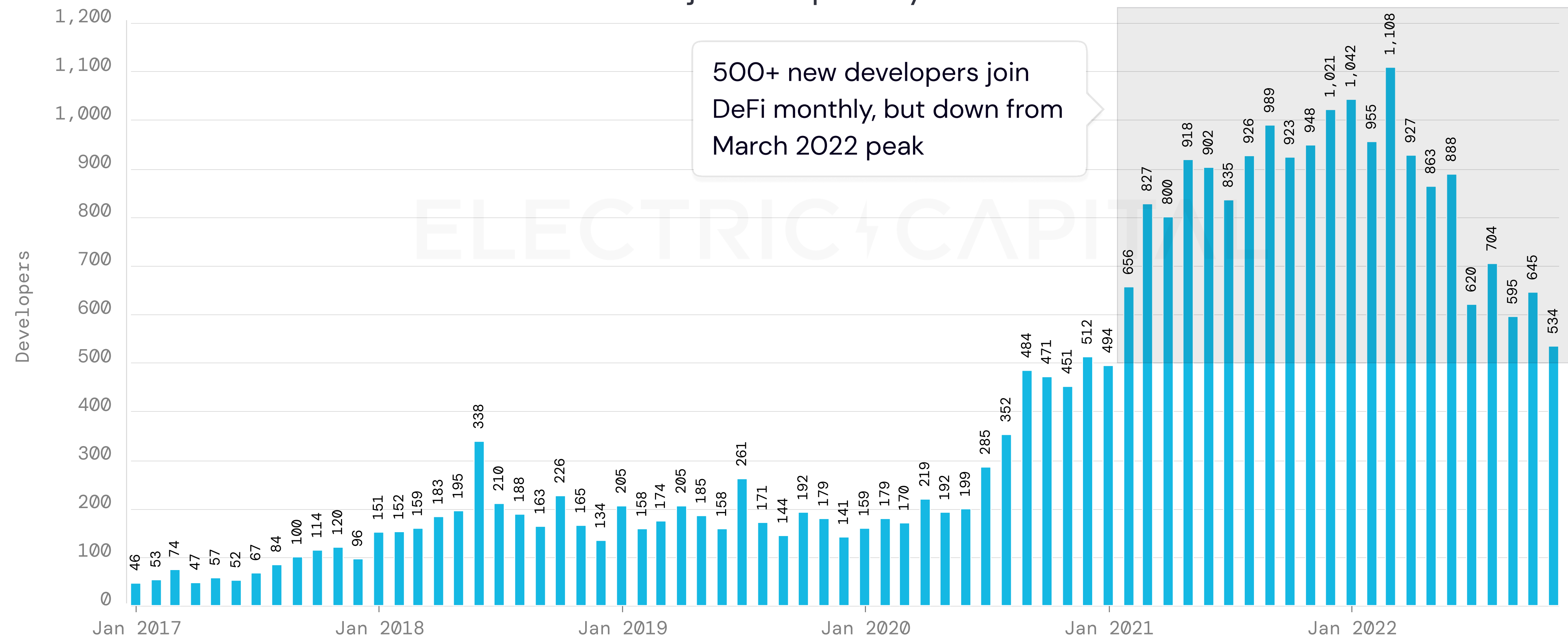


500+ NEW DEVELOPERS PER MONTH CONTINUE TO JOIN DEFI, BUT DOWN FROM PEAK

Number of Developers by Month Joined

500+ new developers join DeFi monthly, but down from March 2022 peak

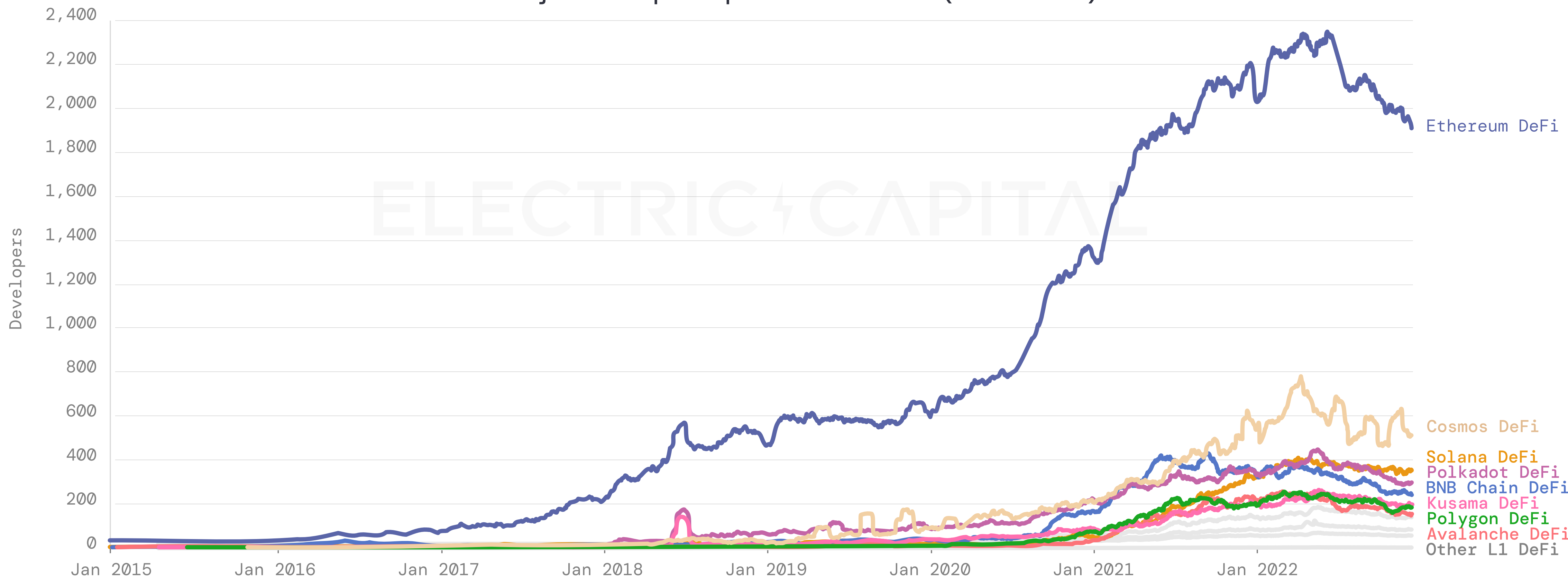
ELECTRIC⚡CAPITAL



HOW HAS DEFI GROWN ACROSS LAYER 1 CHAINS?

ETHEREUM, COSMOS, SOLANA, POLKADOT, BNB, KUSAMA, POLYGON, & AVALANCHE