

DEVELOPER REPORT

January - October 2020

THE DEVELOPER REPORT IS BUILT ON PROPRIETARY DATA FROM ELECTRIC CAPITAL

[Electric Capital](#) is a venture firm that invests in cryptocurrencies & blockchain based businesses.

We compile code, profile nodes, analyze blockchains and open source projects, help secure cryptonetworks, and write software to help the crypto industry understand developer adoption across ecosystems.

Twitter: [@ElectricCapital](#)



AUTHOR

Maria Shen

Twitter: [@MariaShen](#)



DATA PIPELINE

Curtis Spencer

Twitter: [@jubos](#)



DATA PIPELINE

Ken Deeter

Twitter: [@puntium](#)



CONTRIBUTOR

Avichal Garg

Twitter: [@avichal](#)

WHY ANALYZE DEVELOPER ACTIVITY?

1. Crypto networks are **new open platforms** on which new applications will be built.
2. An **early signal of adoption** on an emerging platform is **engagement from developers**. Developers build the applications that deliver value to end users and customers, which attracts more developers.
3. The crypto stack is uniquely **open source**, allowing us to analyze and understand developer engagement in an unprecedented way.

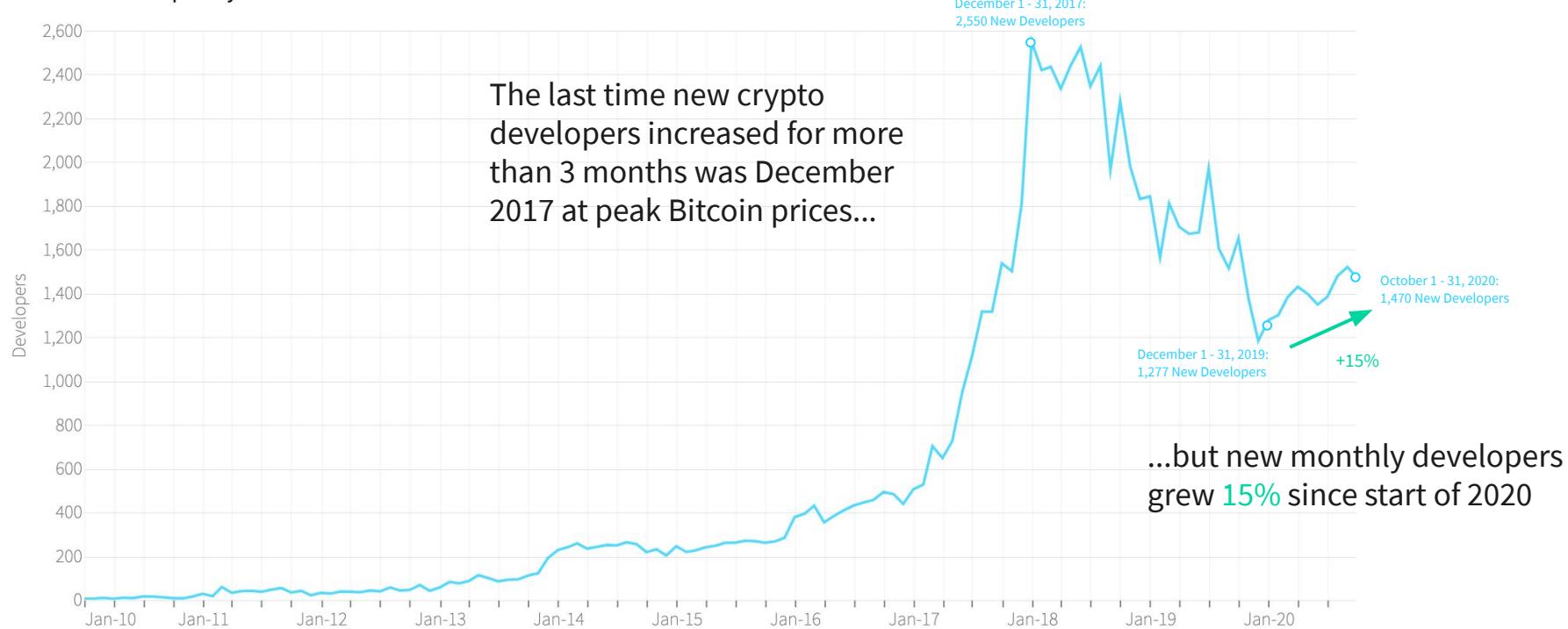
EXECUTIVE SUMMARY

1. **The number of new crypto developers is growing for the first time since 2017**
 - a. New monthly crypto developers grew **15%** in 2020, increasing for the first time since 2017
 - b. **80%+** of all active developers today came in the last two years
2. **There is a flight to quality: high quality ecosystems are growing while others are shrinking**
 - a. Monthly active crypto developers have stayed flat even as new developers joined due to developer loss outside of the Top 200 ecosystems by network value
 - b. The number of developers outside of the Top 200 decreased by **30%** from December 2018
3. **Developer activity is particularly strong across Bitcoin, Ethereum, some Layer 1s, and Decentralized Finance**
 - a. Bitcoin ecosystem has **70%+** more developers than it did 3 years ago
 - b. **300+ new developers per month** commit to the Ethereum ecosystem
 - c. **67%** increase in monthly active developers in Decentralized Finance since January 2020

OVERVIEW

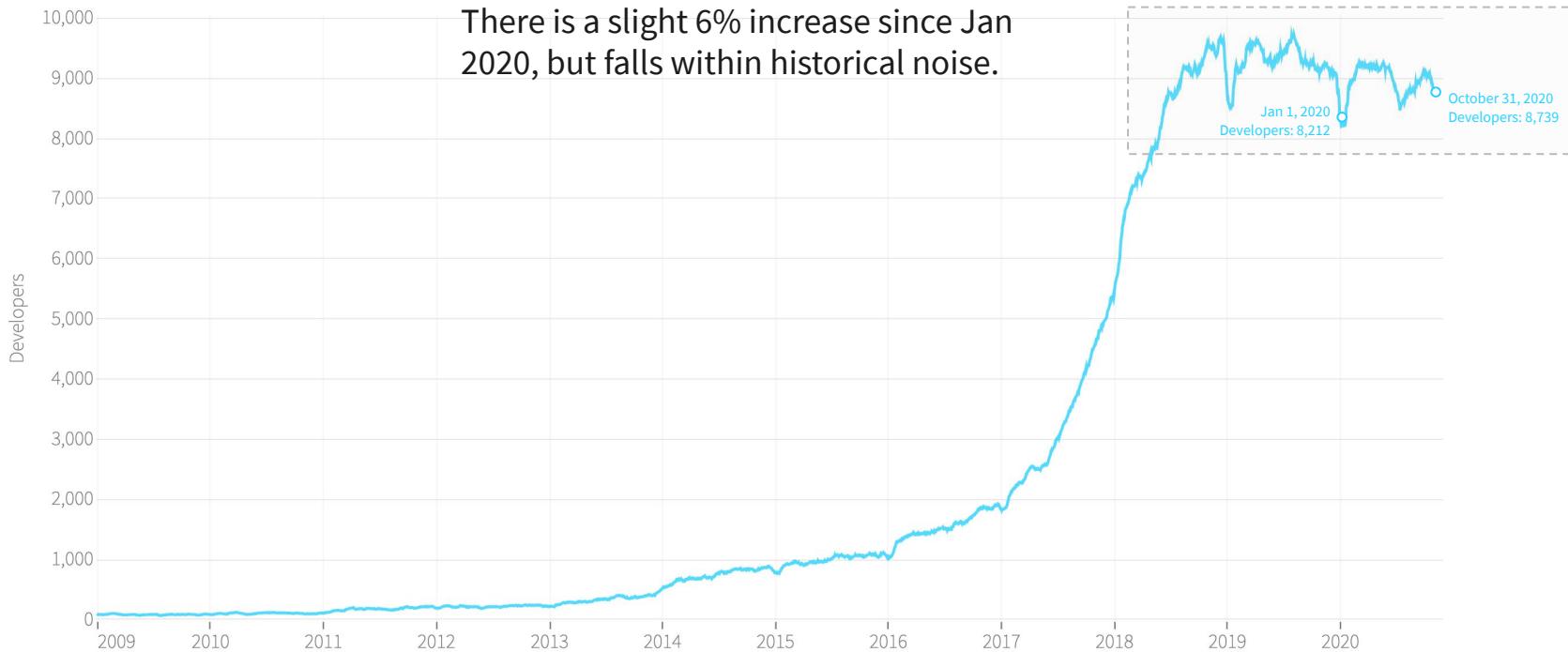
THE NUMBER OF NEW CRYPTO DEVELOPERS IS GROWING FOR THE FIRST TIME SINCE 2017

Number of Developers by Month Joined



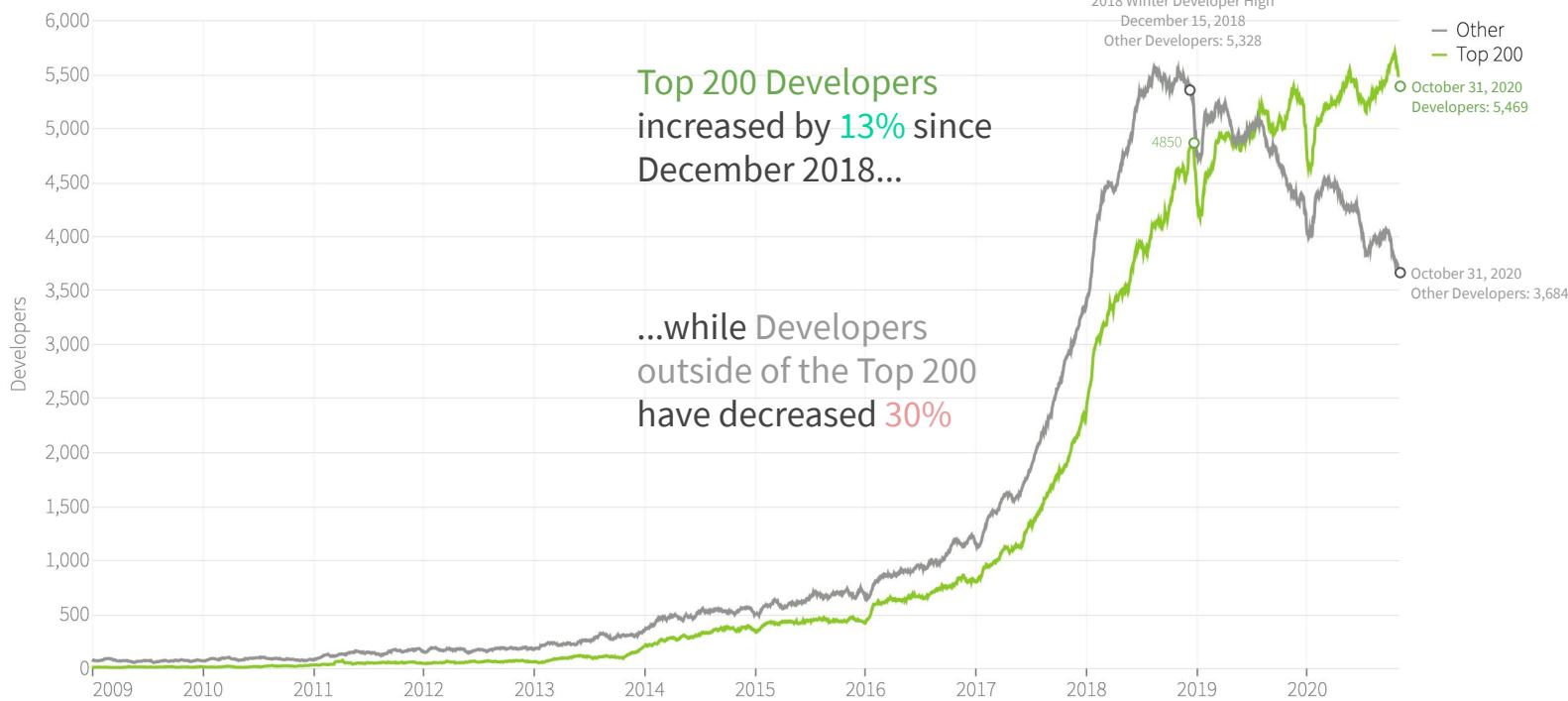
AND MONTHLY ACTIVE DEVELOPERS SEEM TO BE FLAT/SLIGHTLY UP IN 2020...

All Crypto Monthly Active Developers



...BECAUSE DEVELOPERS ARE CONSOLIDATING INTO HIGH QUALITY ECOSYSTEMS IN THE TOP 200 BY NETWORK VALUE

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



THERE ARE AREAS OF STRONG DEVELOPER GROWTH...

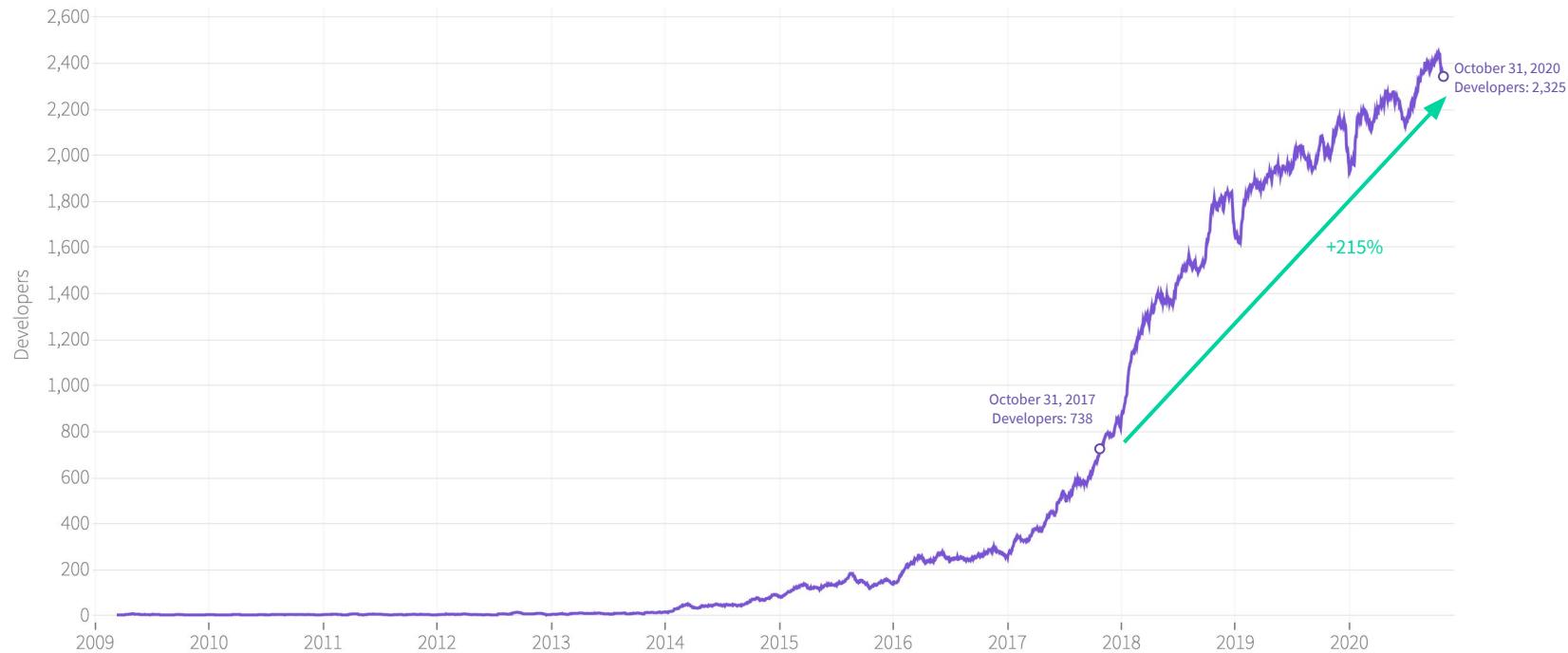
BITCOIN MONTHLY ACTIVE DEVELOPERS HAVE GROWN 70%+ IN 3 YEARS

Bitcoin Monthly Active Developers



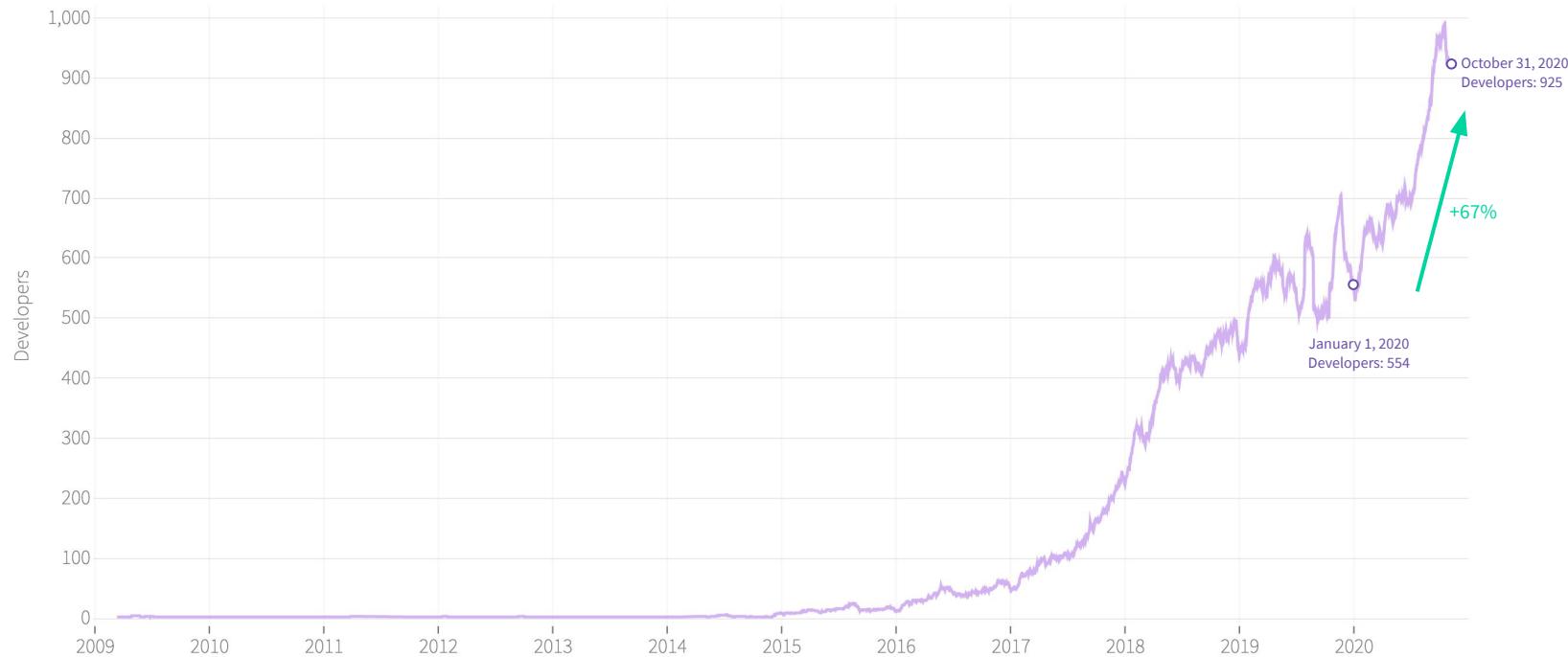
ETHEREUM MONTHLY ACTIVE DEVELOPERS HAVE GROWN 215%+ IN 3 YEARS

Ethereum Monthly Active Developers



DECENTRALIZED FINANCE DEVELOPERS INCREASED BY 67% SINCE JANUARY 2020

Decentralized Finance Monthly Active Developers



WHO LEFT CRYPTO, WHO REMAINS, AND WHO JOINED?

Let's segment by:

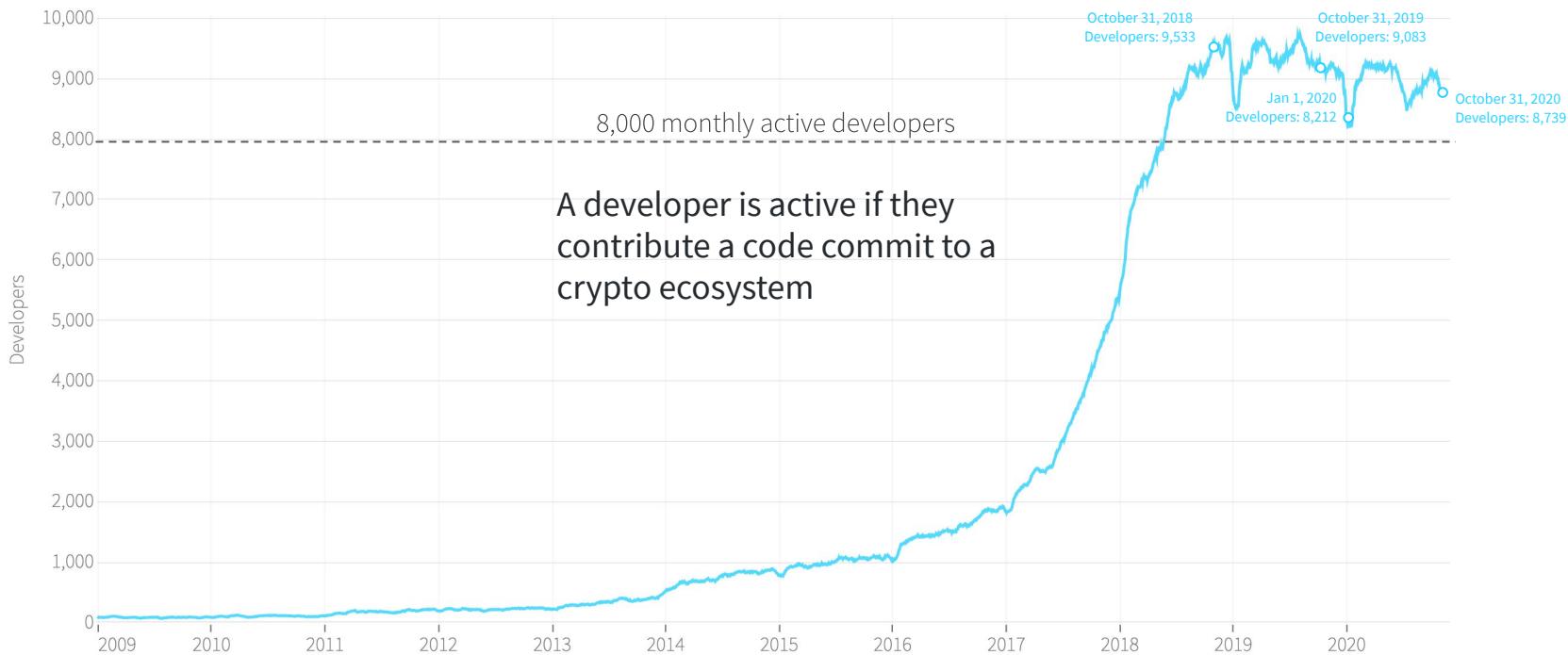
1.	Developer Types	
a.	Frequency of Contribution.....	14
b.	Start Date.....	20
2.	Ecosystem Types	
a.	Size of Ecosystem.....	29
b.	Top 200 Ecosystems by Network Value.....	60
c.	Layer 1 Ecosystems.....	70
d.	Decentralized Finance.....	104

DEVELOPERS
BY FREQUENCY OF CONTRIBUTION

LOOKING ACROSS ALL CRYPTO DEVELOPERS...