HAVE THE LARGEST DEFI DEVELOPER ECOSYSTEMS WITH 150+ DEFI DEVELOPERS

Number of developers per L1 in DeFi (150+ devs)



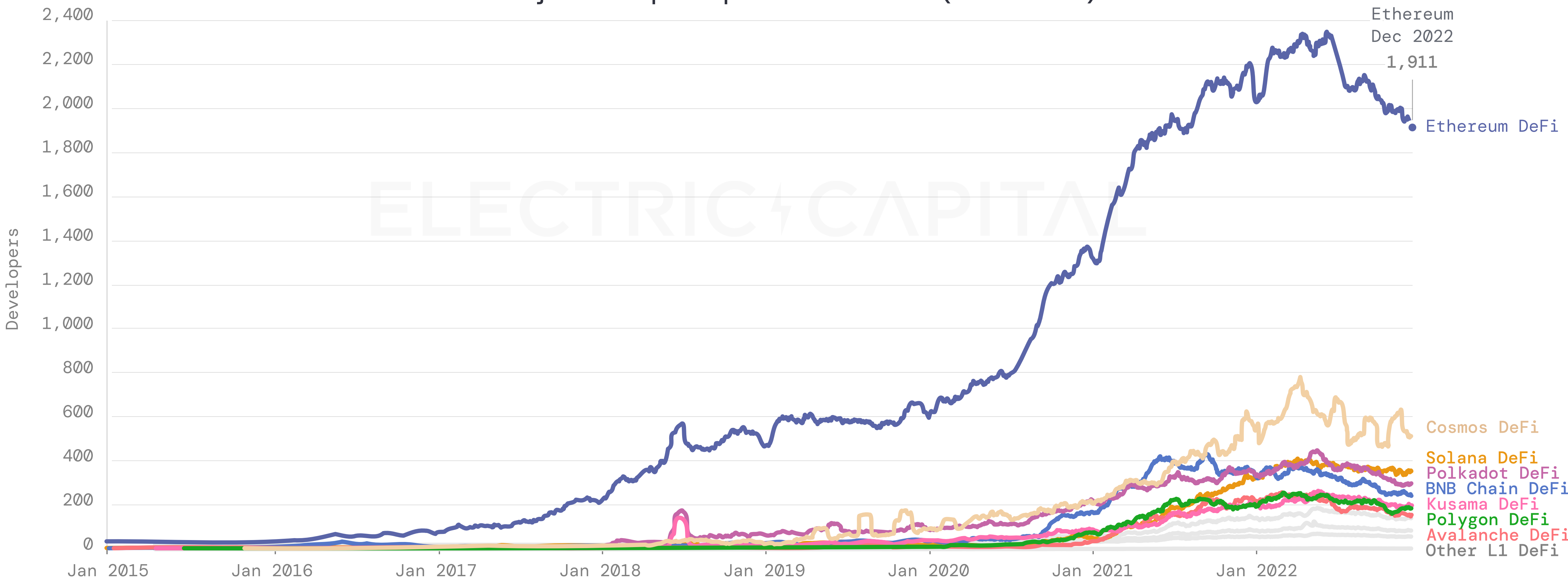
ELECTRIC⚡CAPITAL

ELECTRIC⚡CAPITAL

ETHEREUM IS THE BIGGEST DEFI ECOSYSTEM WITH 1,911 MONTHLY DEVS; COSMOS DEFI IS SECOND WITH 512; SOLANA DEFI IS THIRD WITH 348

Number of developers per L1 in DeFi (150+ devs)

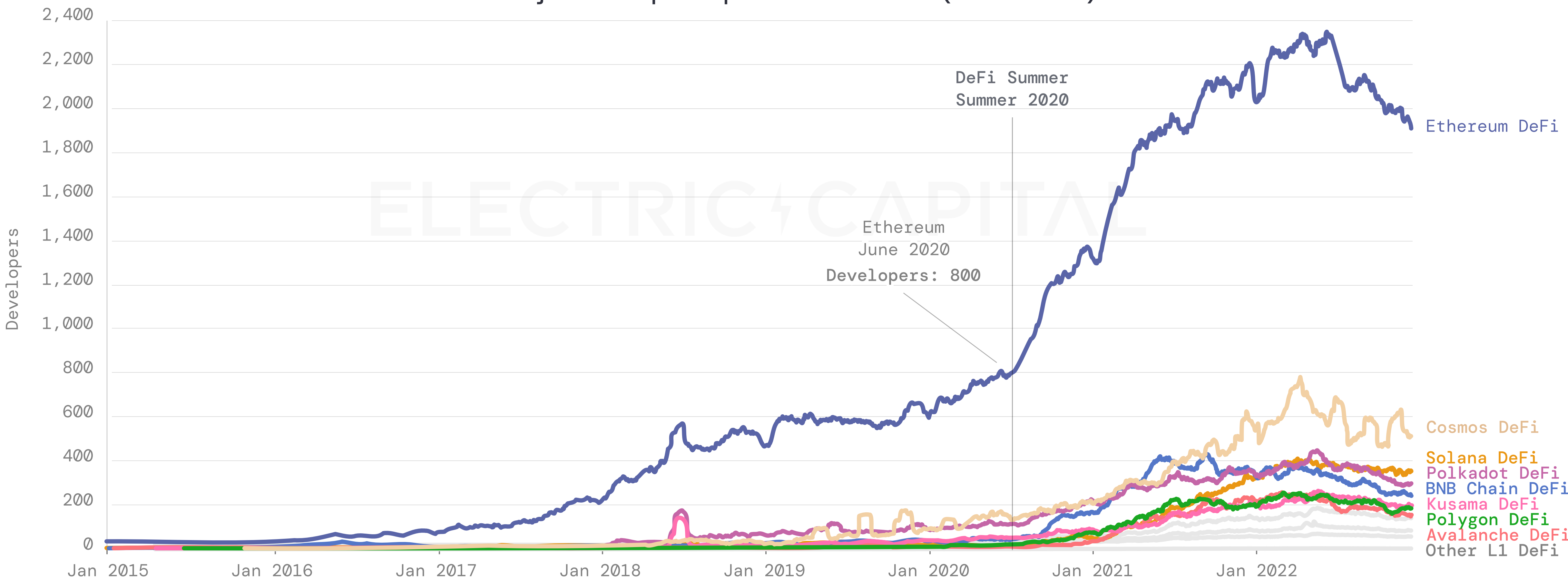
ELECTRIC⚡CAPITAL



ETHEREUM BEGAN WITH 4X MORE DEFI DEVELOPERS THAN ANY OTHER LAYER 1 ECOSYSTEM DURING DEFI SUMMER

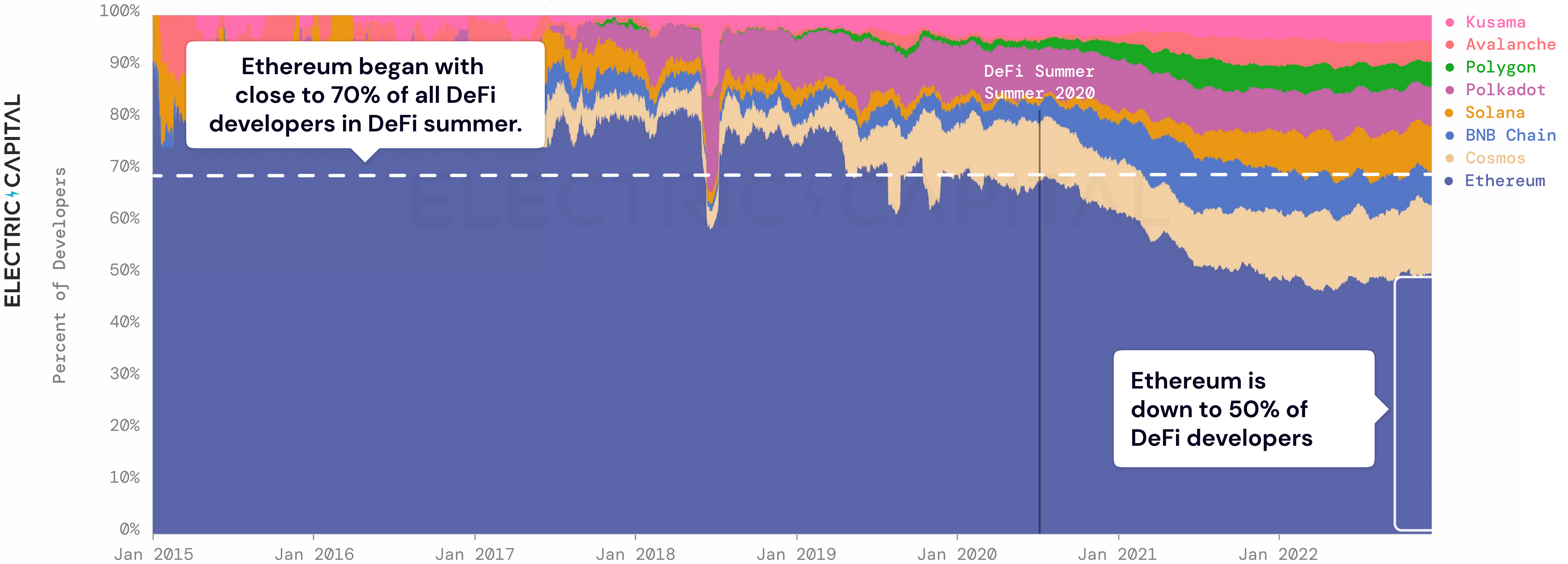
Number of developers per L1 in DeFi (150+ devs)

ELECTRIC CAPITAL



TODAY, 50% OF DEFI DEVELOPERS CONTRIBUTE TO ECOSYSTEMS OUTSIDE OF ETHEREUM, UP FROM 30% DURING DEFI SUMMER

Percentage of Developers per L1 in DeFi (150+ devs)