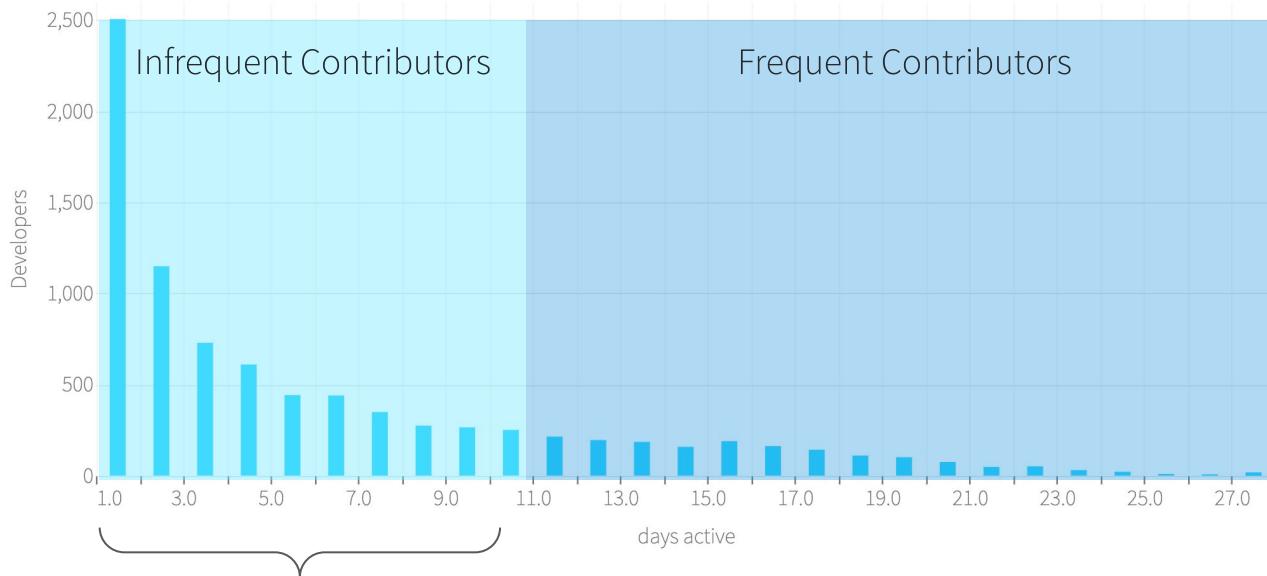
THERE ARE 8,000+ MONTHLY ACTIVE DEVELOPERS IN CRYPTO SINCE EARLY 2018

All Crypto Monthly Active Developers



MOST DEVELOPERS CONTRIBUTE FEWER THAN 10 DAYS IN 1 MONTH

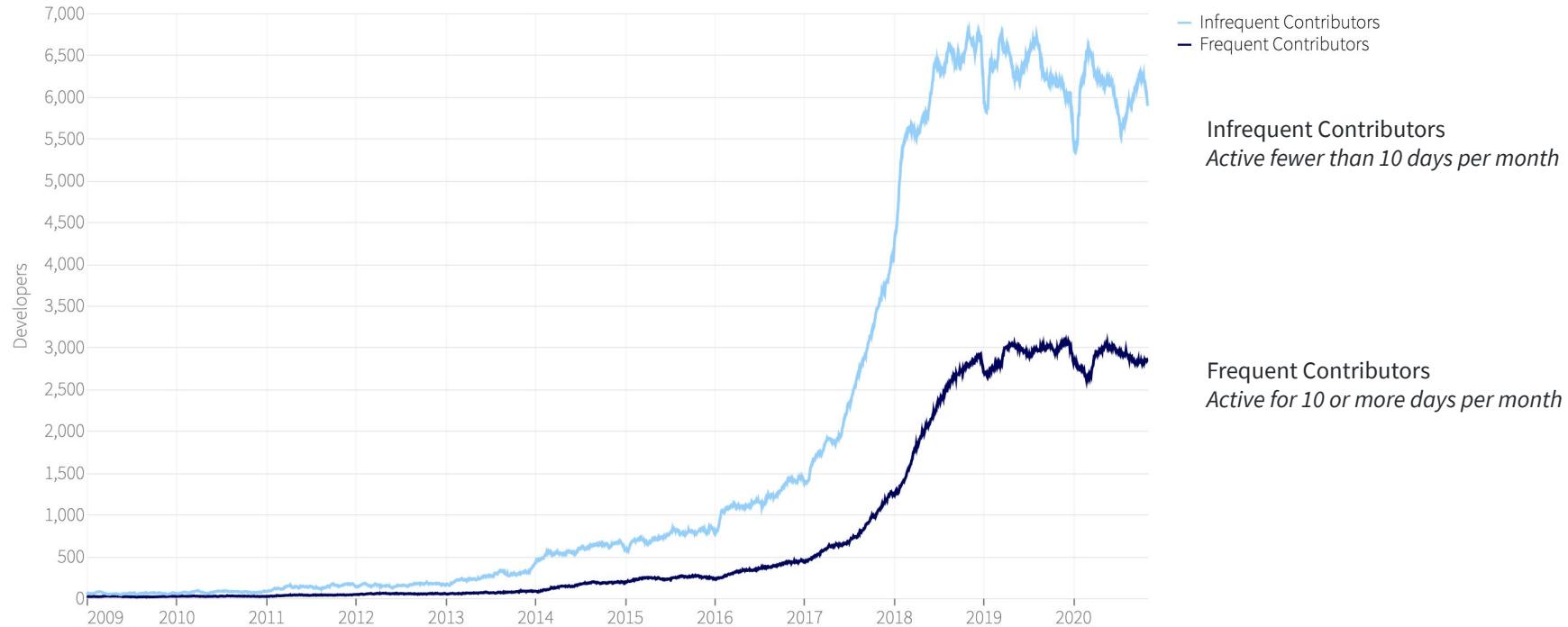
All Crypto Developers by Active Days Histogram



75% of developers contributed fewer than 10 days in October 2020

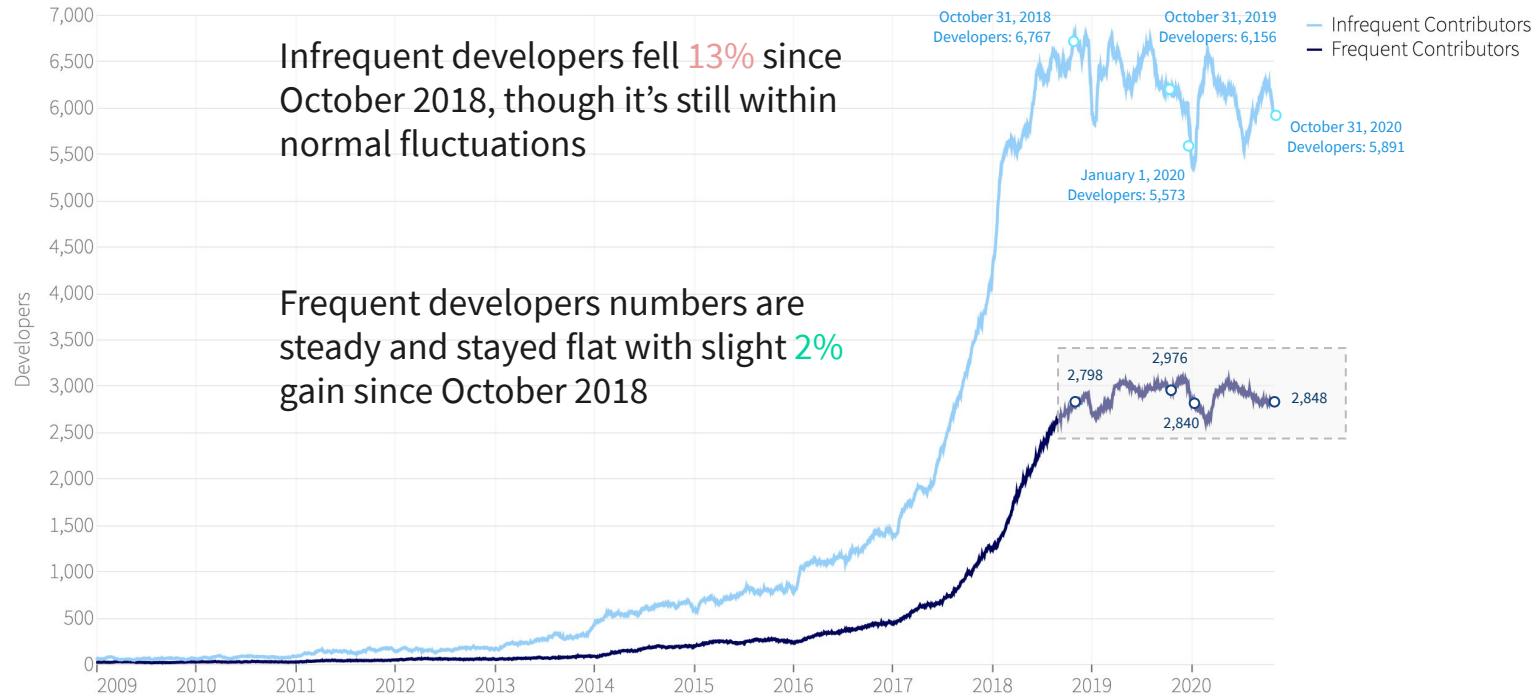
WE CAN CATEGORIZE DEVELOPERS BASED ON FREQUENCY OF CONTRIBUTION

All Crypto Monthly Active Developers



YEAR OVER YEAR, INFREQUENT CONTRIBUTORS DECREASED BY 13% WHILE FREQUENT CONTRIBUTORS STAYED RELATIVELY FLAT

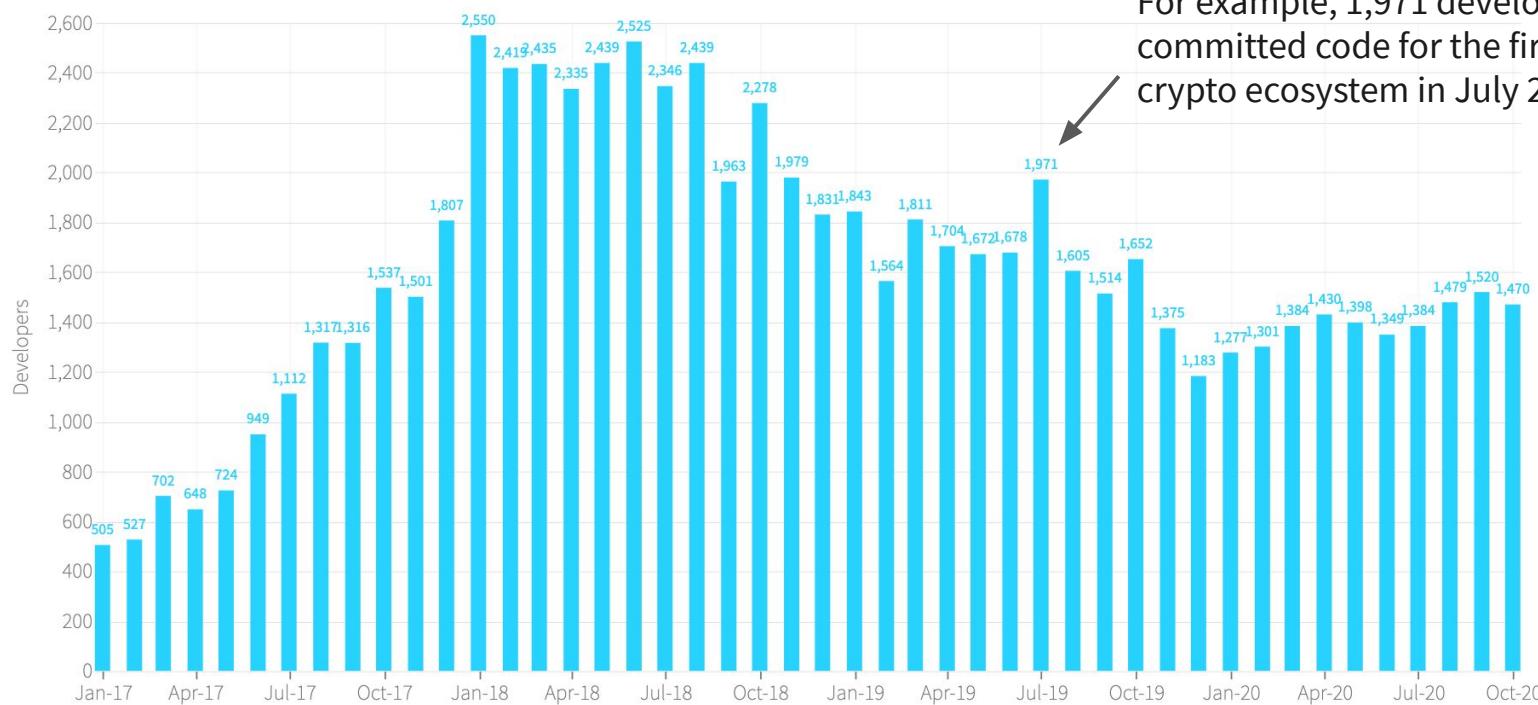
All Crypto Monthly Active Developers



DEVELOPERS
BY START DATE

WE FIND EACH DEVELOPER'S FIRST COMMIT DATE TO PINPOINT THEIR START DATE

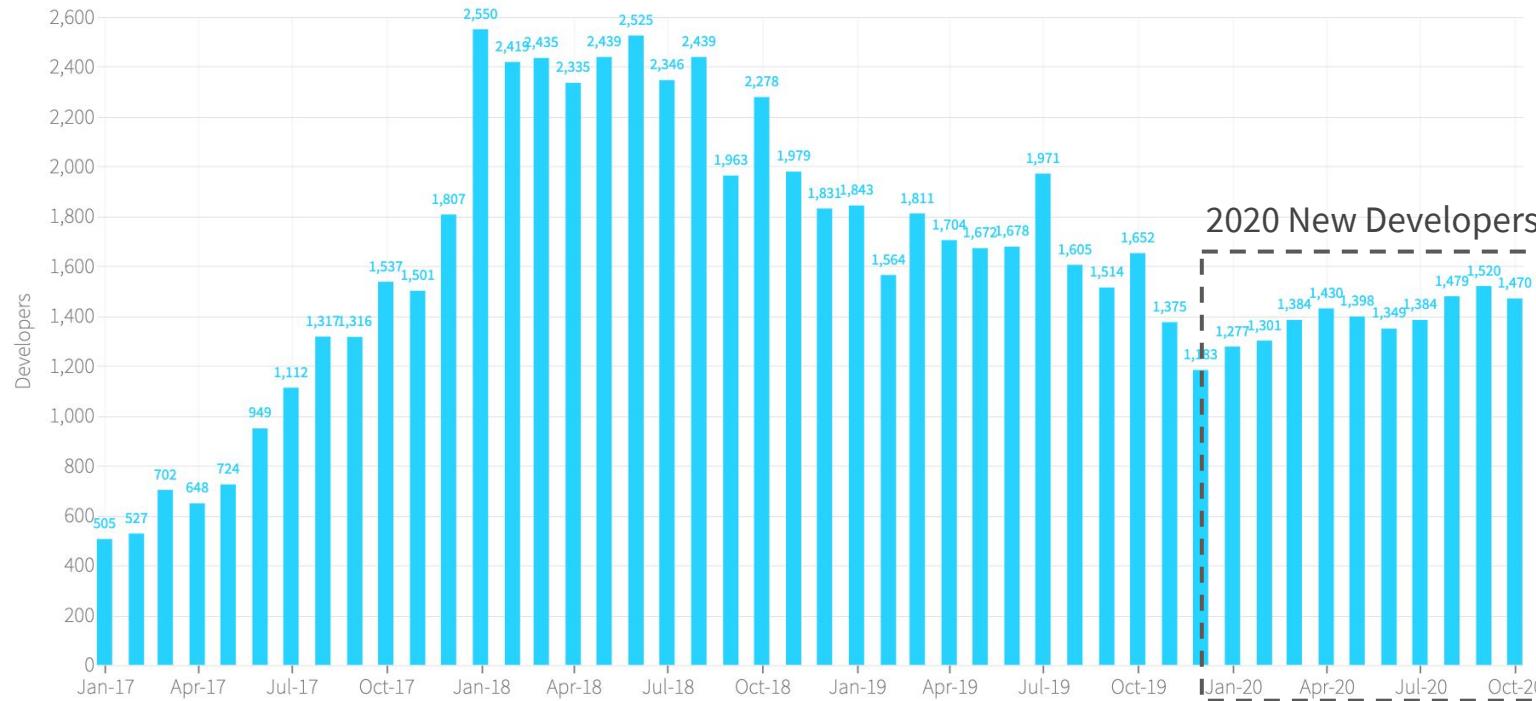
Number of Developers by Month Joined



For example, 1,971 developers committed code for the first time in a crypto ecosystem in July 2019

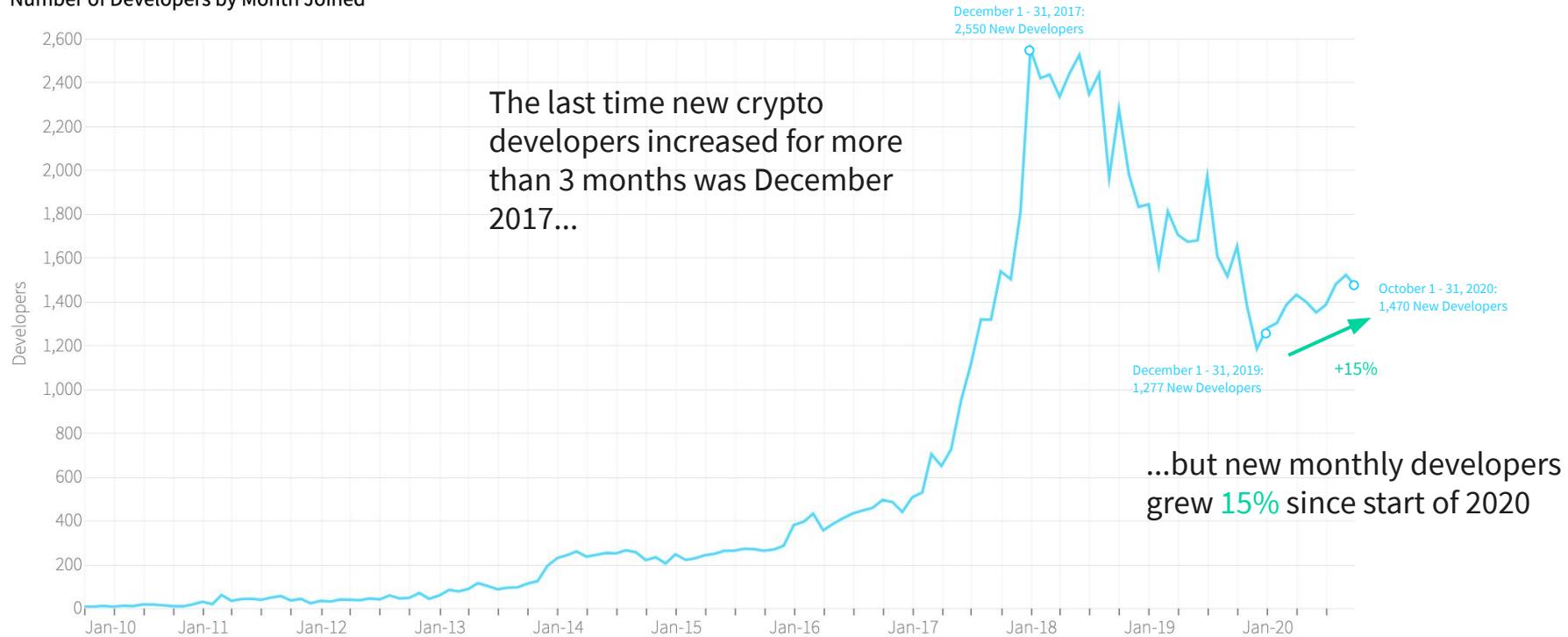
1200+ NEW DEVELOPERS JOIN CRYPTO EVERY MONTH IN 2020

Number of Developers by Month Joined



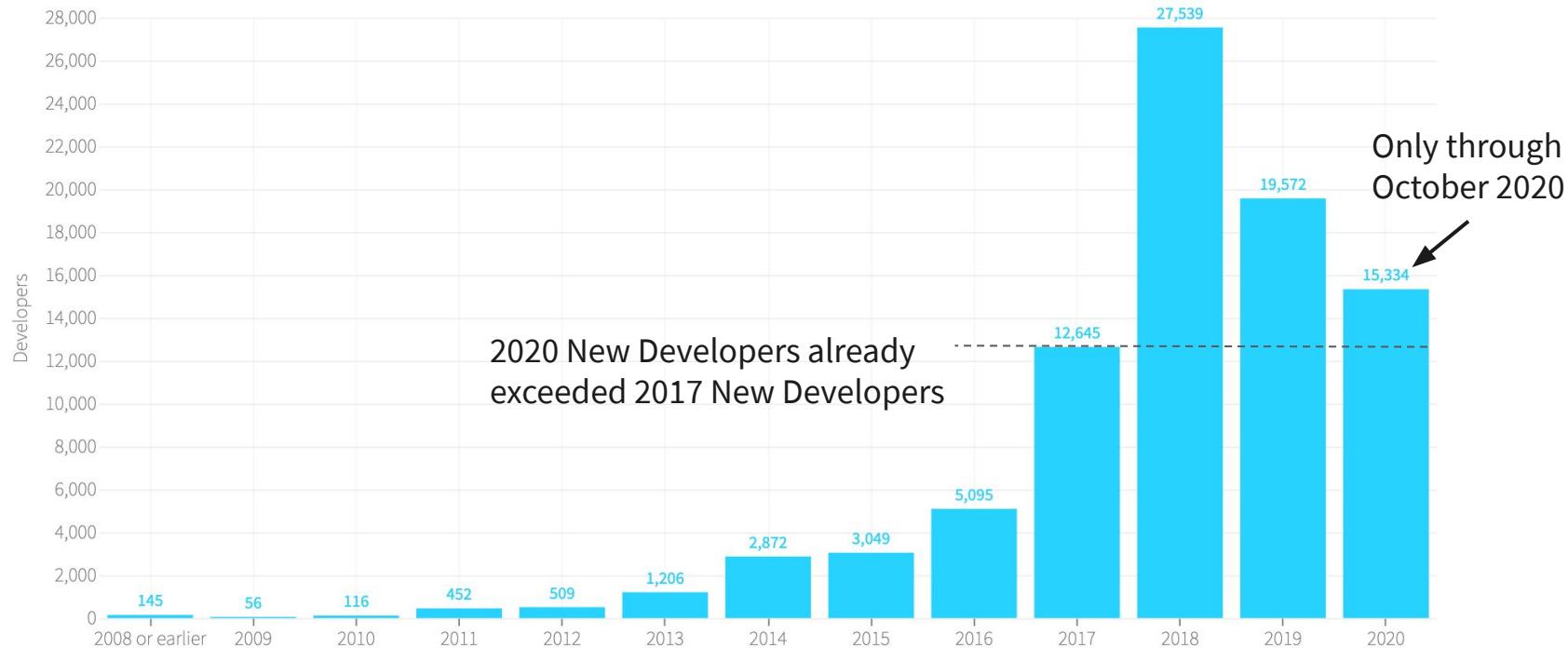
15% GROWTH IN MONTHLY NEW DEVELOPERS IN CRYPTO SINCE DECEMBER 2019

Number of Developers by Month Joined



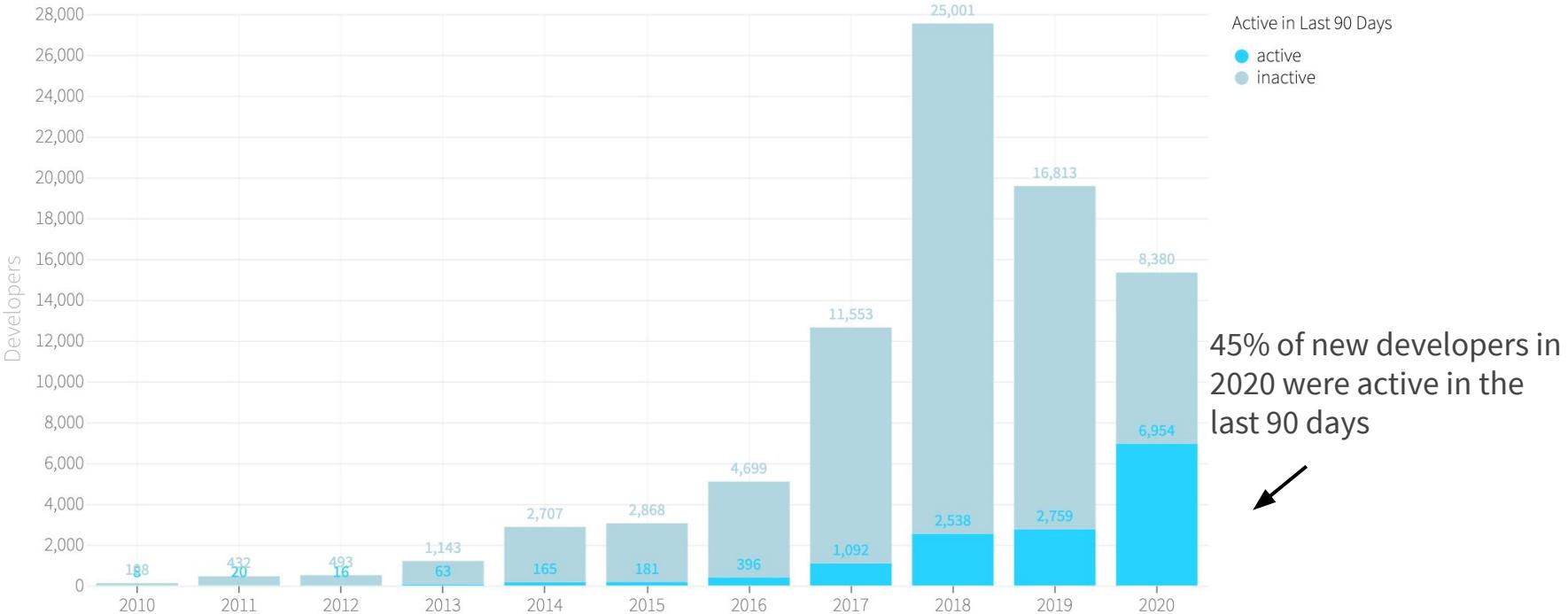
YEARLY NEW DEVELOPERS IN 2020 ALREADY EXCEEDED NEW DEVELOPERS FROM 2017

Number of Developers by Year Joined



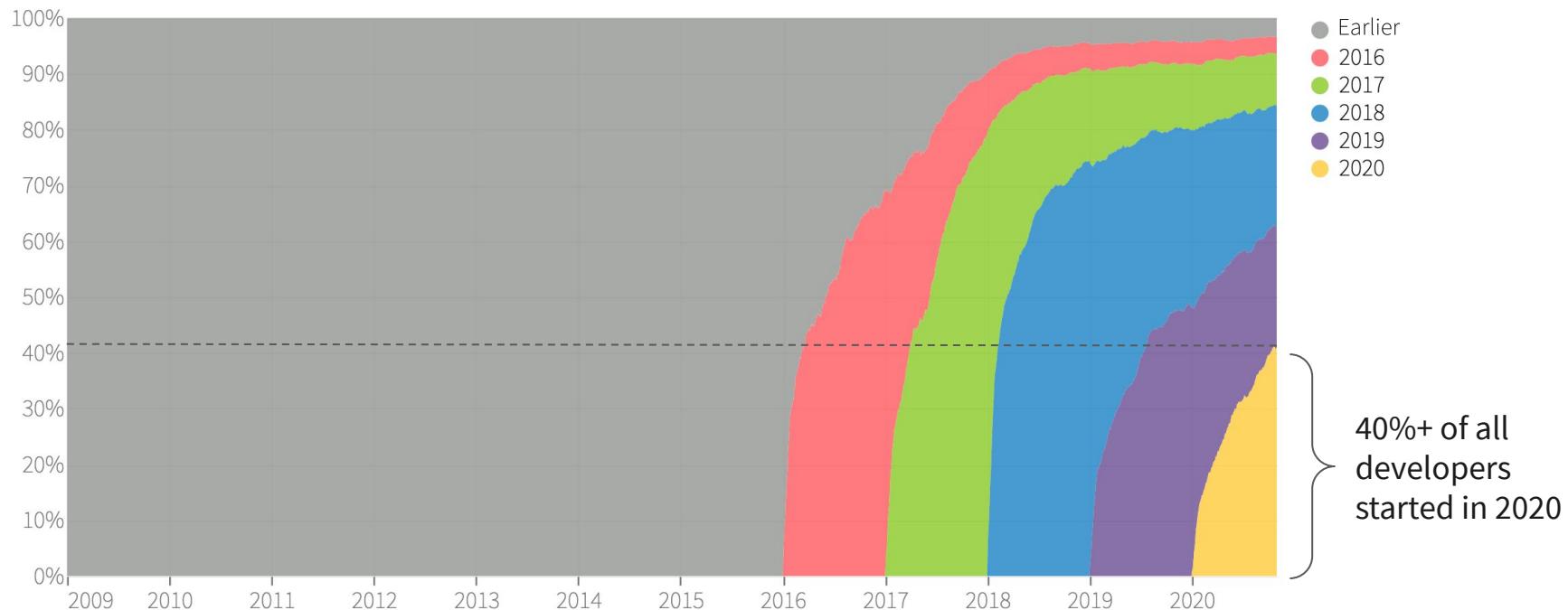
45% OF NEW DEVELOPERS IN 2020 WERE ACTIVE IN THE LAST 90 DAYS

Number of Developers by Year Joined



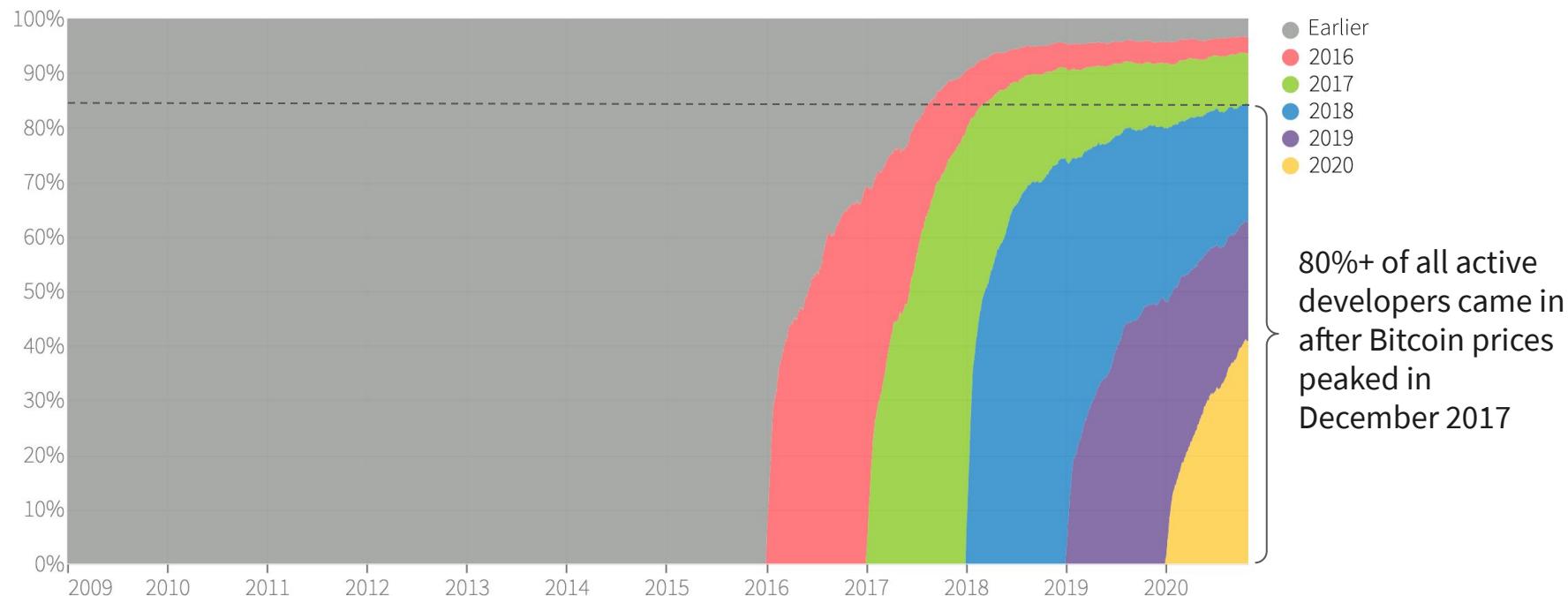
40%+ OF CURRENTLY ACTIVE MONTHLY DEVELOPERS STARTED IN 2020

Proportion of Monthly Active Developers by Start Date



80%+ OF CURRENTLY ACTIVE DEVELOPERS STARTED AFTER BITCOIN'S ALL TIME HIGH IN 2017

Proportion of Monthly Active Developers by Start Date

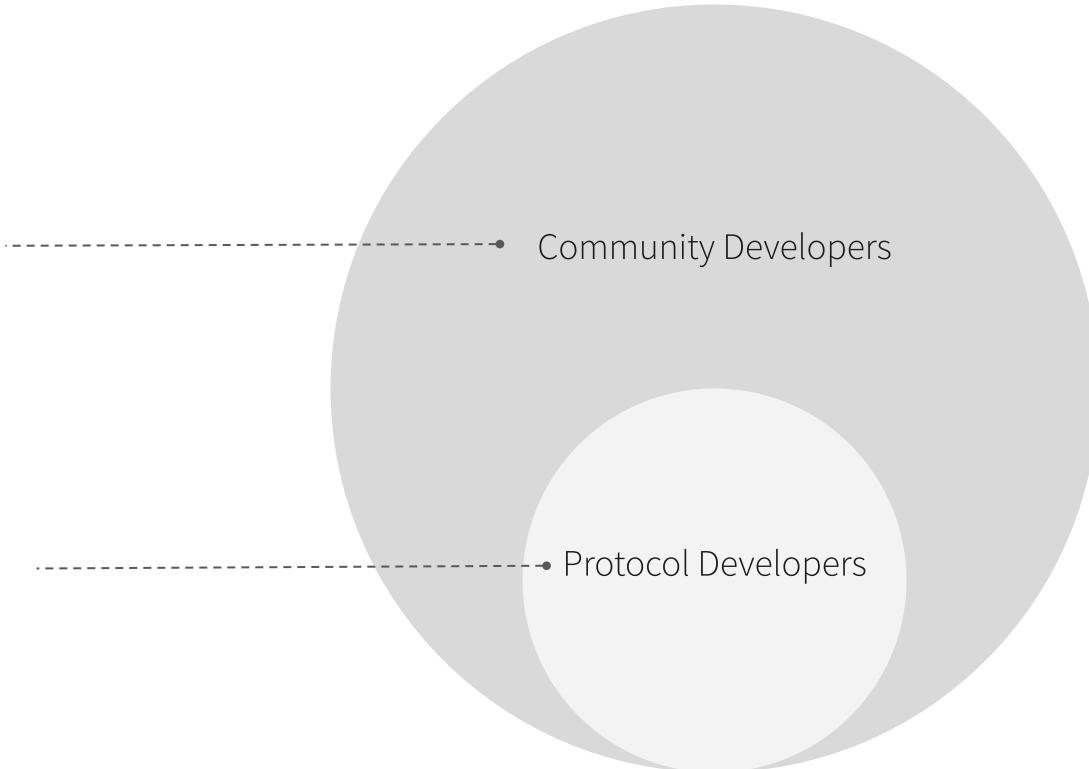


SWITCHING TO LOOKING AT ECOSYSTEMS...

ECOSYSTEMS
BY ECOSYSTEM SIZE

ECOSYSTEMS ARE COMPRISED OF COMMUNITY AND PROTOCOL LEVEL DEVELOPERS

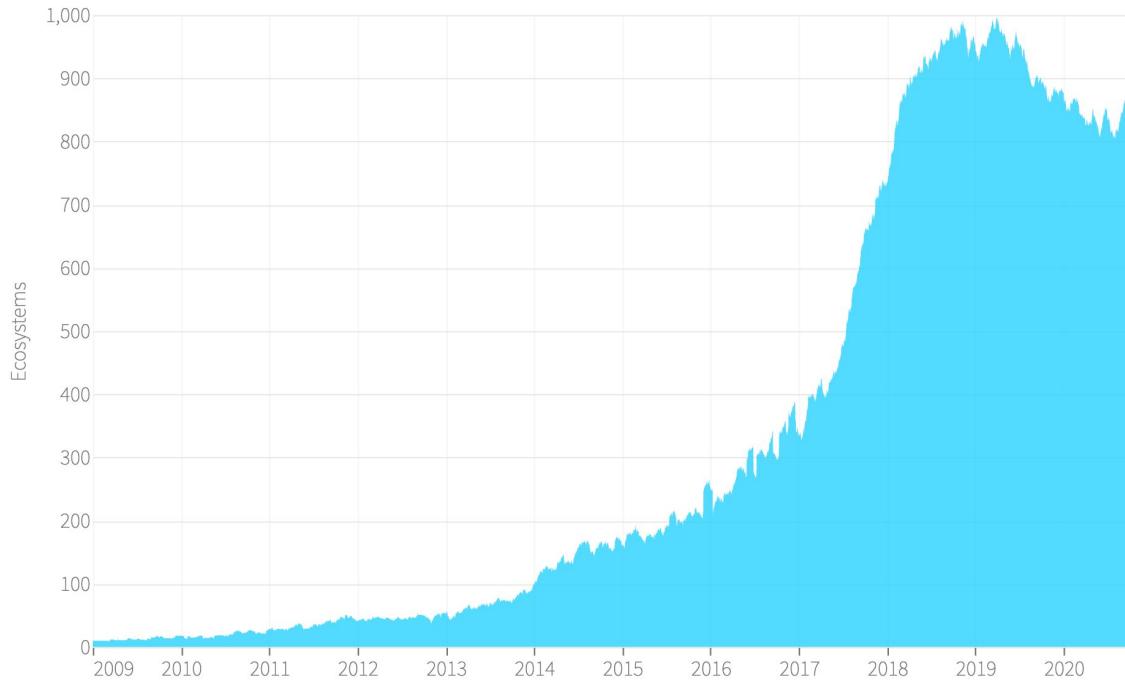
1. **Community Developers** are working on decentralized applications, documentation, tooling, wallets, and anything else furthering the project.



2. **Protocol Developers** include developers working only on the core protocol.