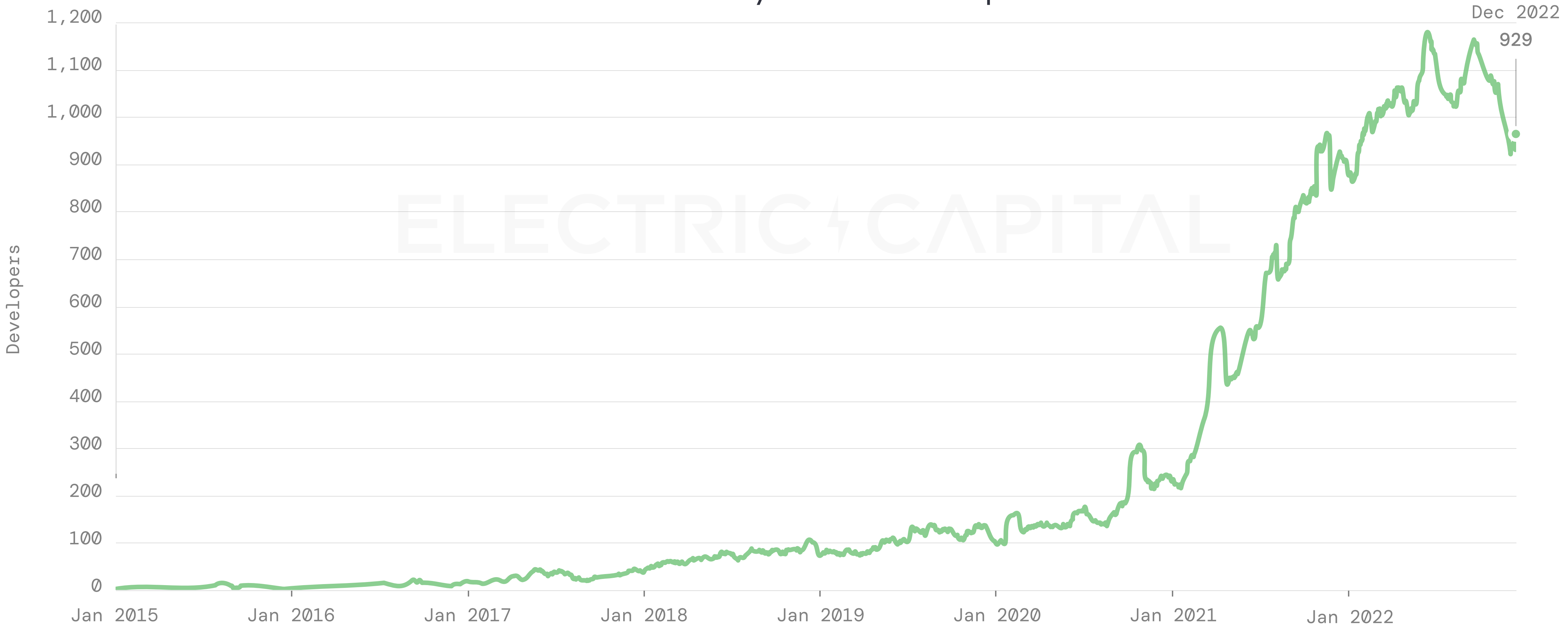


HOW MANY DEVELOPERS WORK IN NFTS?