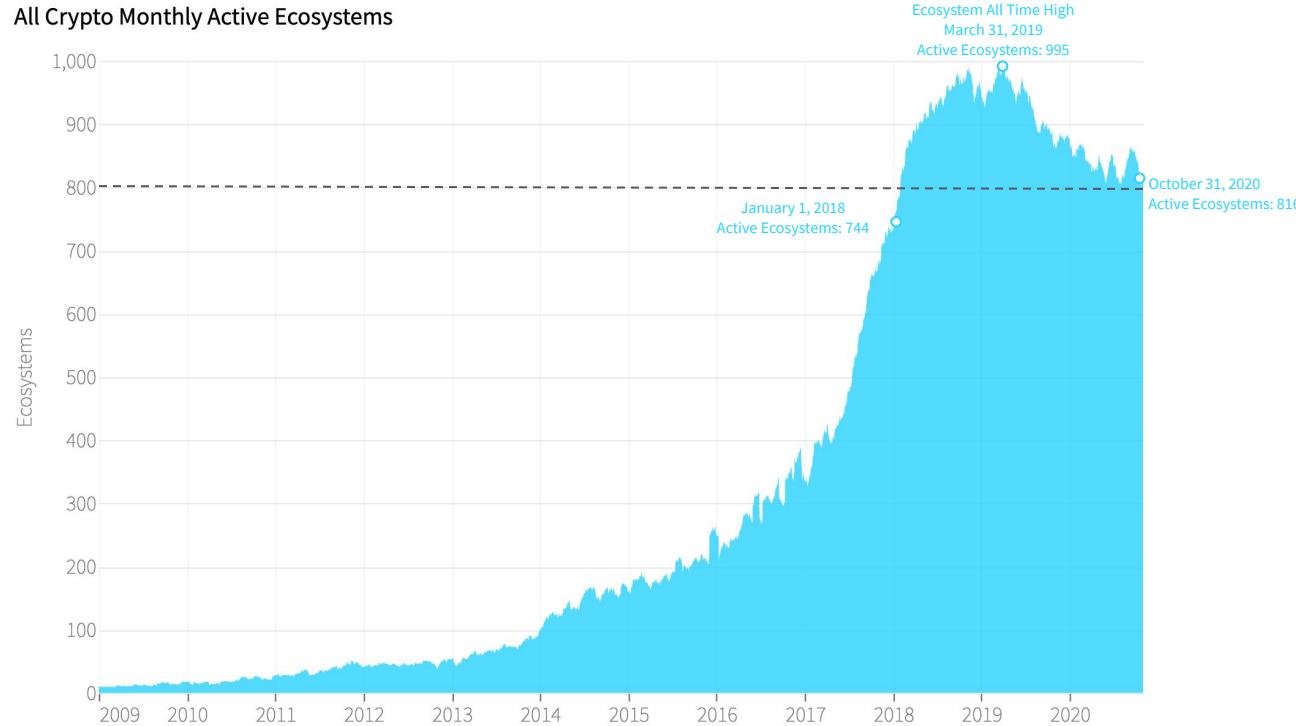
WE CAN COUNT THE NUMBER OF CRYPTO ECOSYSTEMS THAT ARE ACTIVE PER MONTH

All Crypto Monthly Active Ecosystems

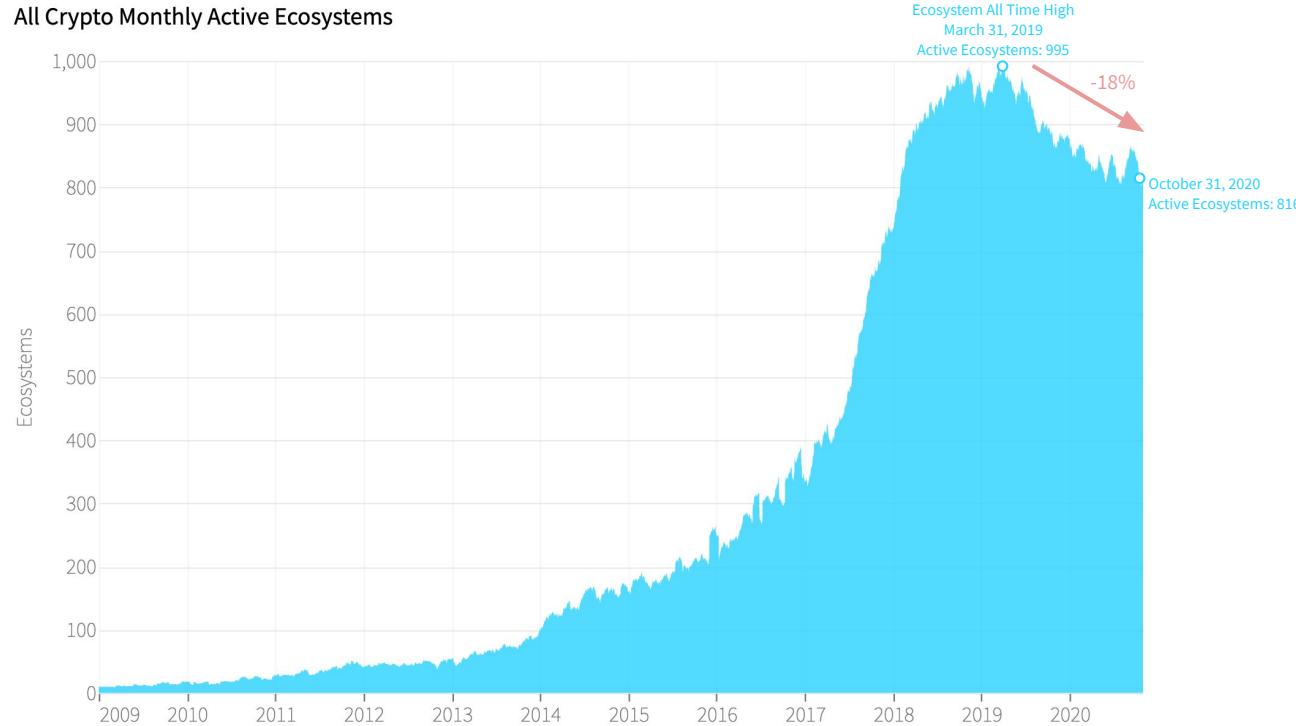


An ecosystem is active if there was a code commit in one of its repositories

ACTIVE ECOSYSTEMS CROSSED OVER 800 IN 2018 AND HAVE STAYED ABOVE THIS LEVEL

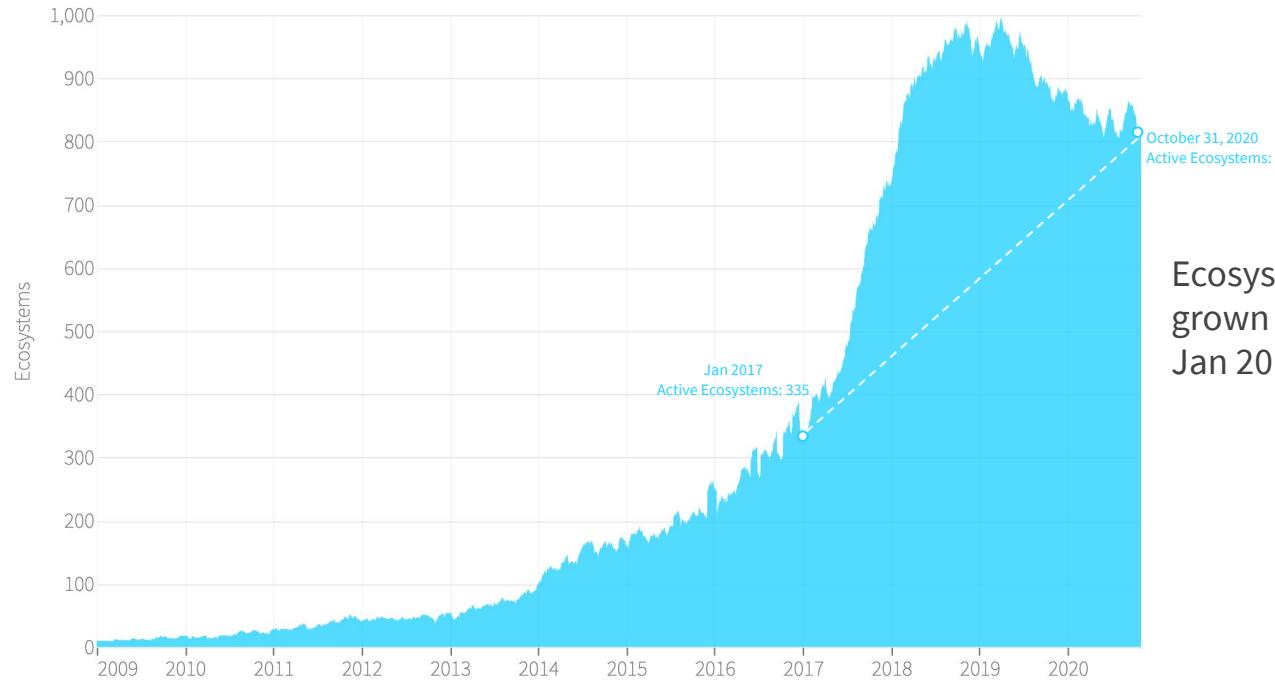


ACTIVE ECOSYSTEMS DECREASED BY 18% SINCE THE ALL TIME HIGH ECOSYSTEM COUNT



THE NUMBER OF CRYPTO ECOSYSTEMS HAVE GROWN **143%** SINCE 2017

All Crypto Monthly Active Ecosystems

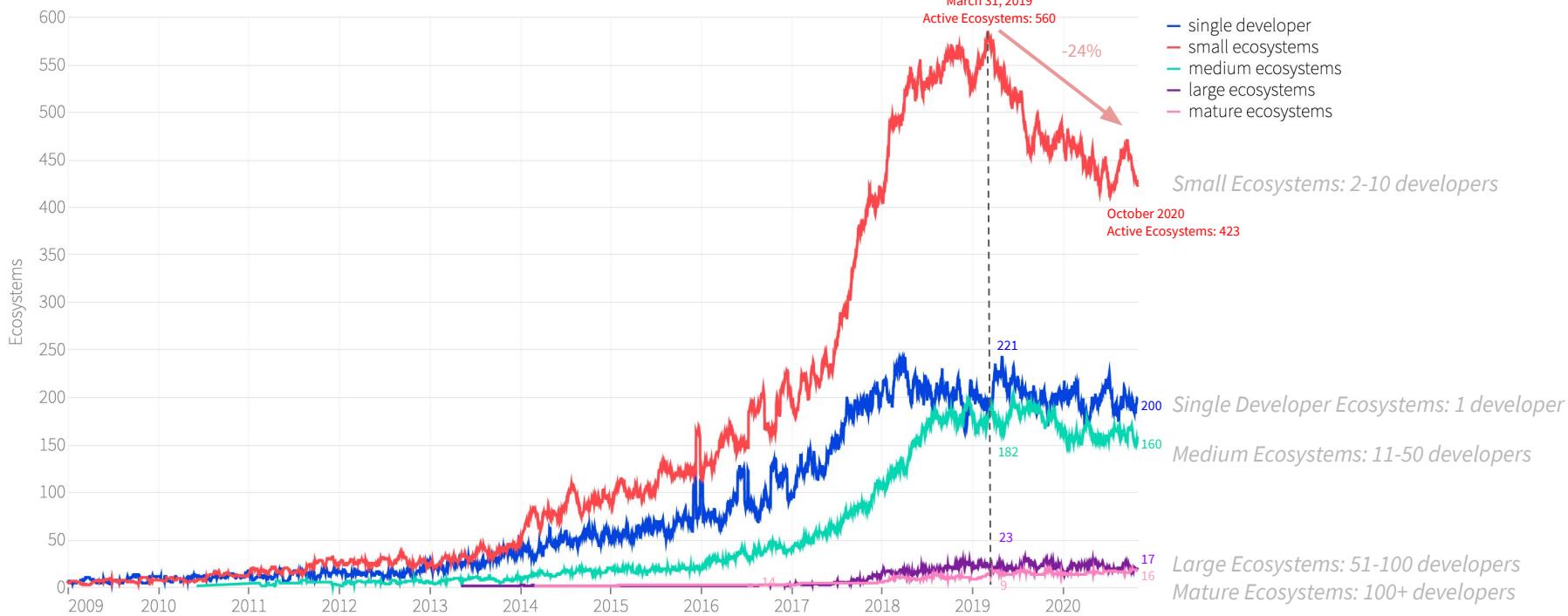


Ecosystems have
grown **143%** since
Jan 2017

LET'S SEGMENT ECOSYSTEMS BY NUMBER OF DEVELOPERS...

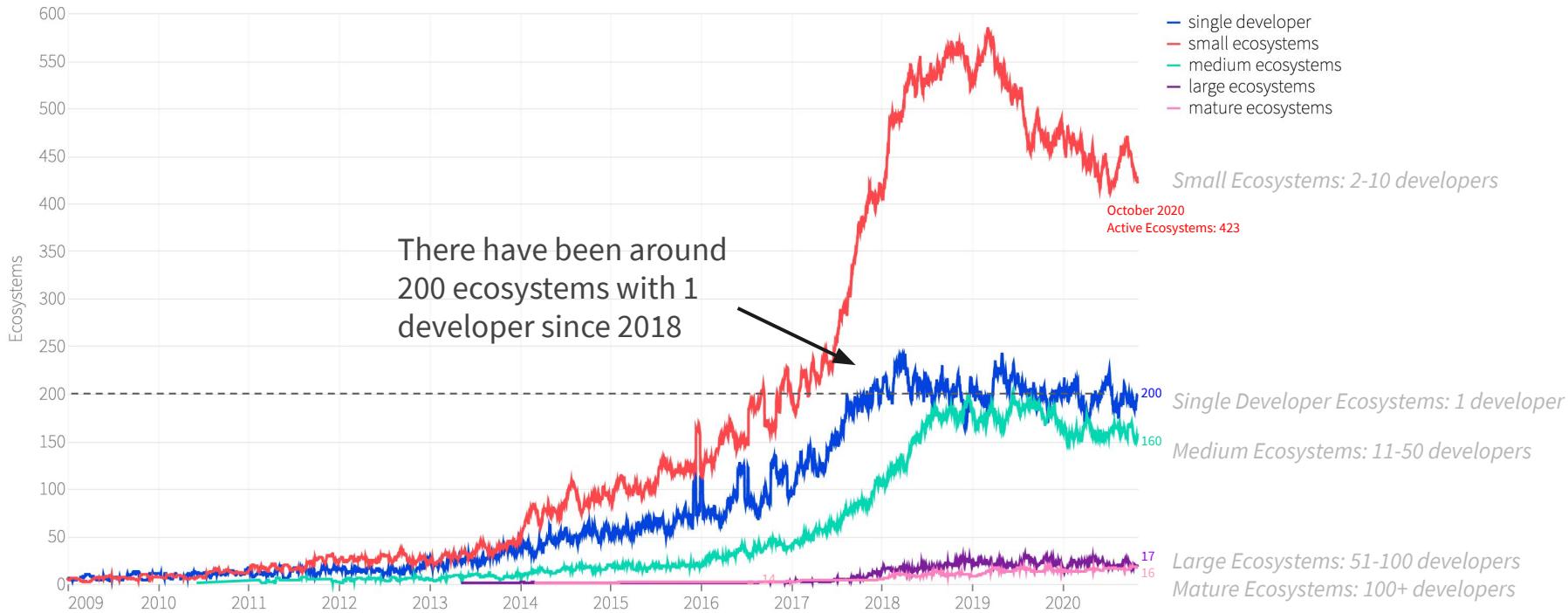
ECOSYSTEMS WITH 2-10 DEVELOPERS ARE THE SOURCE OF THE OVERALL DROP

All Crypto Monthly Active Ecosystems



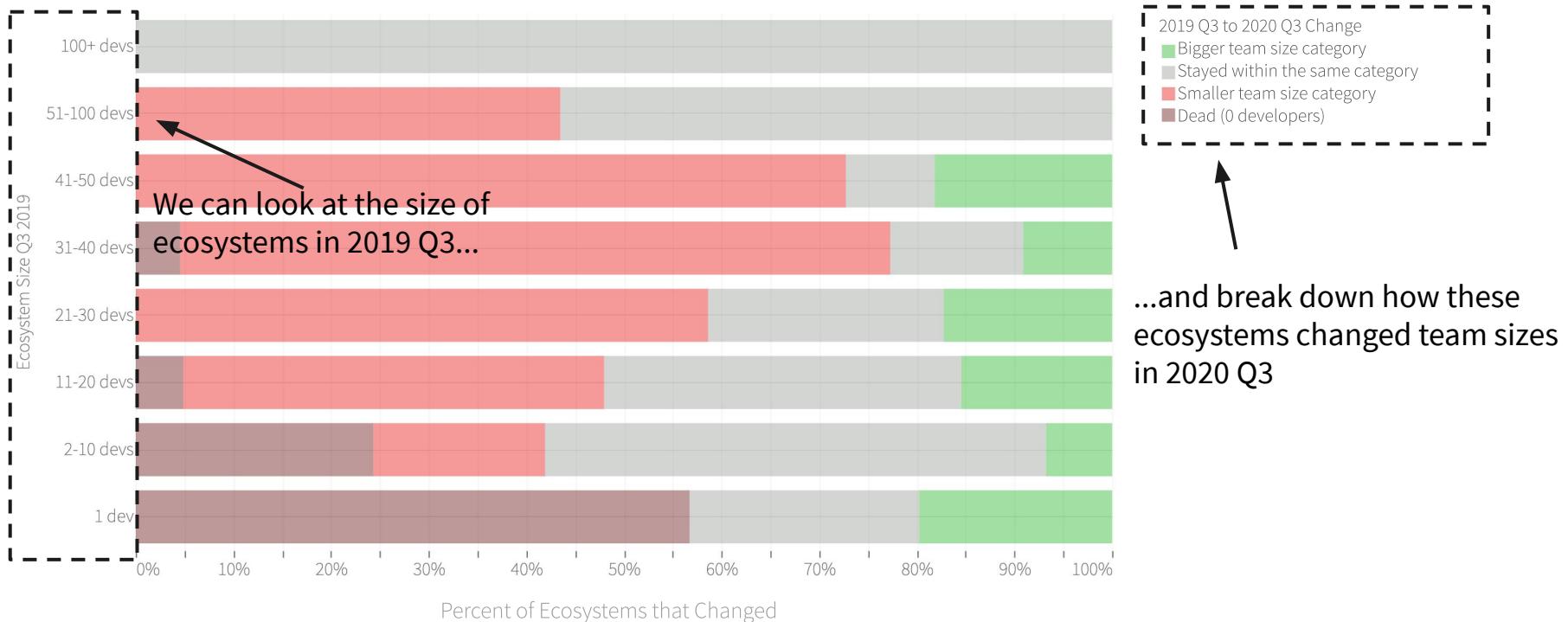
ECOSYSTEMS WITH 1 DEVELOPER HAVE STAYED FLAT AROUND 200 SINCE 2018

All Crypto Monthly Active Ecosystems



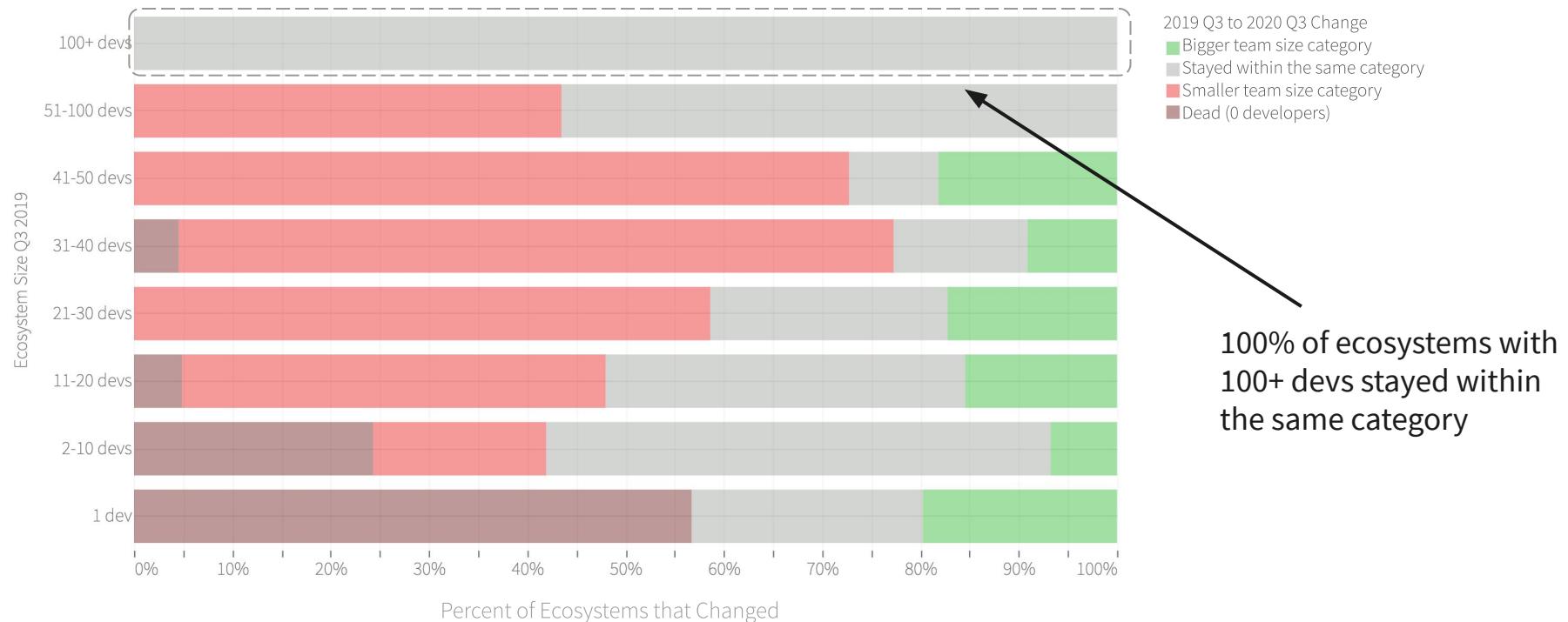
WE CAN TRACK HOW ECOSYSTEMS CHANGED SIZE CATEGORIES FROM 2019 Q3 TO 2020 Q3

Ecosystem Size Change



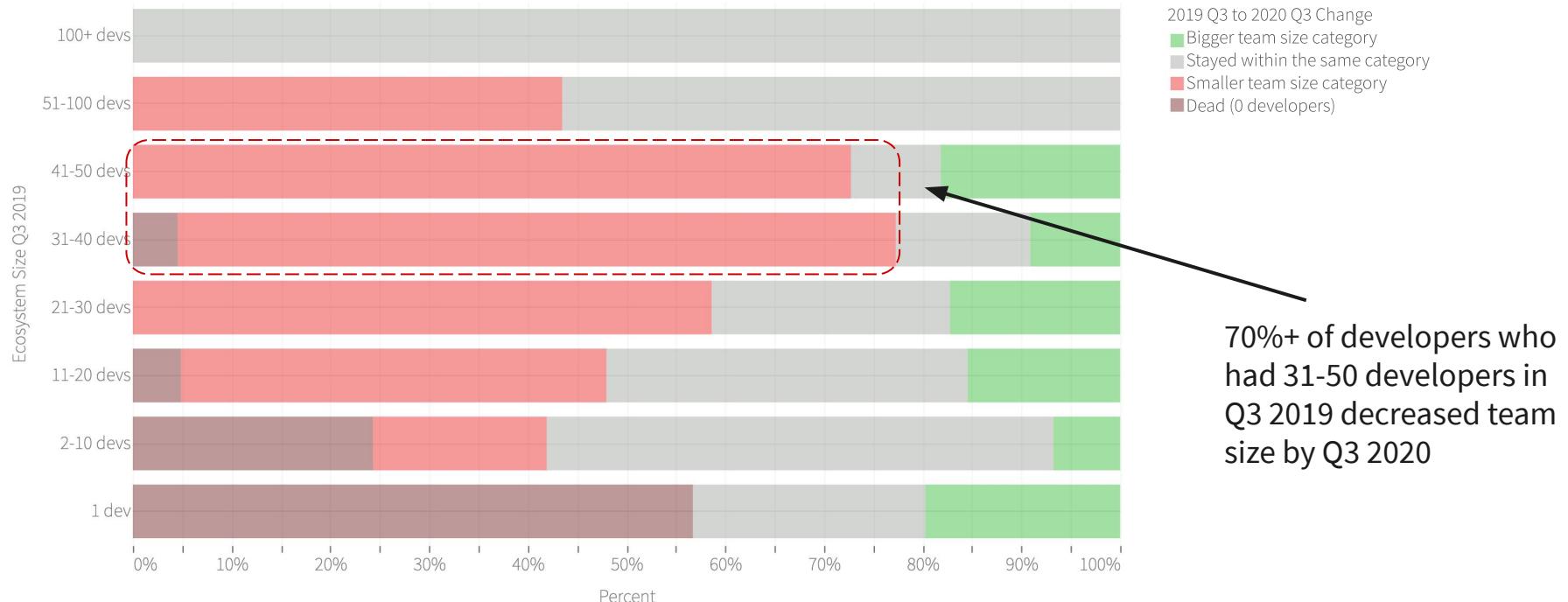
ECOSYSTEMS WITH 100+ DEVELOPERS DID NOT FALL BELOW THAT LEVEL BY 2020 Q3

Ecosystem Size Change



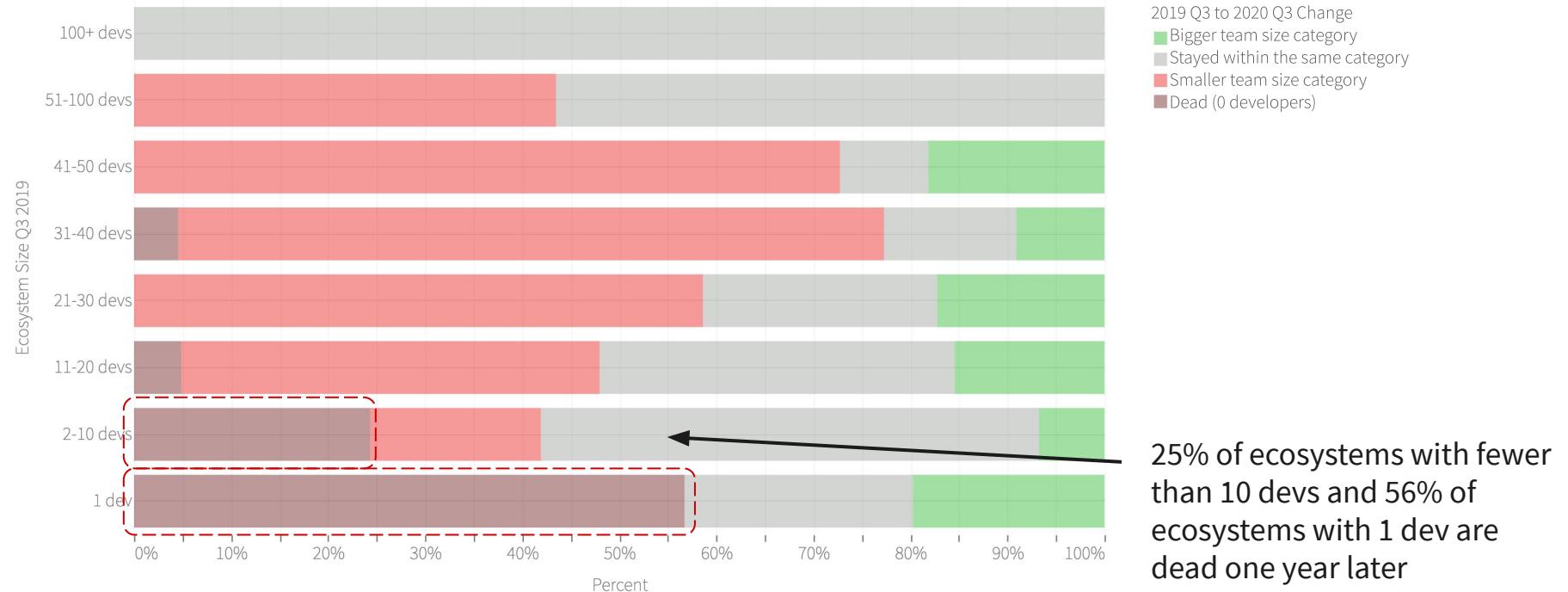
ECOSYSTEMS WITH 31-50 DEVELOPERS IN Q3 2019 WERE THE MOST PRONE TO LOSING DEVELOPERS

Ecosystem Size Change



ECOSYSTEMS WITH FEWER THAN 10 DEVELOPERS ARE LIKELIER TO BE ABANDONED

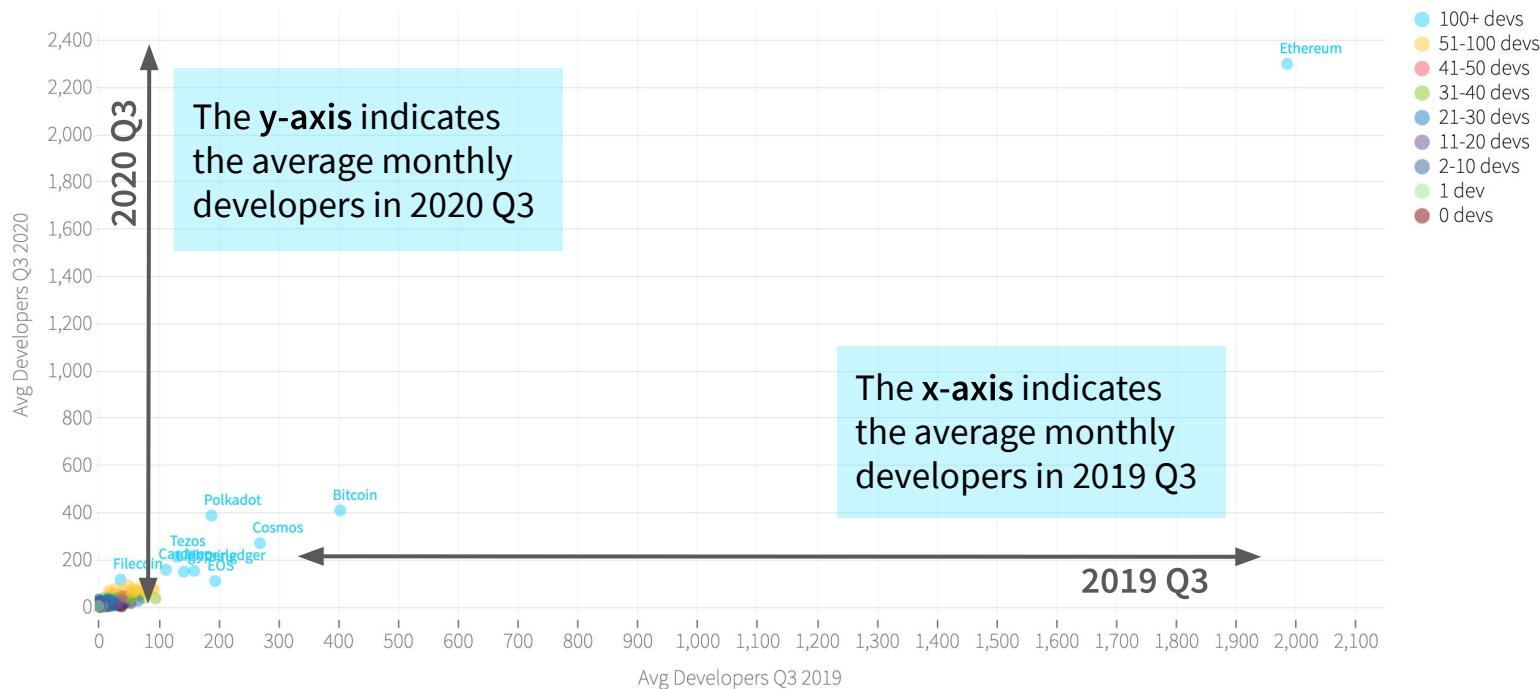
Ecosystem Size Change



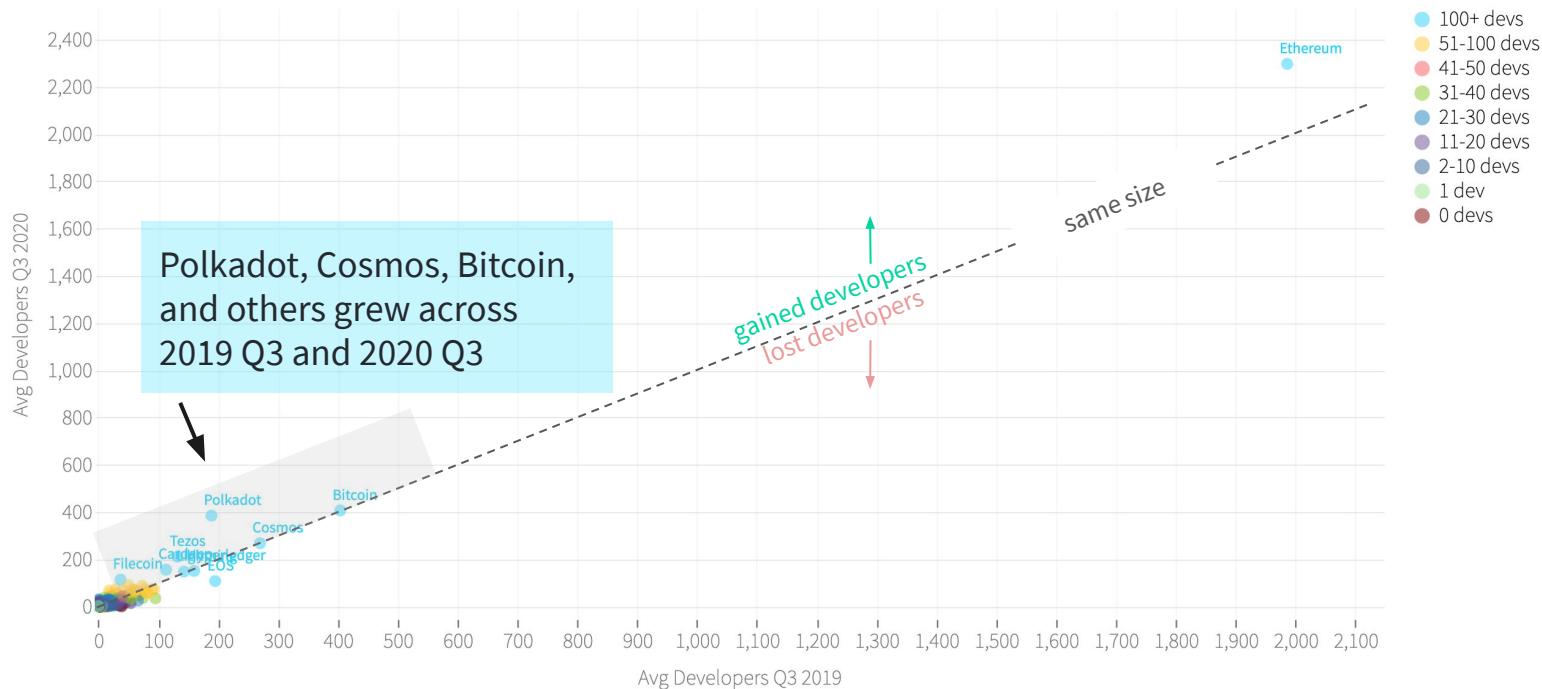
**WE CAN TAKE A SNAPSHOT OF ECOSYSTEMS IN 2019 & 2020
TO SEE HOW DEVELOPER NUMBERS CHANGED**

2019 Q3 VS 2020 Q3

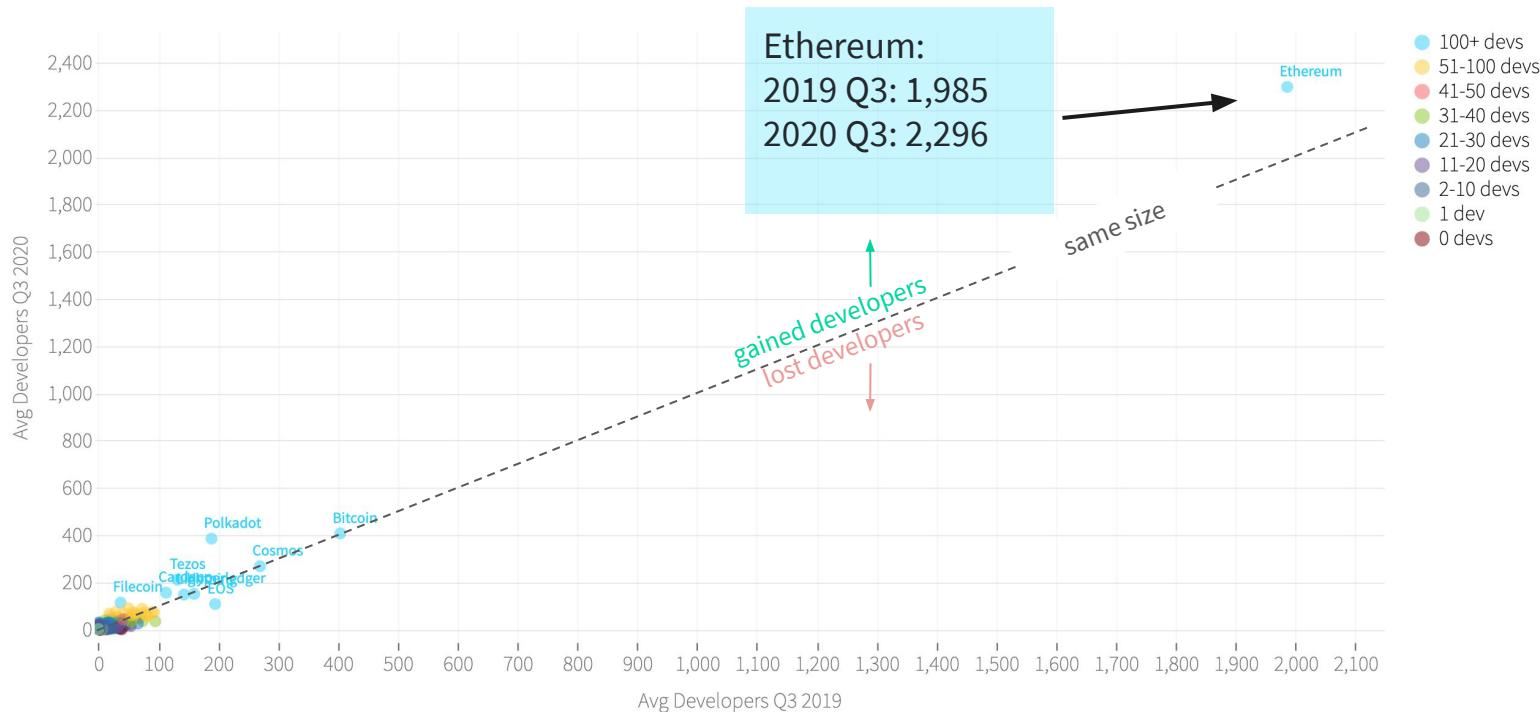
WE CAN BENCHMARK 2020 Q3 TEAM SIZE AGAINST 2019 Q3 TO ASSESS DEVELOPER GROWTH



MOST ECOSYSTEMS WITH MORE THAN 100+ DEVS TODAY GREW OR STAYED THE SAME SIZE



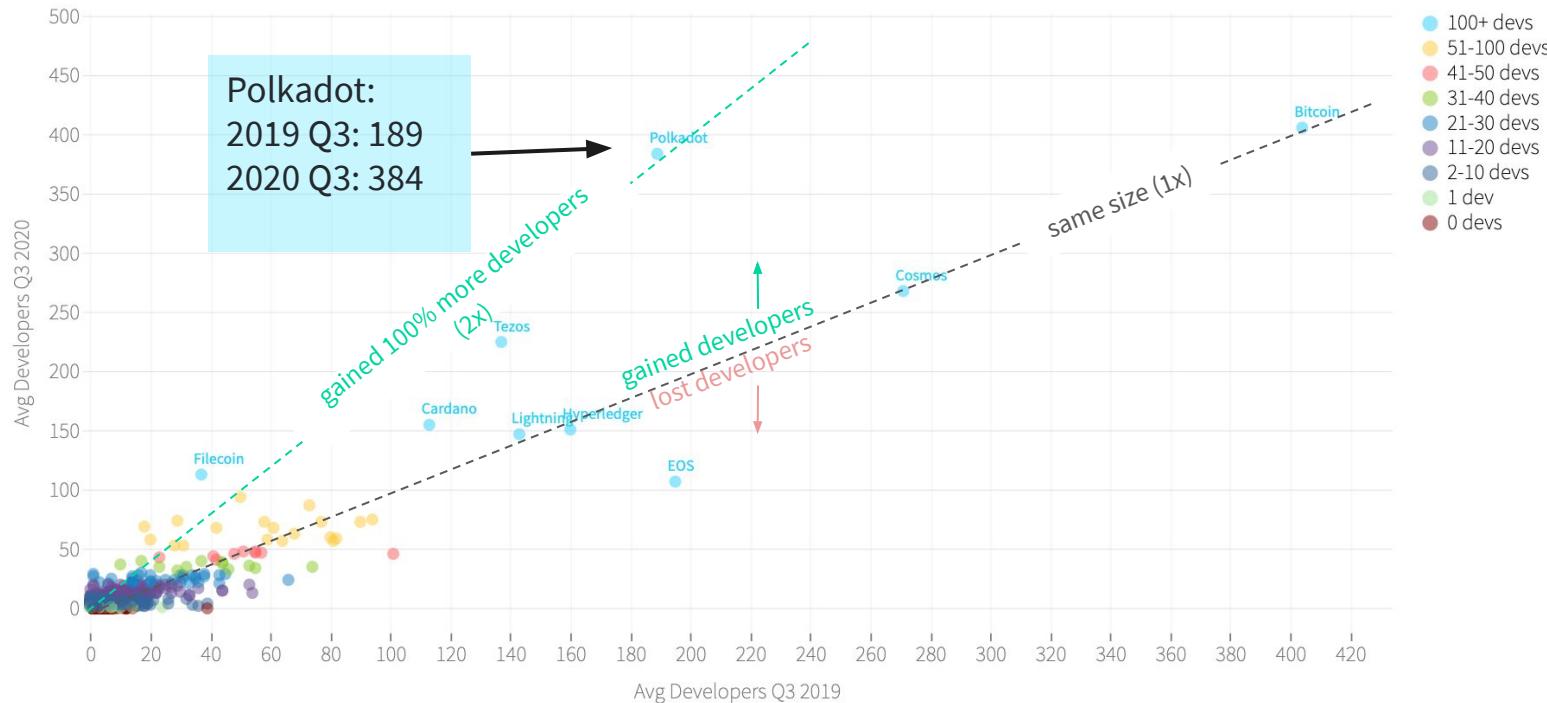
ETHEREUM GAINED 300+ AVERAGE MONTHLY DEVELOPERS SINCE Q3 2019



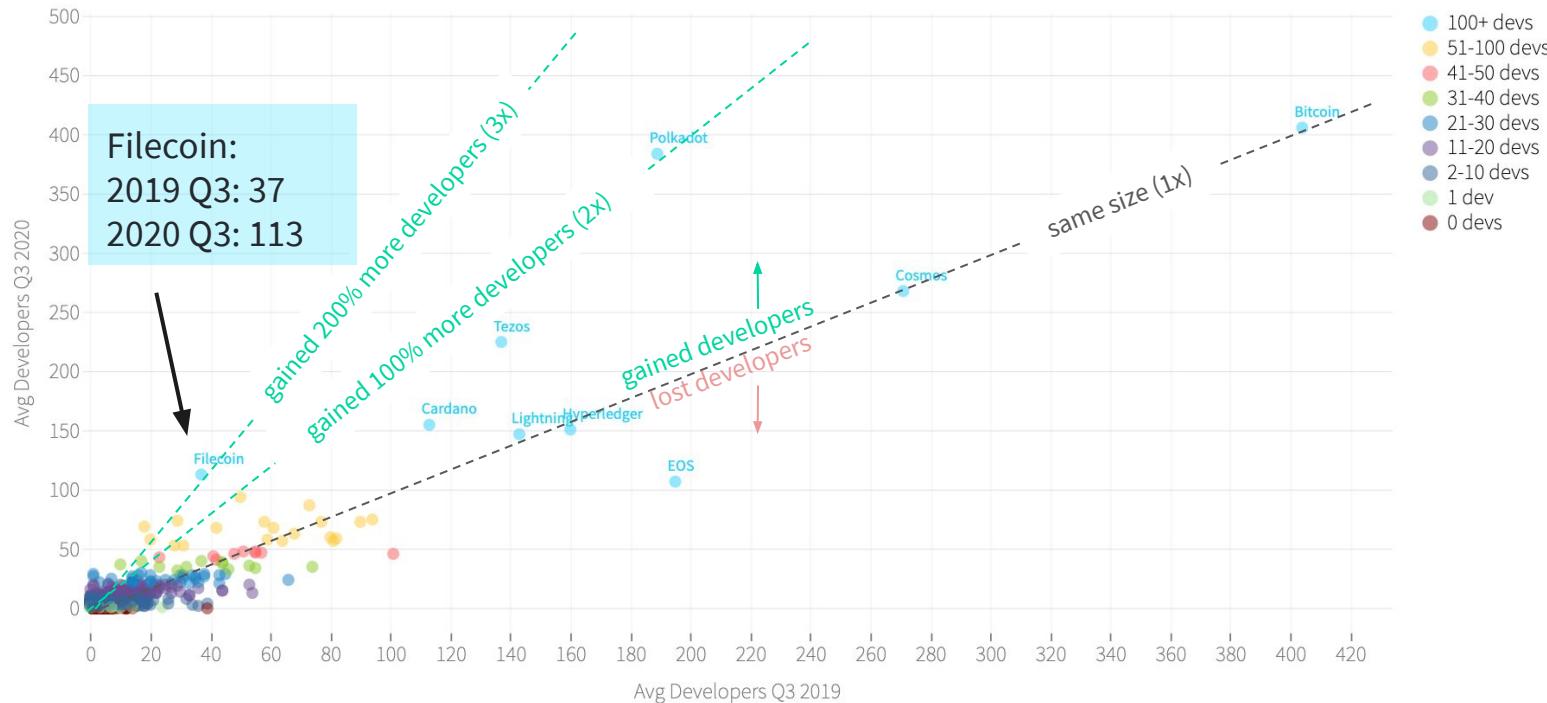
ZOOMING IN...POLKADOT, TEZOS, CARDANO HAD 100+ DEVS IN Q3 2019 AND GAINED MORE DEVELOPERS BY Q3 2020



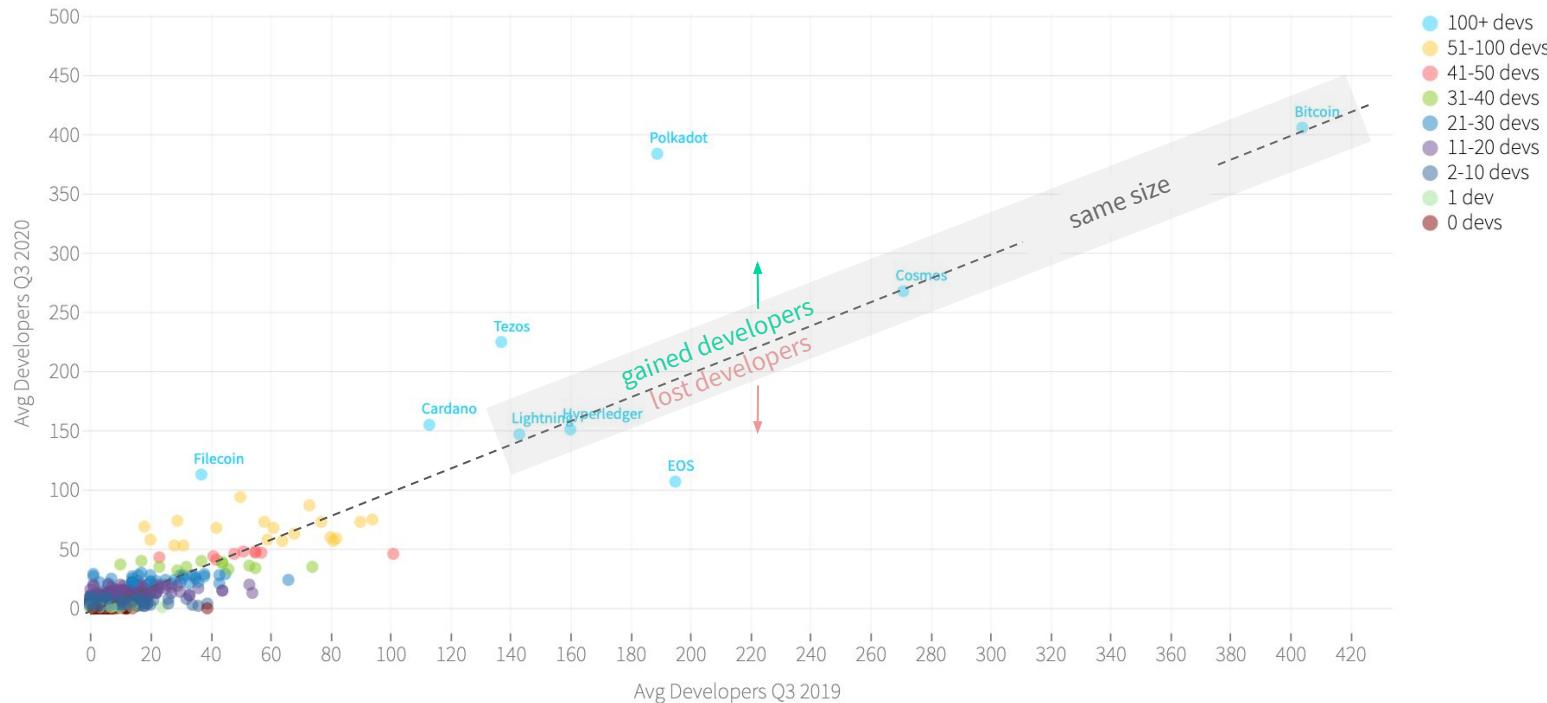
POLKADOT DOUBLED THEIR DEVELOPER COUNT



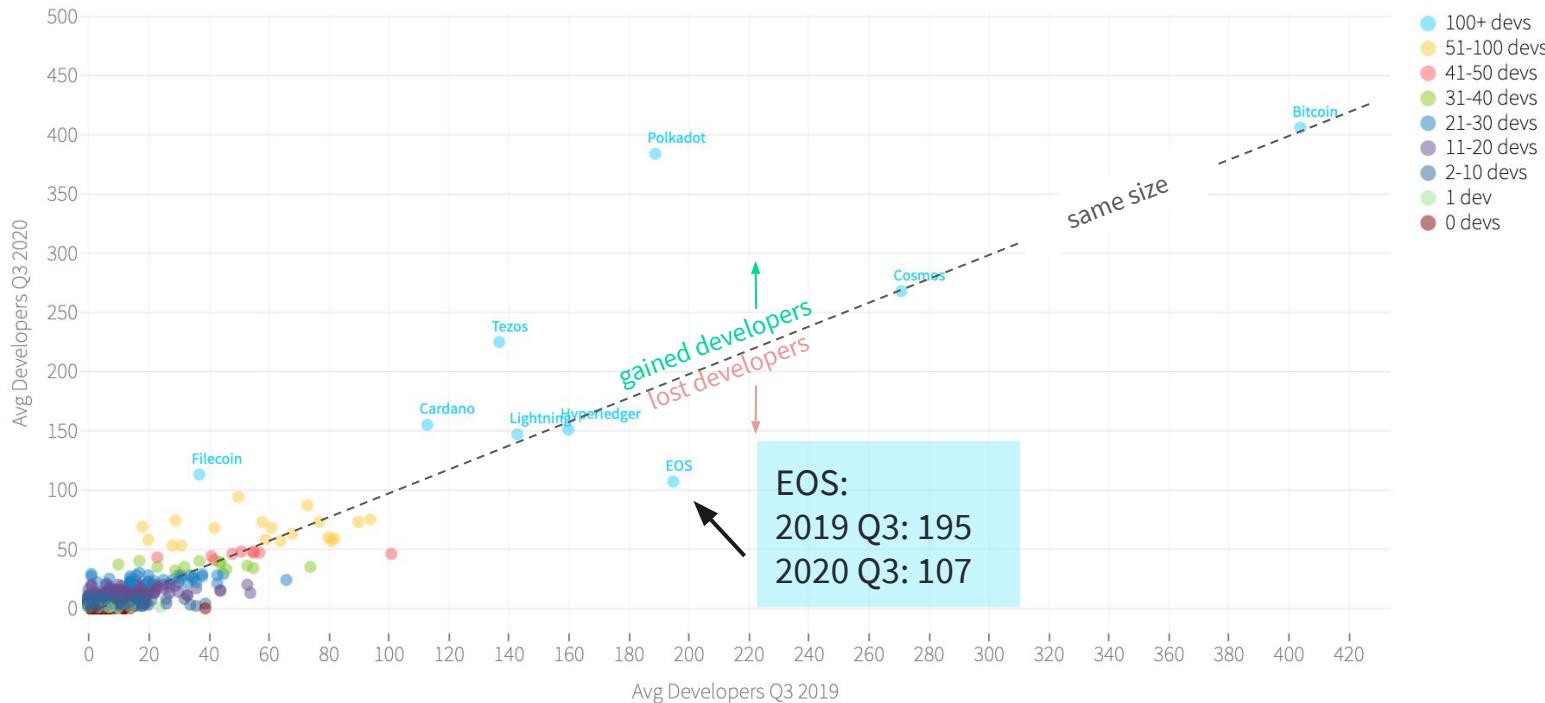
FILECOIN BROKE INTO THE 100+ CATEGORY BY GROWING DEVS 3X