929 MONTHLY ACTIVE OPEN-SOURCE DEVELOPERS WORK IN NFTS

NFTs Monthly Active Developers

ELECTRIC⚡CAPITAL



+299% MONTHLY NFT DEVELOPERS SINCE JAN 2021

NFTs Monthly Active Developers



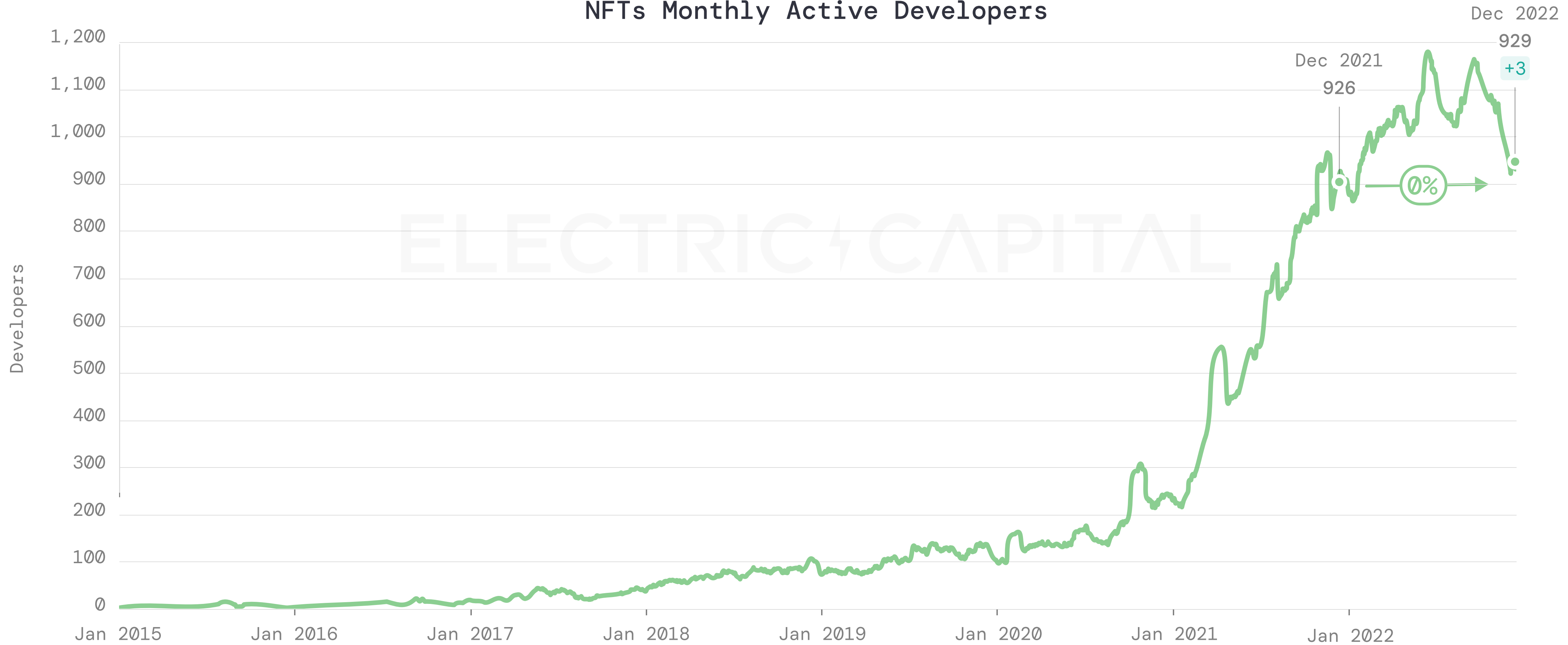
ELECTRIC⚡CAPITAL

ELECTRIC⚡CAPITAL

Developers

THE NUMBER OF NFT MONTHLY DEVELOPERS IS FLAT YOY

NFTs Monthly Active Developers



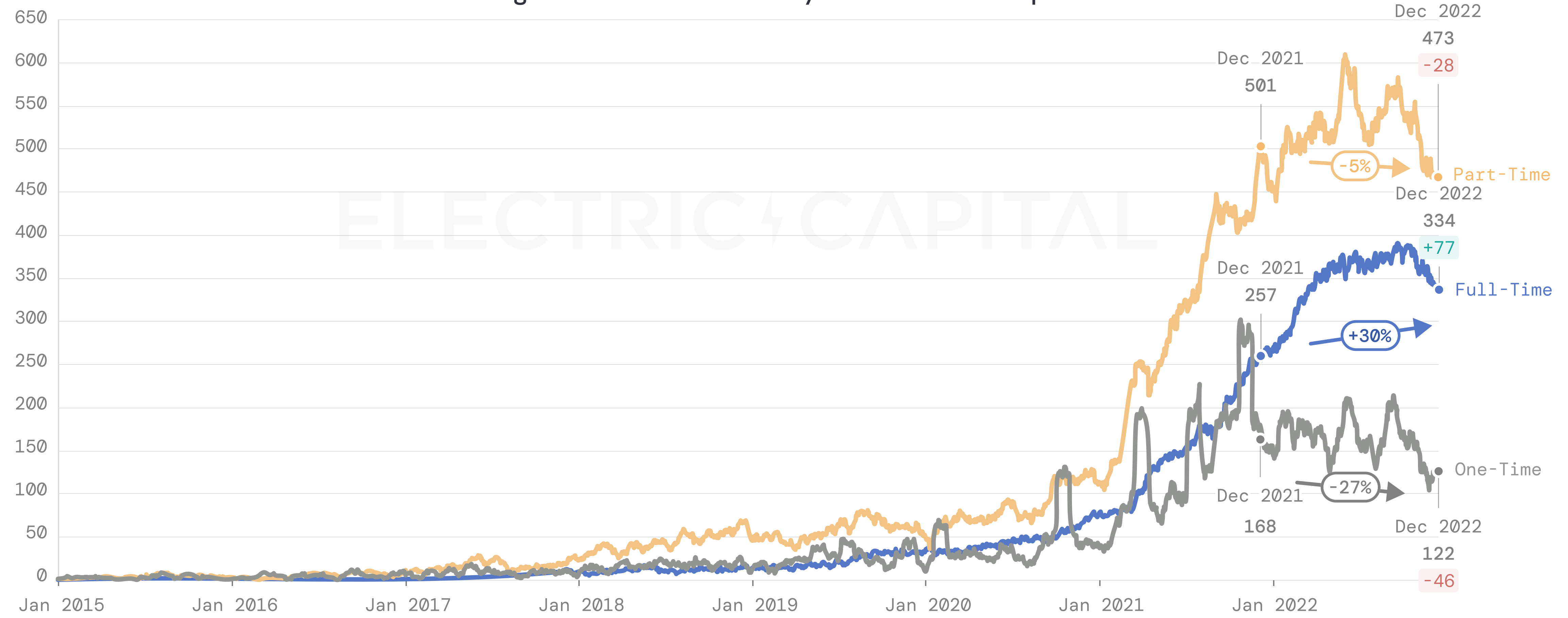
ELECTRIC⚡CAPITAL

ELECTRIC⚡CAPITAL

Developers

NFT'S YOY GROWTH COMES FROM FULL-TIME (+30%), LOSSES COME FROM ONE-TIME (-27%) AND PART-TIME (-5%) DEVELOPERS

Non-Fungible Tokens Monthly Active Developers

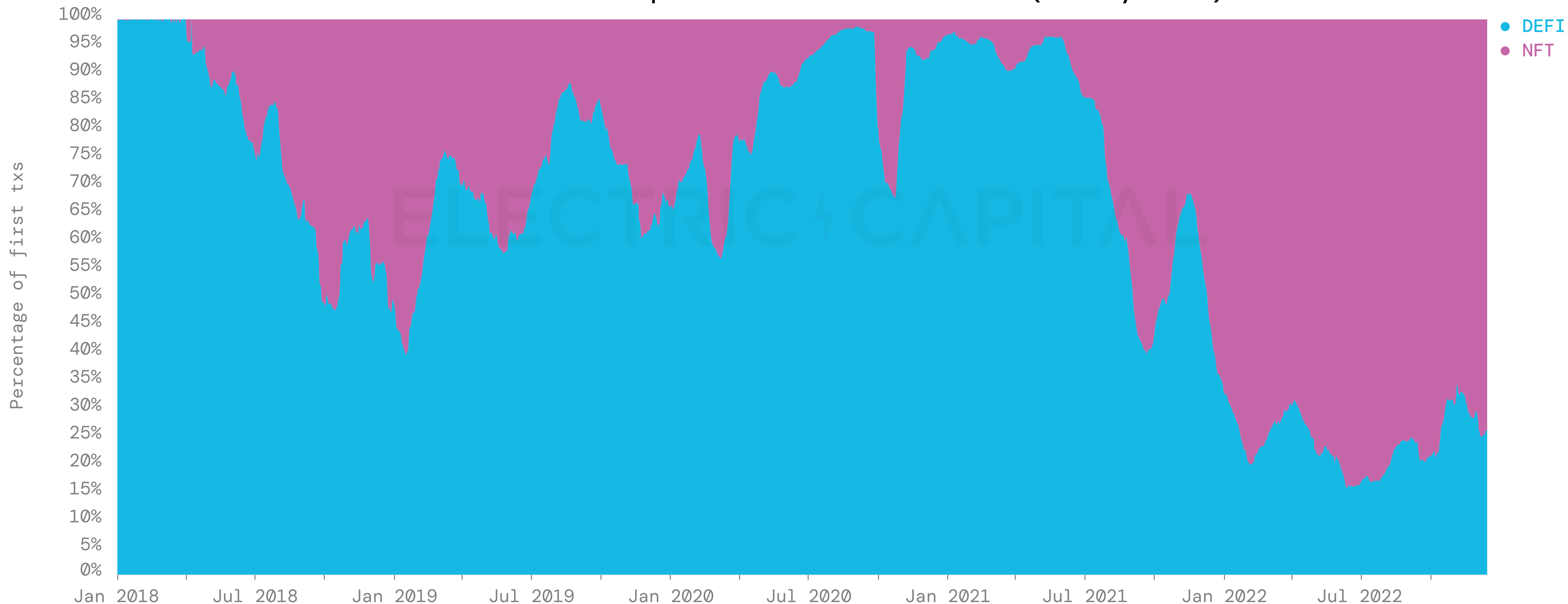


ELECTRIC CAPITAL

ELECTRIC CAPITAL

INCREASINGLY, A NEW WALLET'S FIRST ACTION IS IN NFTS: 80% WALLETS' FIRST TRANSACTION WAS RELATED TO NFTS IN 2022

First transaction per wallet - DeFi vs NFT (28-day mean)



DEVELOPER ENGAGEMENT IS NOT THE BEST LENS FOR ALL ECOSYSTEMS

NFTs, Gaming, and DAOs

Aggregate developer metrics alone may be misleading and may not be the correct leading indicator to consider for NFTs, Gaming, and DAOs.

In these use cases, a relatively small number of developers can build reusable components and the amount of smart contract code written will be small relative to community engagement. For example, a very small amount of code written by just one developer might drive a large PFP (Profile Picture) NFT community. Or in the case of games, the majority of code may be off chain and closed-source, thereby making extrapolation from on-chain and open-source data very noisy.

We believe community engagement signals are an important and complementary leading indicator for the NFT, Gaming, and DAO markets. We are working on several novel ways to gather community data and signals and will share our results as they become available.