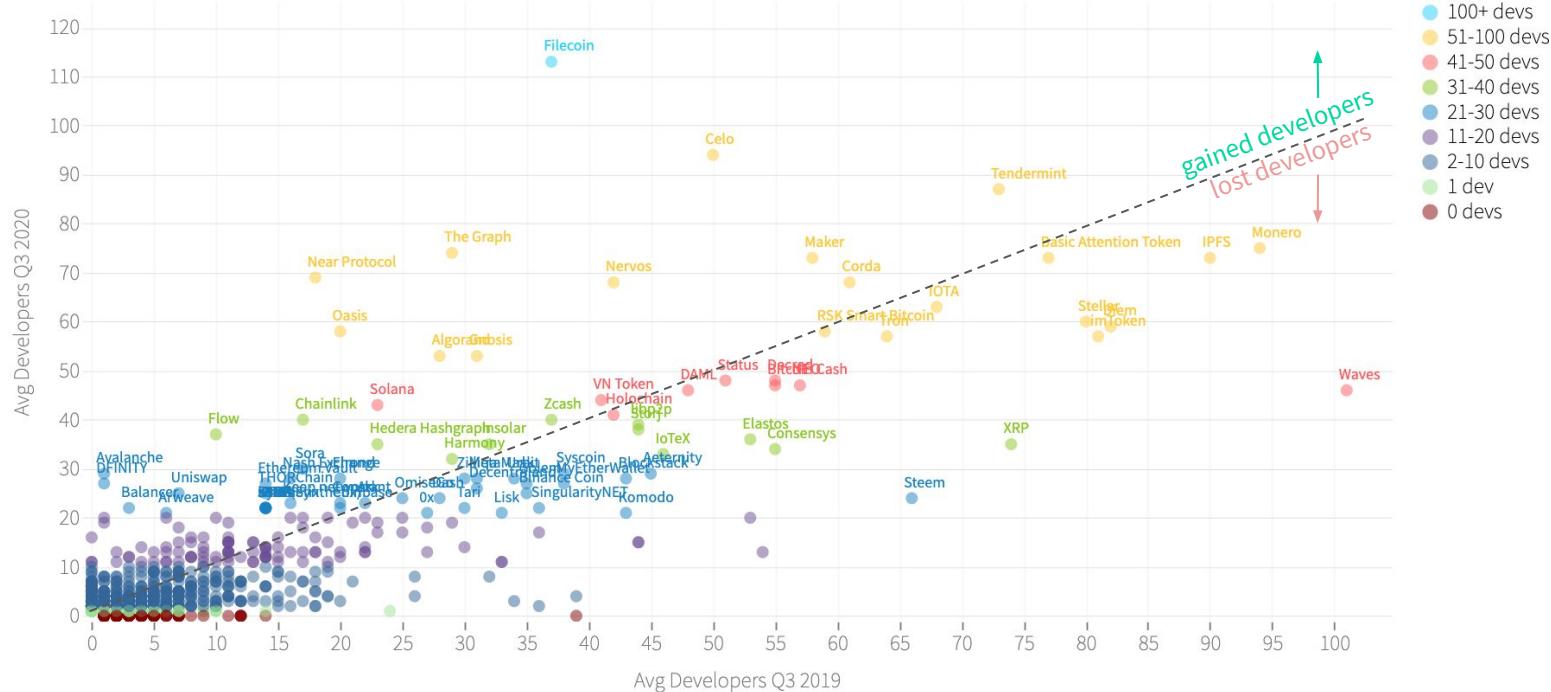
BITCOIN, COSMOS, LIGHTNING, AND HYPERLEDGER ALL STAYED THE SAME SIZE



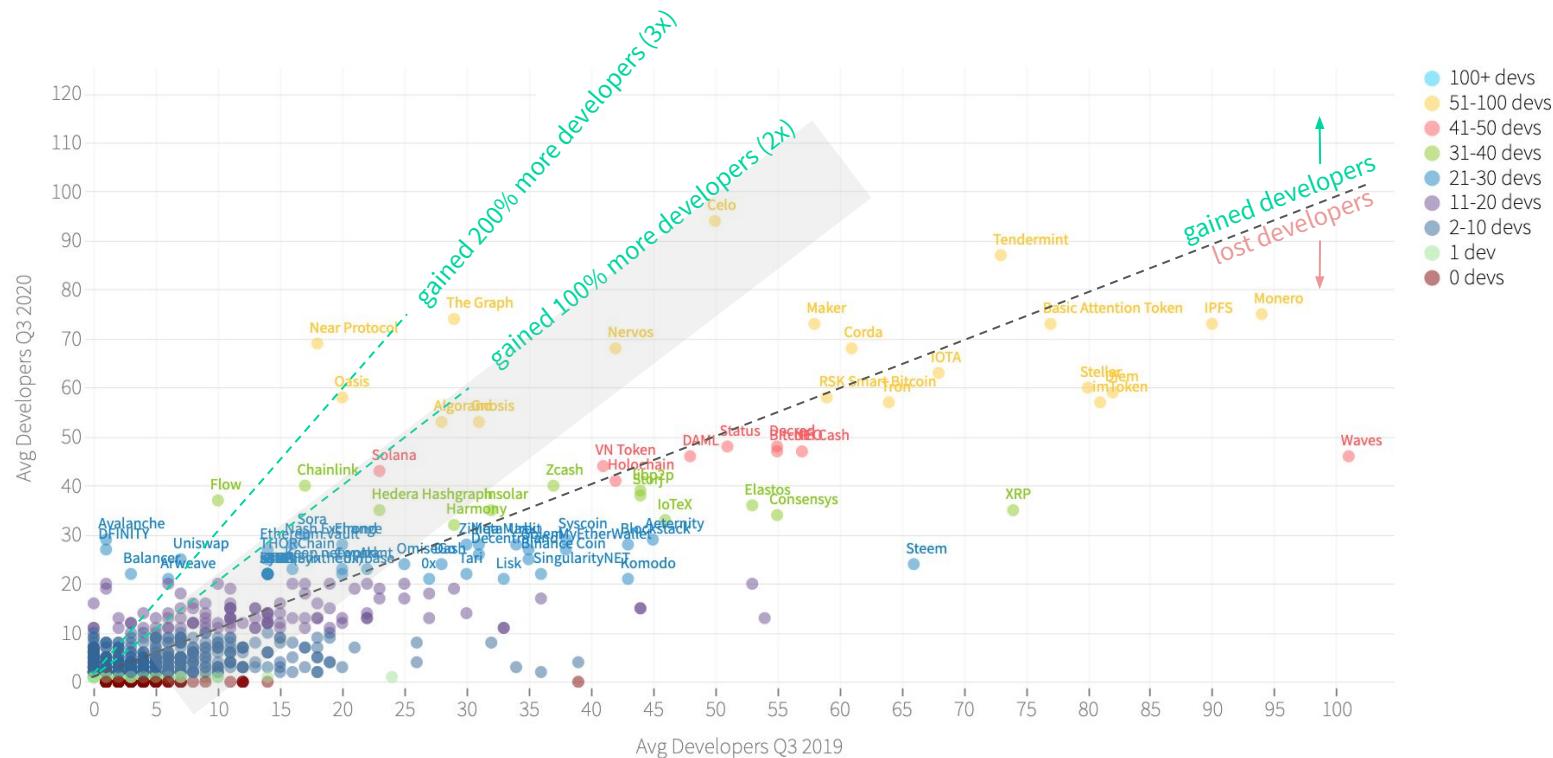
EOS LOST AN AVERAGE OF 88 MONTHLY ACTIVE DEVELOPERS



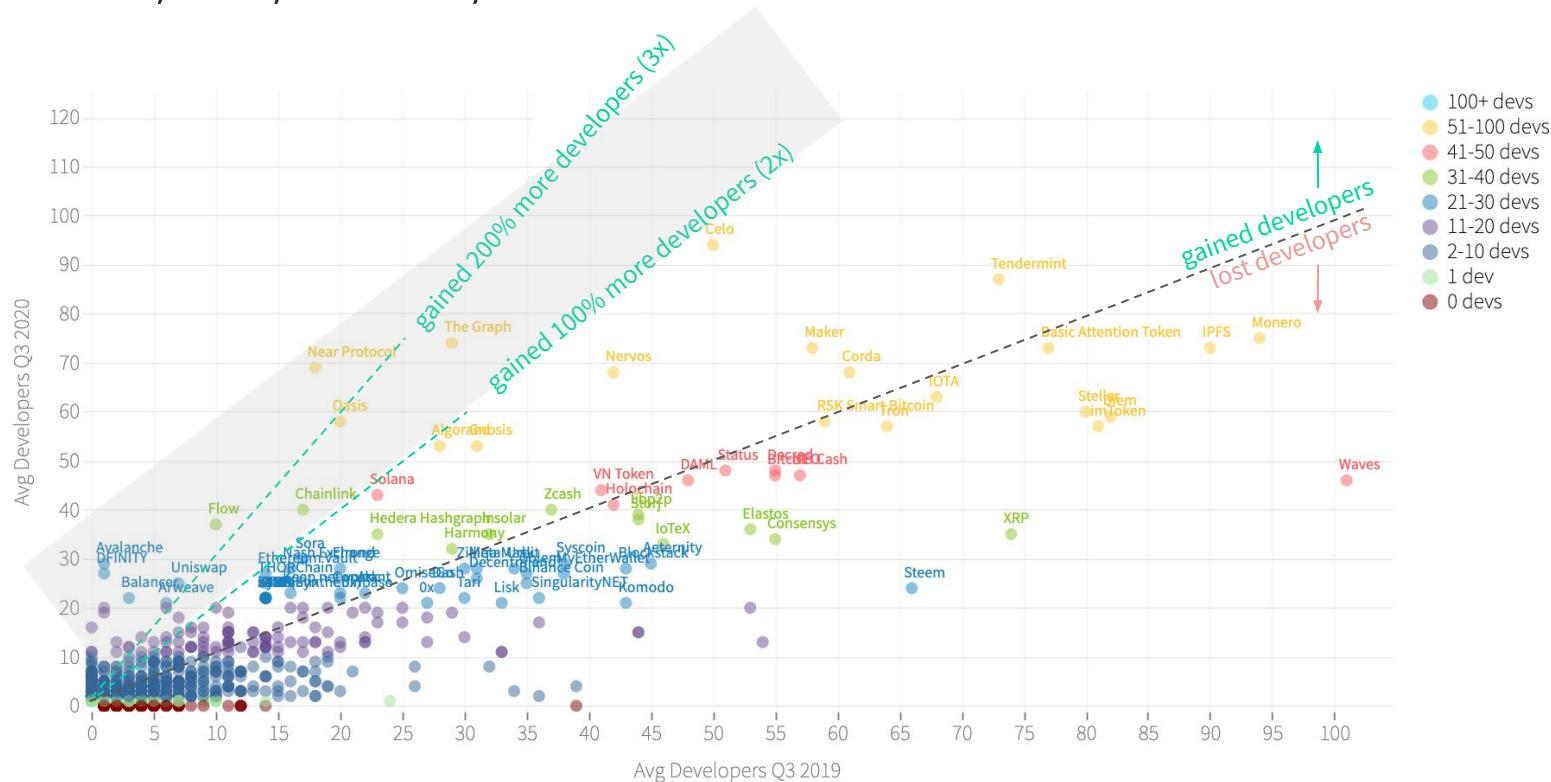
ZOOMING IN FURTHER TO ECOSYSTEMS WITH 20+ DEVELOPERS...



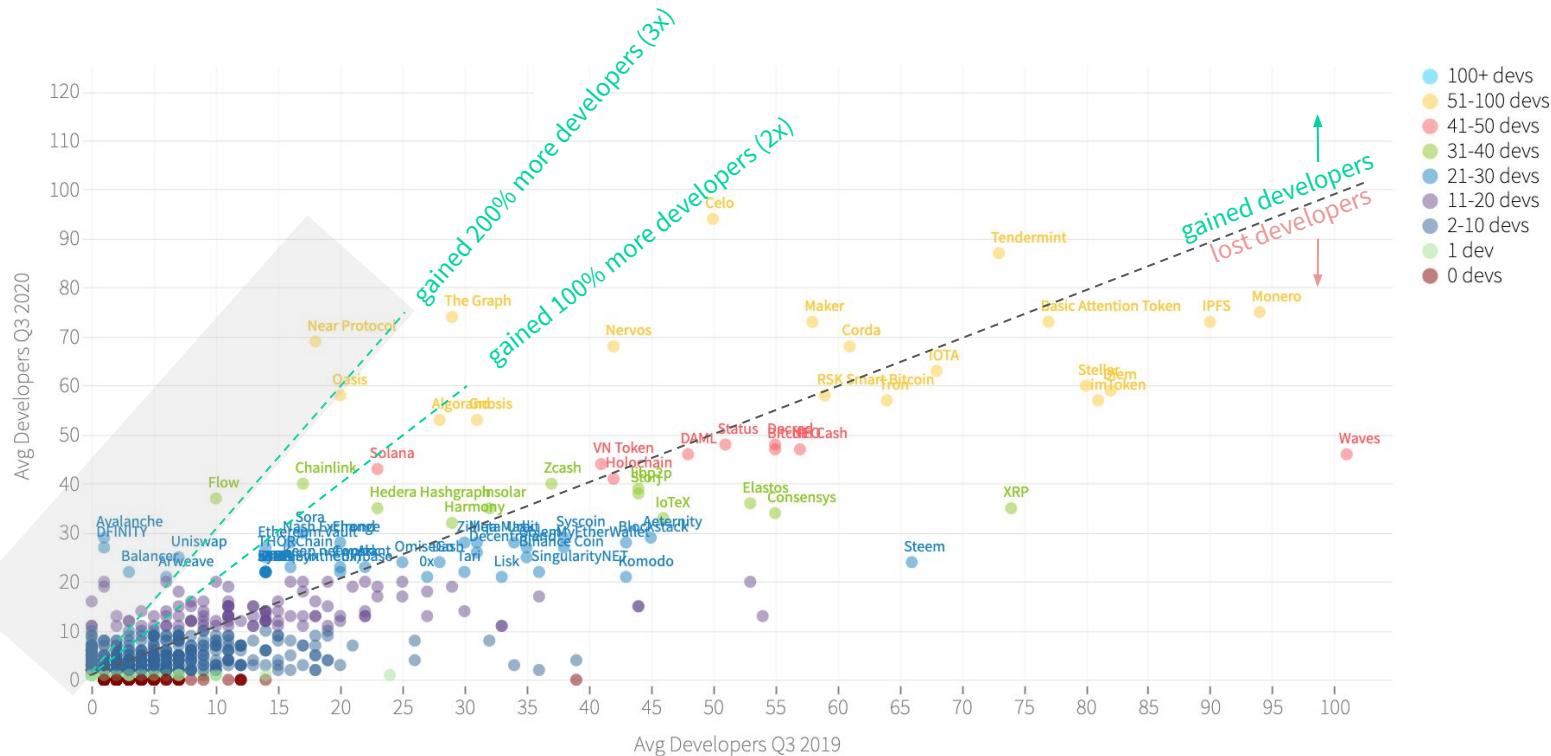
CELO, NERVOUS, ALGORAND, GNOSIS, SOLANA NOW HAVE CLOSE TO 2X THEIR DEVELOPERS IN 2019 Q3