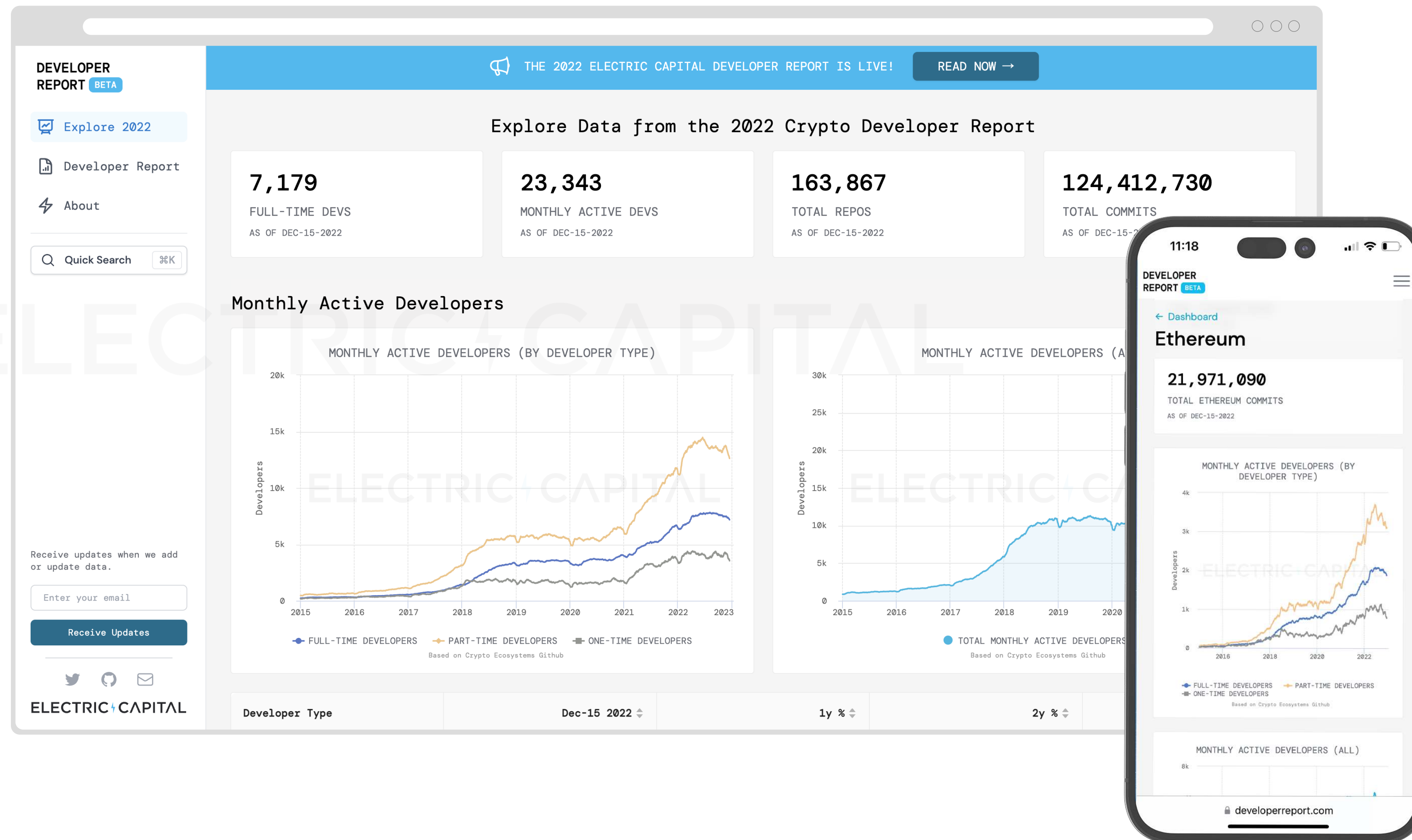
04

DEVELOPERREPORT.COM

DIVE INTO DATA: DEVELOPERREPORT.COM

We are excited to launch DeveloperReport.com to showcase the data that goes into creating our annual Developer Report. Our aim is to provide a transparent, open, data source for the community.

We will be adding more visualizations, more data, and moving towards more real-time updates at DeveloperReport.com. We will continue to publish an annual Developer Report with detailed analysis on an annual basis as well.



THANK YOU

HELP MAP THE CRYPTO ECOSYSTEM

Our ecosystem map on GitHub continues to be open so that anyone can contribute.

Submit a pull request in our Github:

github.com/electric-capital/crypto-systems

We will use this data for our reports going forward and for [DeveloperReport.com!](https://DeveloperReport.com)



THANK YOU

Adeniyi
@EmanAbio

Akriti Vij
@AkritiVij

Alexander Graebe

Alvin Kan
@alvin_kan

Andrea Muttoni
@muttonia

Anuke
@anukeganegoda

Austin Federa
@Austin_Federa

Ben White
@BenWhiteJamin

Bram Cohen
@bramcohen

Brian Henhsi
@bhenhsi

Brian McKenna
@brian_p_mckenna

Brittany L
@br_ttany

Catrina Wang

Chase Barker
@therealchaseeb

Chris Ackermann
@chrsackermann

Christian Hresko

David Sedgwick

Dan Saber
@dansabermetrics

Danielle Harris
Look Look Studio

David Feiock
@davidfeiock

Dawn Song
@dawnsongtweets

Diwaker Gupta
@diwakergupta

Eric Nakagawa
@ericnakagawa

Eric Zietlow
@EricZietlow

Evan Cheng
@EvanWeb3

Gene Hoffman
@hoffmang

Greg
@Greg_Nazario

HQ Han
@duckie_han

Illia Polosukhin
@ilblackdragon

Jack Zampolin
@jackzampolin

Jacob Creech
@jacobvcreech

Jelena
@jelenaaa_____

Jesse Wiley
@mrjwiley

Jim Yang
@proofstake

Jonathan Victor
@jnthnvctr

Joey Bender
@josephbender

Jordan Kail

Josh Ford

Karim
@karimpb

Kenny Rogers
@KenTheRogers

Kori
@koritual

Kuleen
@knimkar

Kyle L
@kylelangham

Lina Lu

Lomesh D
@lomeshdutta

Loren Cookson

Lorny P
@lornyelle

Maksym Zavershynskyi
@mzavershynskyi

Marko Baricevic
@markObaricevic

Marek
@marek_

Mefrem

Moritz
@cryptoschindler

Neil H
@neilhar_

Nikhil Ranjan
@niklabh

Oliver Bett

Ollie Corbisiero

Pavel Kudinov

Pavla
@daemia10

Raphaël Guilleminot
@raphelectric

Raj Gokal
@rajgokal

Rene
@RegenRene

Rodrigo Mendoza
@rOdms

Roham Gharegozlou
@roham

Rumeel Hassain
@RumeelHussain

Sam Blackshear
@blackdOg

Sargonas
@sargonas

Santi Balaguer
@santibalaguer

Stani
@StaniKulechov

Stef Sprinz

Stephanie Marin

Steve Lee
@moneyball

Sunny Aggarwal
@sunnya97

Urban
@uosvald

Vik Kalghatgi
@vik_kalghatgi

Vlad Grichina
@vgrichina

Weilei Yu
@WeileiY

Will Corcoran
@corcoranwill

Will Cove
@WillCove

Xochitl Cazador
@xochitlcazador

Yiwei H.