THE GRAPH, OASIS, CHAINLINK, AND OTHERS NOW HAVE MORE THAN 2X THEIR DEVELOPERS IN 2019 Q3

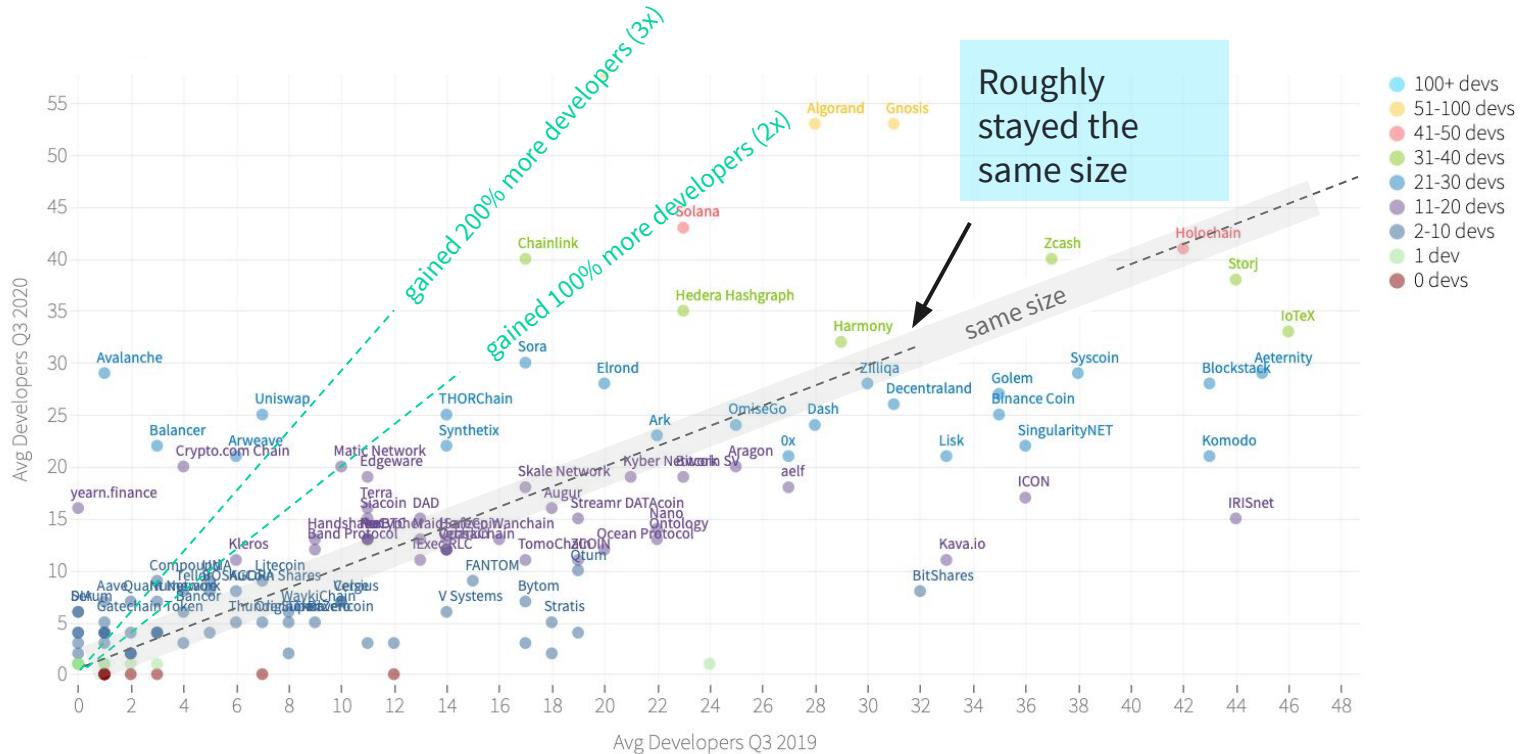


NEAR, FLOW, AVALANCHE, UNISWAP, BALANCER, ARWEAVE, & OTHERS NOW HAVE MORE THAN 3X THEIR DEVELOPERS IN 2019 Q3

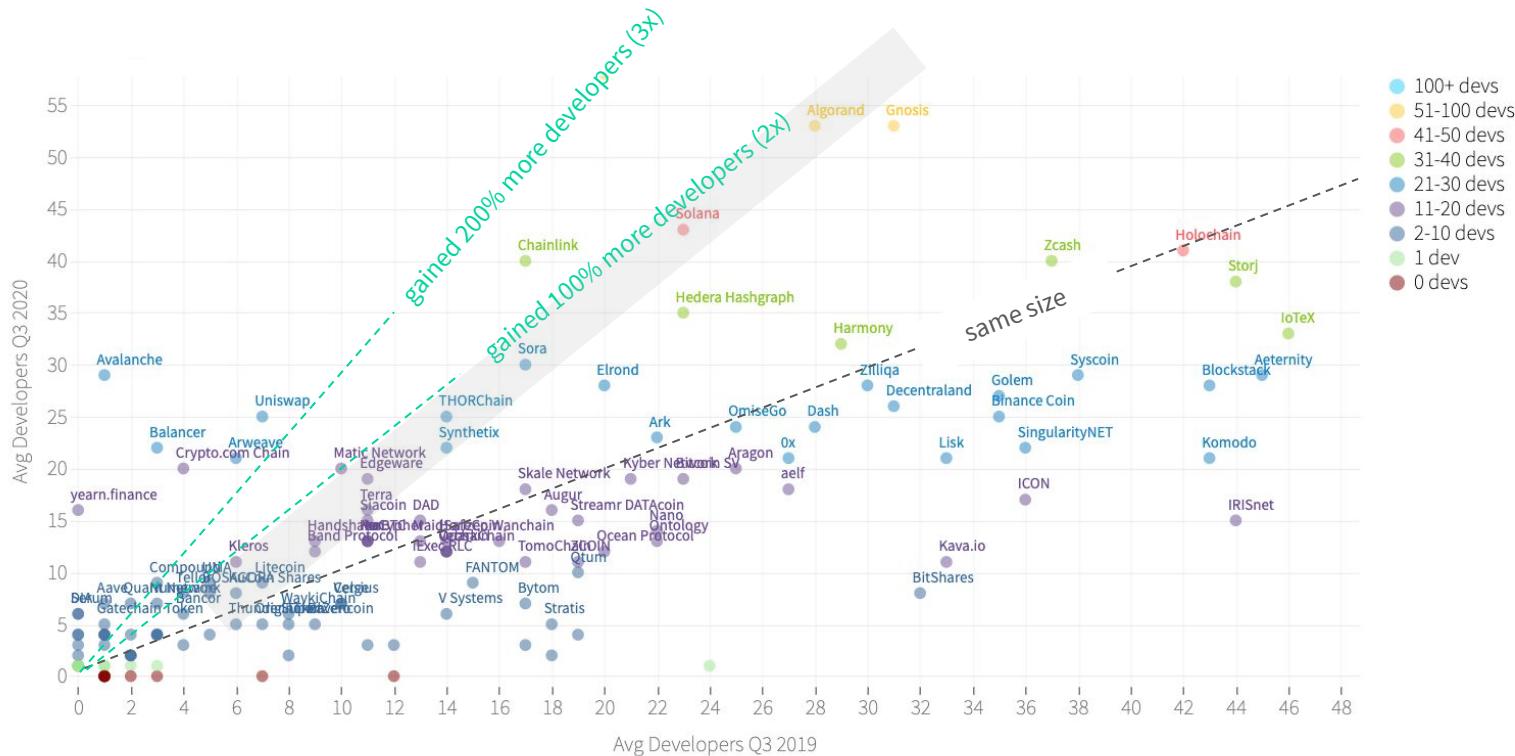


**ZOOMING INTO ECOSYSTEMS WITH <50 DEVELOPERS &
FILTERING OUT SMALL NETWORK VALUE ECOSYSTEMS...**

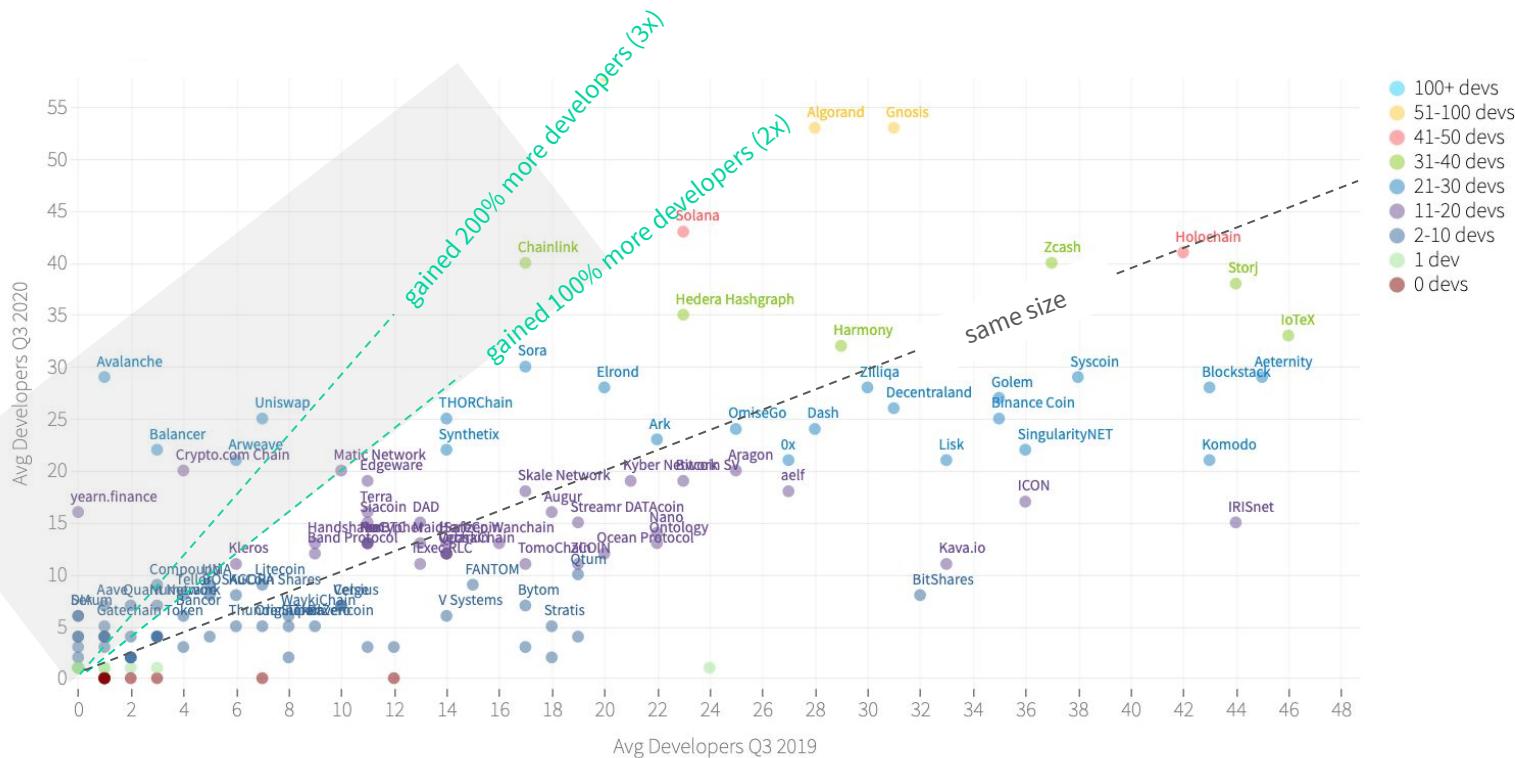
HOLO, OMISEGO, ZILLIQA, ARK, SKALE, & OTHERS ROUGHLY STAYED THE SAME SIZE



ALGORAND, SOLANA, THORCHAIN, SYNTHETIX, & OTHERS HAVE CLOSE TO 2X THEIR DEVELOPERS IN 2019 Q3



CHAINLINK, AVALANCHE, UNISWAP, ARWEAVE, CRYPTO.COM, BALANCER, MATIC & OTHERS HAVE MORE THAN 2X DEVELOPERS

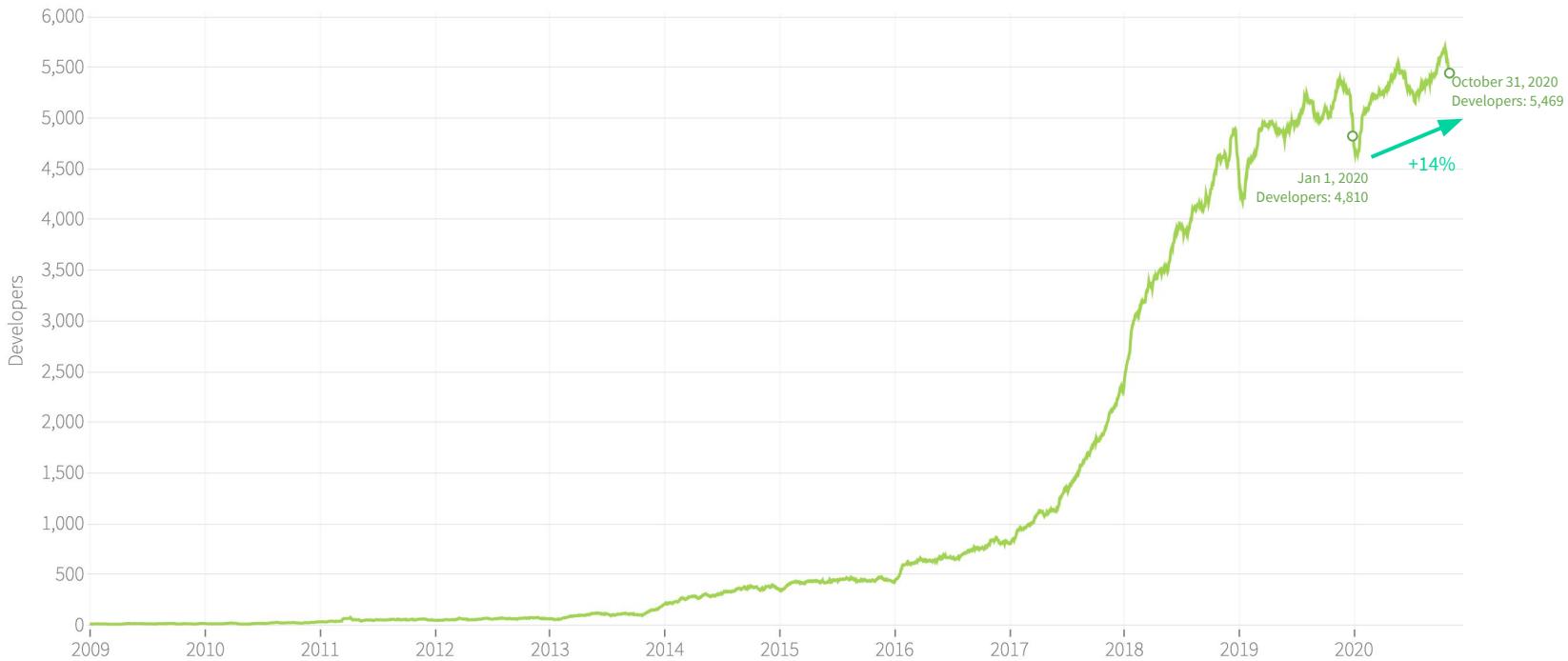


ECOSYSTEMS

BY TOP 200 IN NETWORK VALUE

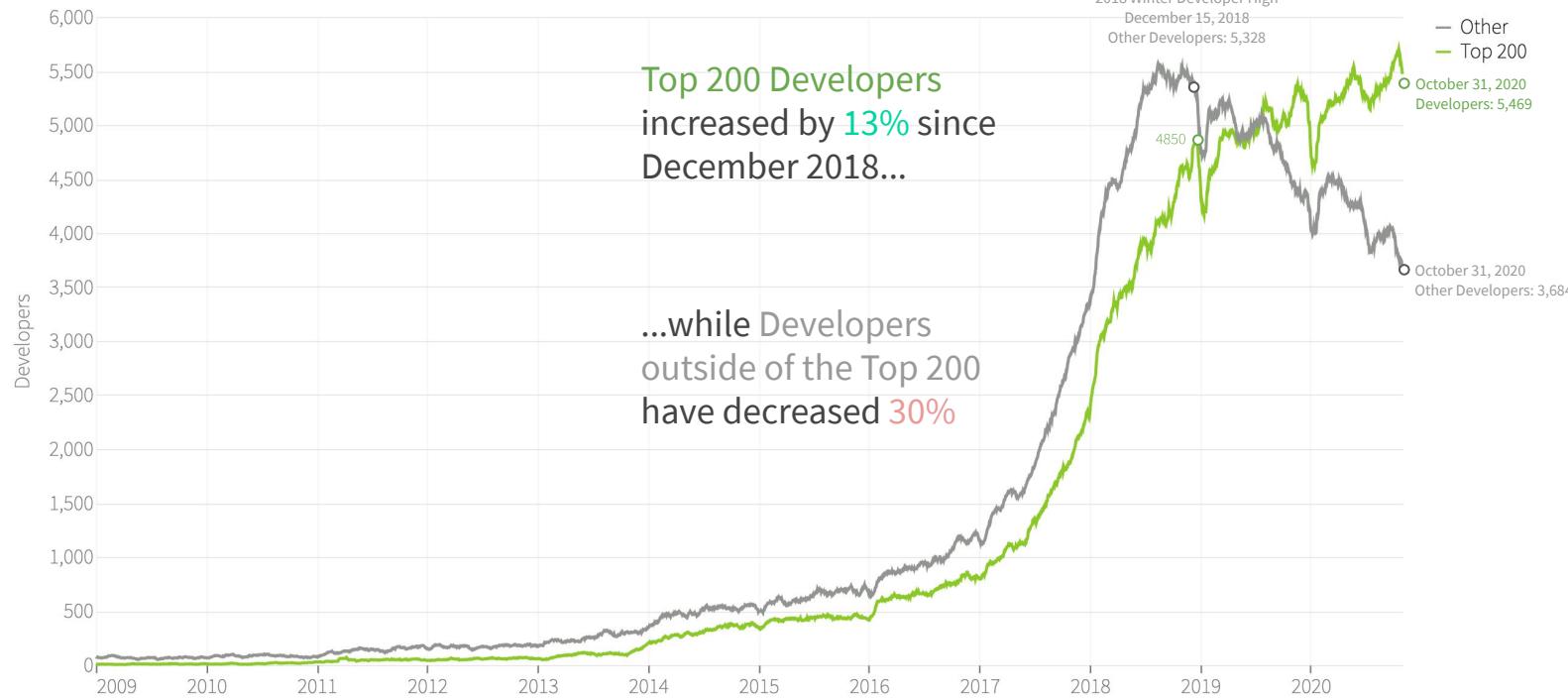
14% MORE DEVELOPERS WORKING IN THE TOP 200 SINCE JANUARY 2020

Top 200 Monthly Active Developers



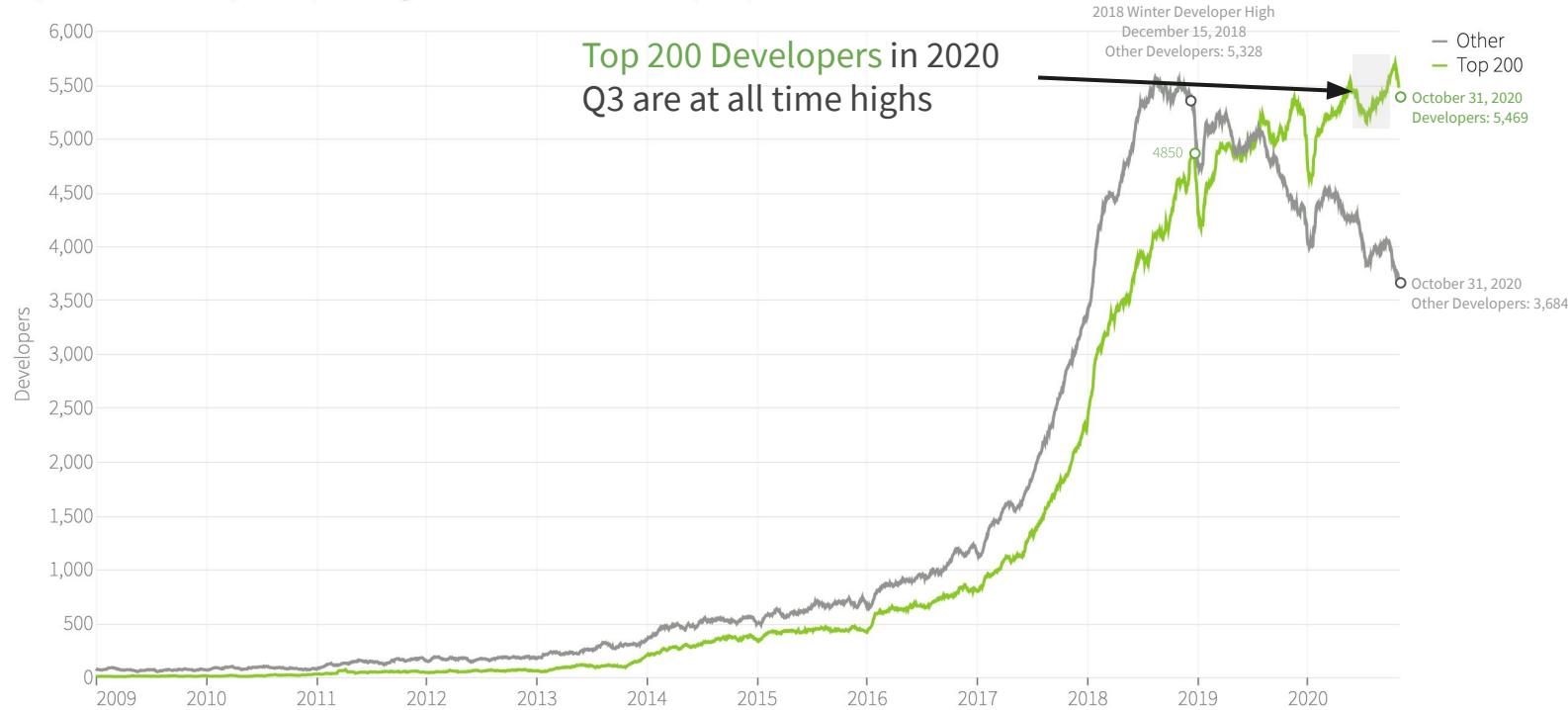
MOST DEVELOPERS HAVE CONSOLIDATED INTO THE TOP 200 ECOSYSTEMS

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



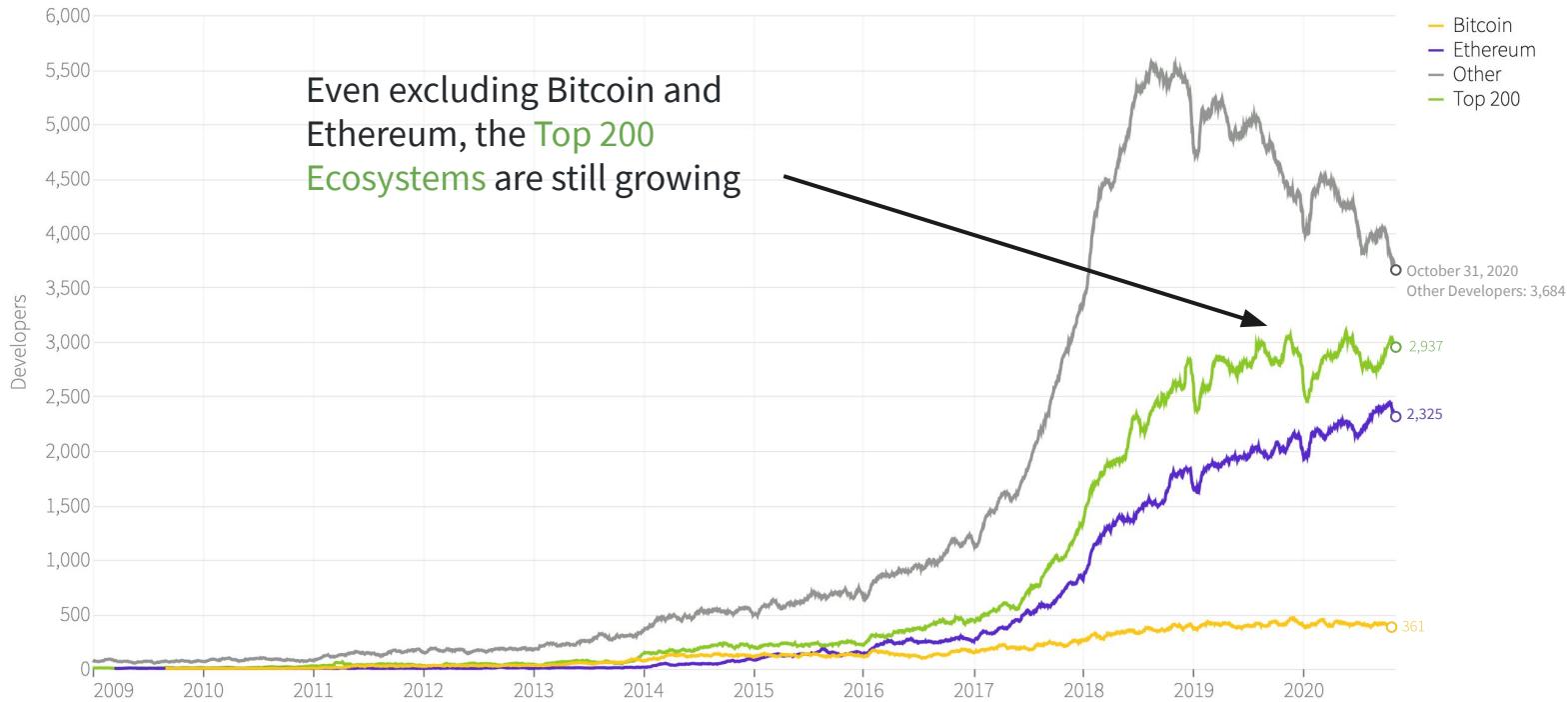
DEVELOPERS IN THE TOP 200 ECOSYSTEMS ARE AT ALL TIME HIGHS

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



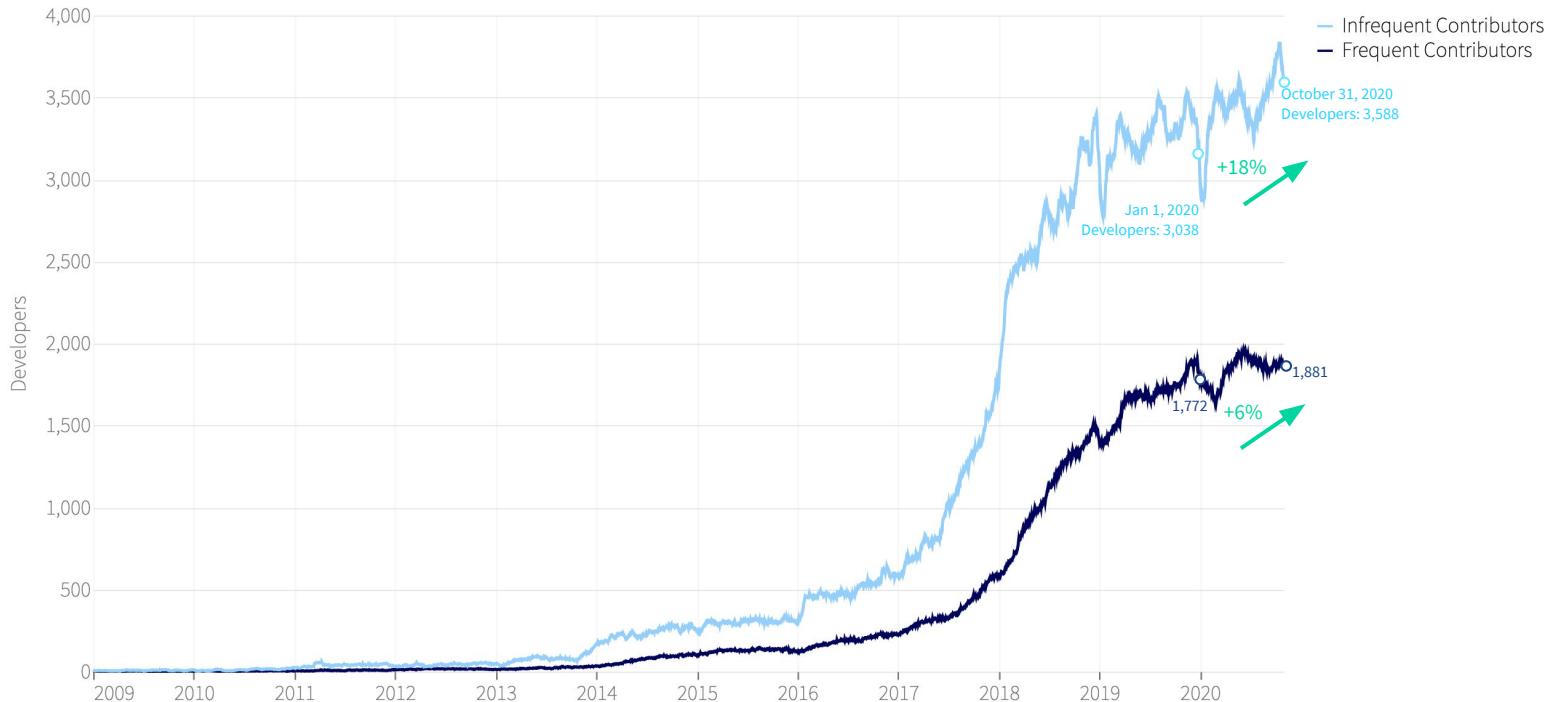
EVEN EXCLUDING BITCOIN AND ETHEREUM, TOP 200 ECOSYSTEMS ARE STILL GROWING

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



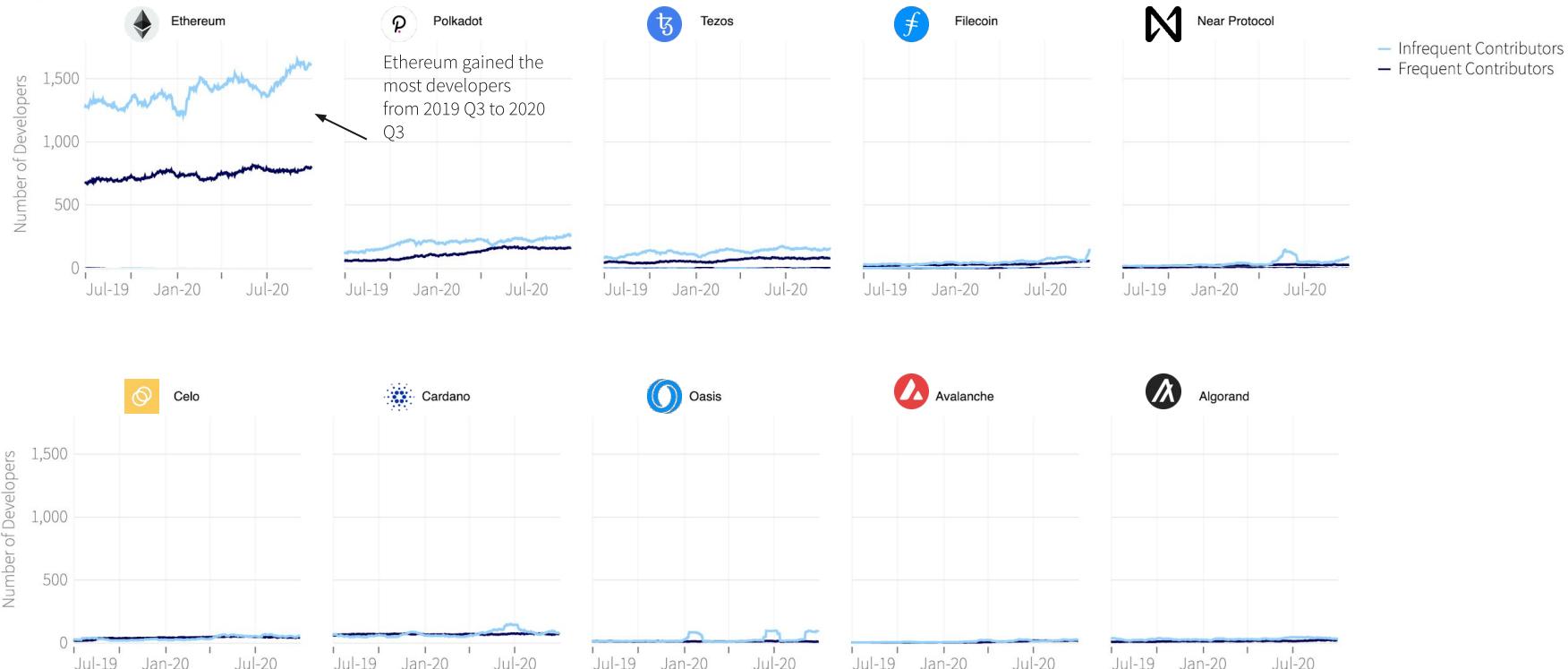
FREQUENT AND INFREQUENT CONTRIBUTORS BOTH INCREASED IN THE TOP 200 ECOSYSTEMS

Top 200 Monthly Active Developers



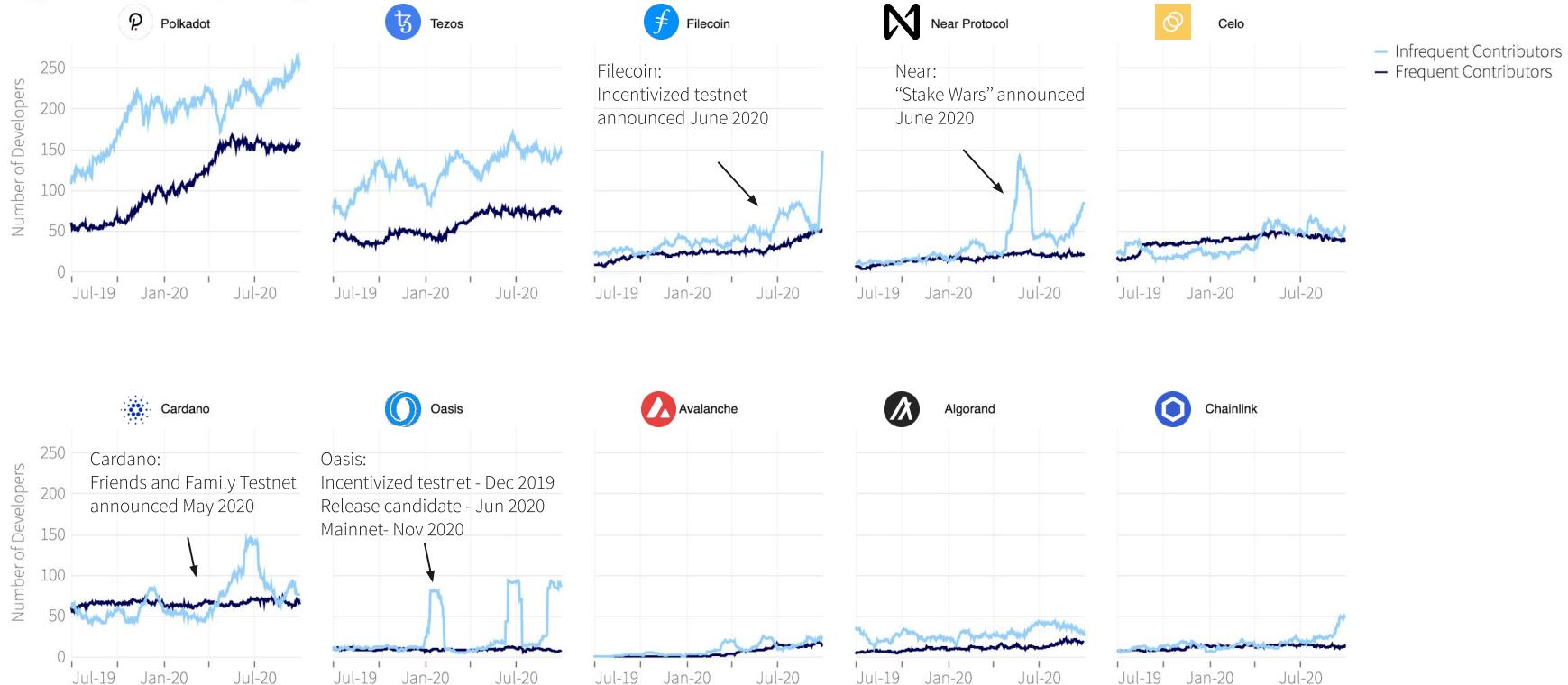
LOOKING AT TOP 10 GAINERS ACROSS ALL TOP 200 ECOSYSTEMS... ETHEREUM GAINED THE MOST DEVELOPERS