Zaki Manian
@zmanian

THANK YOU GITHUB CONTRIBUTORS

2075
@marcobahn

Oxlyd
@Oxlyd

Oxneil

Oxrmvdao

advanderveer

aguillon

Akibalogh

algodevstats
@algodevstats

AnshuJalan
@aj_jalan

arrudagates

baabaabet001

BadgerAnn

bmgentile
@bmgentile

bogachevant
@bogachev_anton

BowTiedDeployer
@BowTiedDeployer

btsponny

CassFairiesClub
@CassFairieClub

catskillnft
@CatskillNFT

christianschmitz

clarus
@guillaumeclaret

ctrlaltdel

dantrevino
@dantrevino

darkverbit

dchoi27

dedushky

denver-s

diwakergupta
@diwakergupta

doranoda

dvkam

edisonOxyz
@edisonOxyz

eherrerosj
@eherrerosj

elasticLove1

elliottkennedy

Eltairovy
@Elena_Von_Tsss

EnergyTrade
@_EnergyTrade_

ericnakagawa
@ericnakagawa

evilboyajay
@evilboyajay

falkonprods
@drewfalkman

farmerdiamonds

fhb191309

fiftyeightandeight

forgetso

gabrieljaegerde

germanD

gfox1
@graeme_fox

gregnazario
@greg_nazario

hieudd
@hieudaosw

hskang9
@hskang0525

hstove
@heyanky

imotai
@TaizeWang

ItasMattWebb

j-vp
@j00324

jalehman
@jlehman_

jdbender66

jonathanpdunne
@JonPDunne

jordan-tezos

JosephKnecht-lab

Kazik435

kimsk
@kimsk

KittiBorissza

letmejustputthishere

lourkeur lourkeur

lucasdcf
@lucasdcf

lurpis

m-kus

mando222

markgenuine

MarvinQuevedo

mistertoucan

mshankarrao

mutobui stefan_muto

muttoni
@muttonia

nathanduft44

neosavvy
@adamparrish

nicolasochem
@nicolasochem

nikhildfinity

nilscodes
@NilsCodes

notEduardo

nud3l
@dominikO_

olliecorbisiero

owocki

paradigma-cl
@CheckParadigma

pascuin

peopledrivemecrazy
@shrjji

philippem

PoorMansChiaFarm

pranaydotparity

Primate411

RaekwonIII
@RaekwonIII

richardyu65

RichAyotte
@RichAyotte

robert-zaremba

RomarQ
@RodrigoQuelhas

rube-de

ryancwalsh

schimih

scrutinously

sergiimk

shaelilwang

shapeman
@shapeman2004

sjriddle
@SamuelJRiddle

SlowestTimelord
@SlowestTimelord

snow-farmer
@yieldyak_

SnowPrimate
@OxPrimata

spazcoin

StephenFluin
@stephenfluin

SUGURUSEO

sunya97

SwiftAdviser
@SwiftAdviser

tezms

tezos-stuff

themacexpert

thenic95

trgarrett

tudorhedged

upsorber

waterrecreation

wileyj

wischli
@WilliamFreude

wyn
@karoshibee

xcolwell
@xcolwell

xrdavies
@xrdavies

XTZNews
@XTZNews

yyolk
@yyolk

zakhikhan

zamrokk
@benji_fuentes

05

APPENDIX

COMMIT COUNTING METHODOLOGY: NOT ALL CODE COMMITS ARE CREATED EQUAL

Forks

Only new code counts towards developer activity. We omit code and developer activity from merging changes from the upstream codebase.

Fingerprinting

Fingerprinting is a technique used to identify commits originating from upstream projects. We look at the files and lines changed, the commit message, committer, author, and associated dates. This eliminates copy/pasted code from counting towards an ecosystem.

Commits from Integrating Open Source Libraries

Integrating common libraries does not count toward code activity.

Branches

We look at commits from all branches (master/development, etc.) and tags. We look beyond Github's default view, which can be incomplete.

Limitations

We only look at open-source repositories. There are many repositories that are not yet open-source. However, we are planning to enrich the open-source code data with deployed on-chain smart contract code.

HOW ARE DEVELOPERS COUNTED?

Developers

We count original code authors as developers. This means that a developer who merges a pull request is not an active developer on the project, but the original authors of the commits are.

Full-Time Contributors

Contributed code 10+ days out of a month

Part-Time Contributors

Contributed code fewer than 10 days out of a month

One-Time Contributors

Contributed code once in a rolling 3-month window

Monthly Developer

We count commits during the next 28 days of the commit happening to generate more stability in the data

Top-200 category

Any ecosystem that has been in the Top 200 rank by network valuation for at least 90 days in the corresponding year

DISCLAIMER & DISCLOSURE

This Content is for Informational Purposes Only.

Any content included in this report is informational only and not an offer, solicitation, or recommendation to buy or sell securities or pursue any particular investment strategy, and does not constitute the provision of investment advice.

Electric Capital Partners, LLC (together with its affiliates, “Electric Capital”) does not provide advice of any kind through this report, its website, or social media posts. Information in this report or any posts may not be used or relied upon in evaluating the merits of any investment.

You should consult your own advisers as to business, financial, tax, legal, or other related matters concerning any investment.

Certain information has been obtained from third-party sources, including from portfolio companies of funds managed by Electric Capital. Content is as of the date posted and subject to change without notice.

Electric Capital makes no representations about the enduring accuracy of this information, or its appropriateness for a given scenario.

We may hold tokens in some of the ecosystems mentioned in this report.

Electric Capital may have previously held, currently holds, or will in the future hold token or equity interests in one or more of the ecosystems or projects mentioned in this report.

A non-exhaustive list of investments made by funds managed by Electric Capital is [available here](#). Excluded from this list are investments (and certain publicly traded cryptocurrencies or other digital assets) for which the issuer has not provided permission for Electric Capital to disclose publicly. Electric Capital does not short tokens.

For a list of past and present investments, [please visit this link](#).