BIGGEST DEVELOPER GAINS



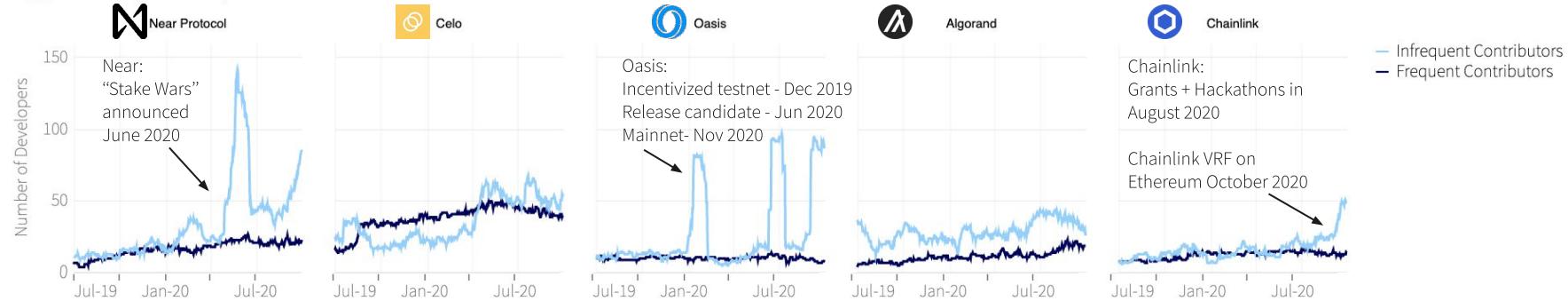
EXCLUDING ETHEREUM FROM THE TOP 10 GAINERS, WE SEE...

Biggest Developer Gains (Excluding Ethereum)



FILTERING TO TOP 10 GAINERS IN ECOSYSTEMS WITH 100 DEV'S OR FEWER...

BIGGEST DEVELOPER GAINS | 51-100 DEV'S, 41-50 DEV'S, 31-40 DEV'S



FILTERING TO TOP 10 GAINERS IN ECOSYSTEMS WITH 30 DEVS OR FEWER...

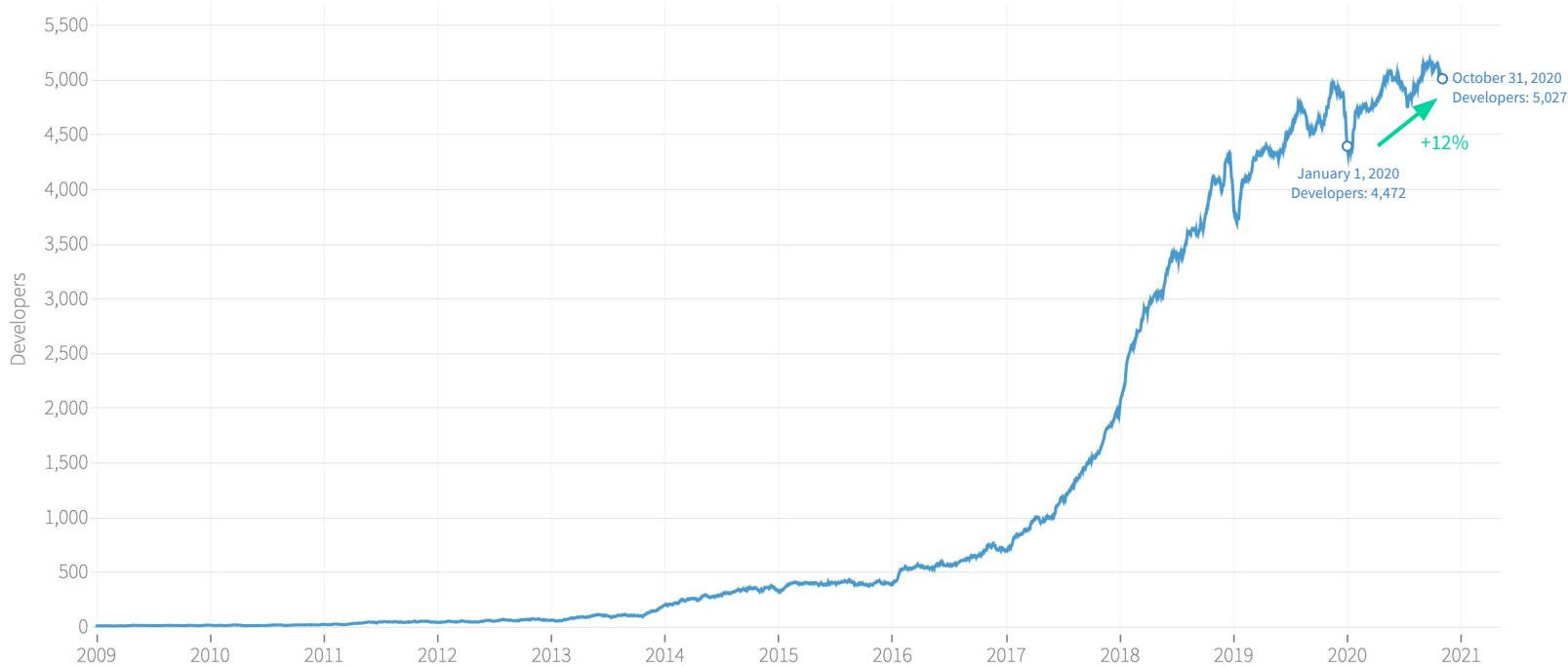
Biggest Developer Gains | 21-30 devs, 11-20 devs, 2-10 devs



ECOSYSTEMS
BY LAYER 1

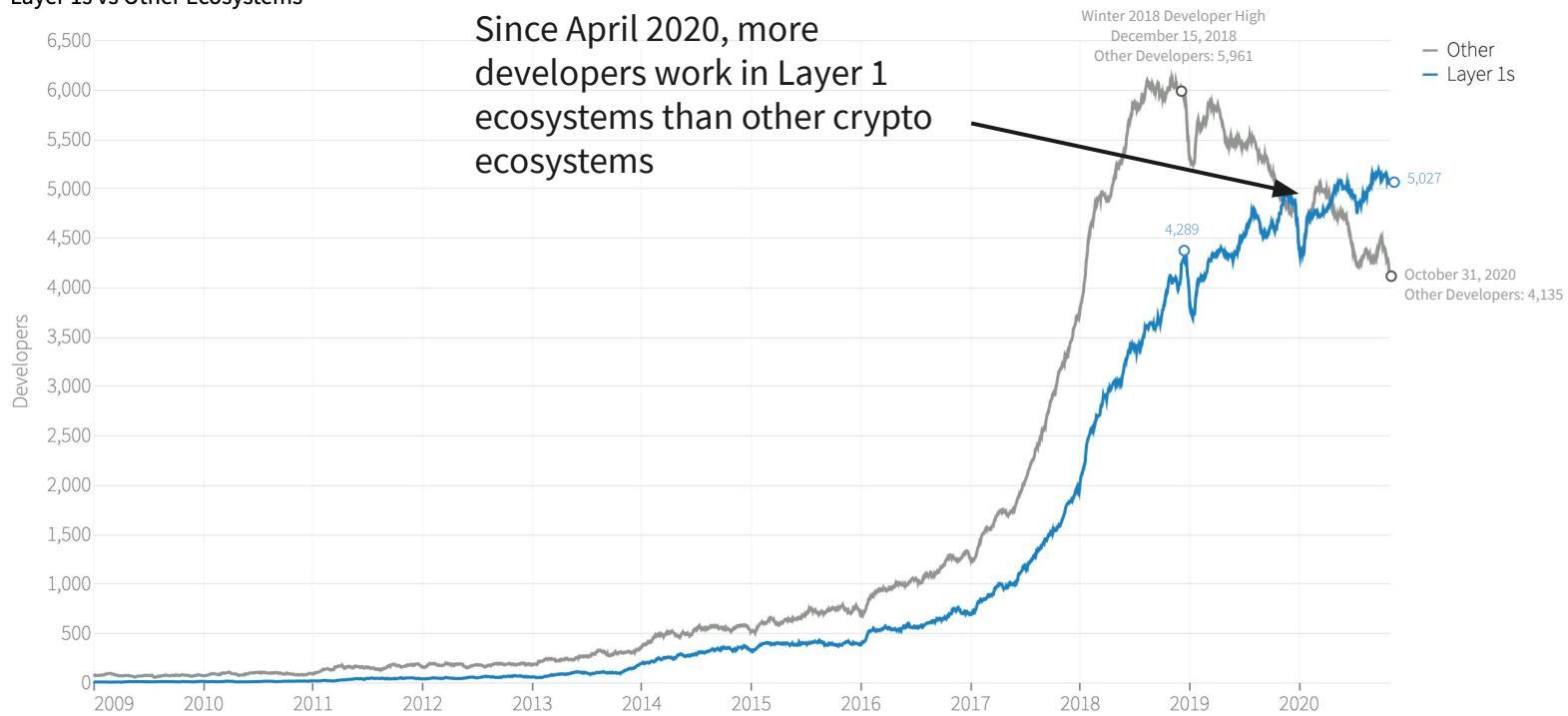
12% MORE DEVELOPERS WORKING IN LAYER 1 ECOSYSTEMS SINCE JANUARY 2020

Layer 1s Monthly Active Developers



SINCE APRIL 2020, MORE DEVELOPERS WORK IN LAYER 1 ECOSYSTEMS THAN OTHER CRYPTO ECOSYSTEMS

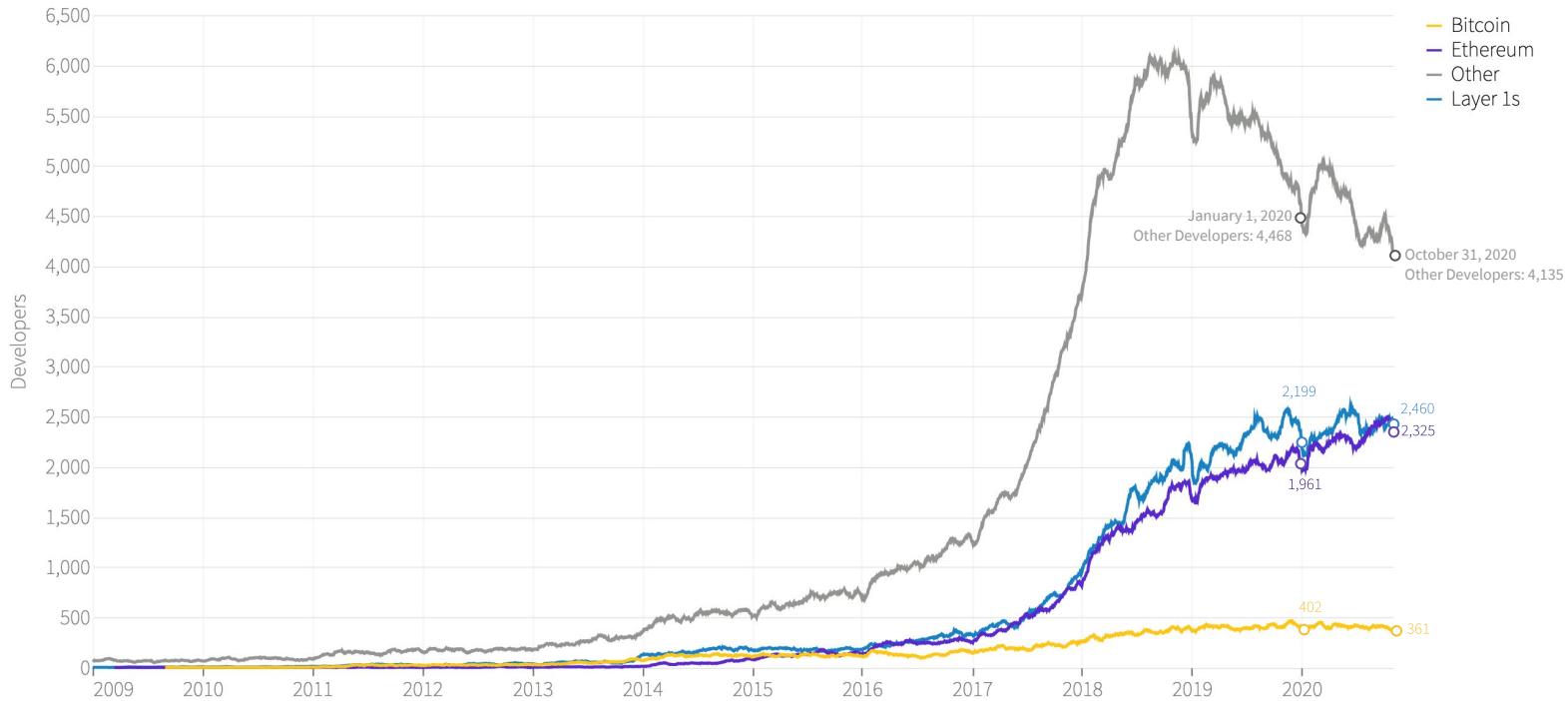
Layer 1s vs Other Ecosystems



Since April 2020, more
developers work in Layer 1
ecosystems than other crypto
ecosystems

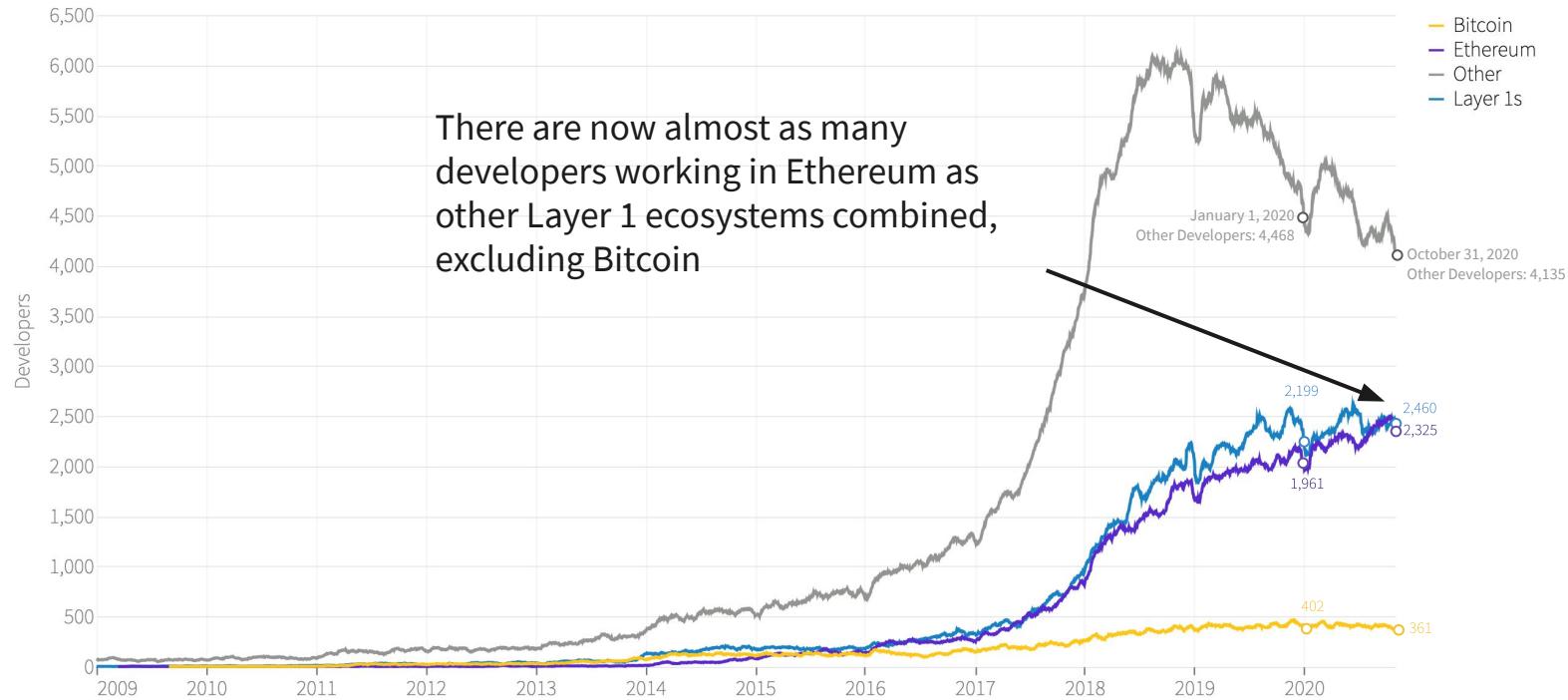
REMOVING ETHEREUM & BITCOIN, LAYER 1 ECOSYSTEMS ARE STILL GAINING DEVELOPERS

Layer 1s vs Other Ecosystems (Excluding Bitcoin & Ethereum from Layer 1s)



THERE ARE NOW ALMOST AS MANY DEVELOPERS WORKING IN ETHEREUM AS OTHER LAYER 1 ECOSYSTEMS COMBINED

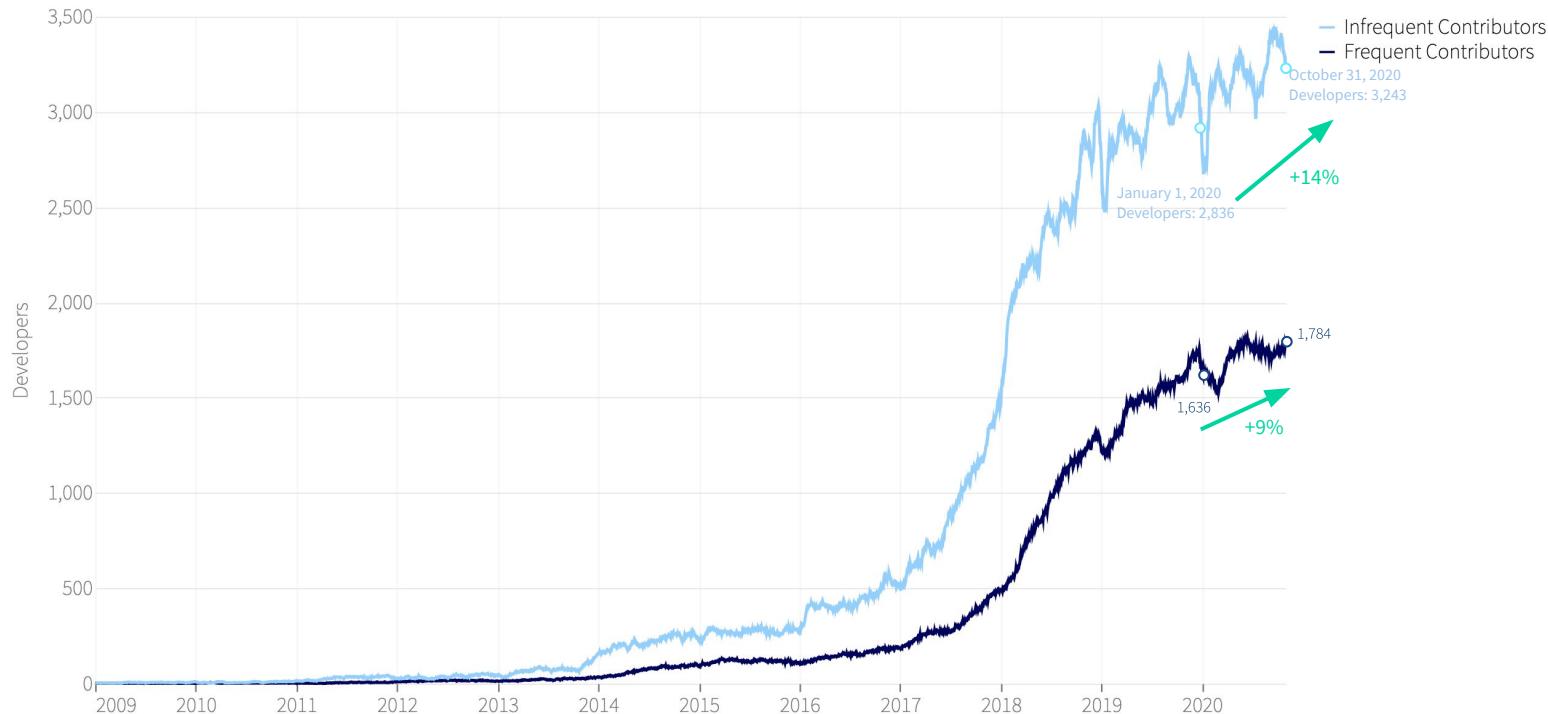
Layer 1s vs Other Ecosystems (Excluding Bitcoin & Ethereum from Layer 1s)



There are now almost as many
developers working in Ethereum as
other Layer 1 ecosystems combined,
excluding Bitcoin

BOTH FREQUENT AND INFREQUENT CONTRIBUTORS ARE INCREASING FOR LAYER 1 ECOSYSTEMS

Layer 1s Monthly Active Developers

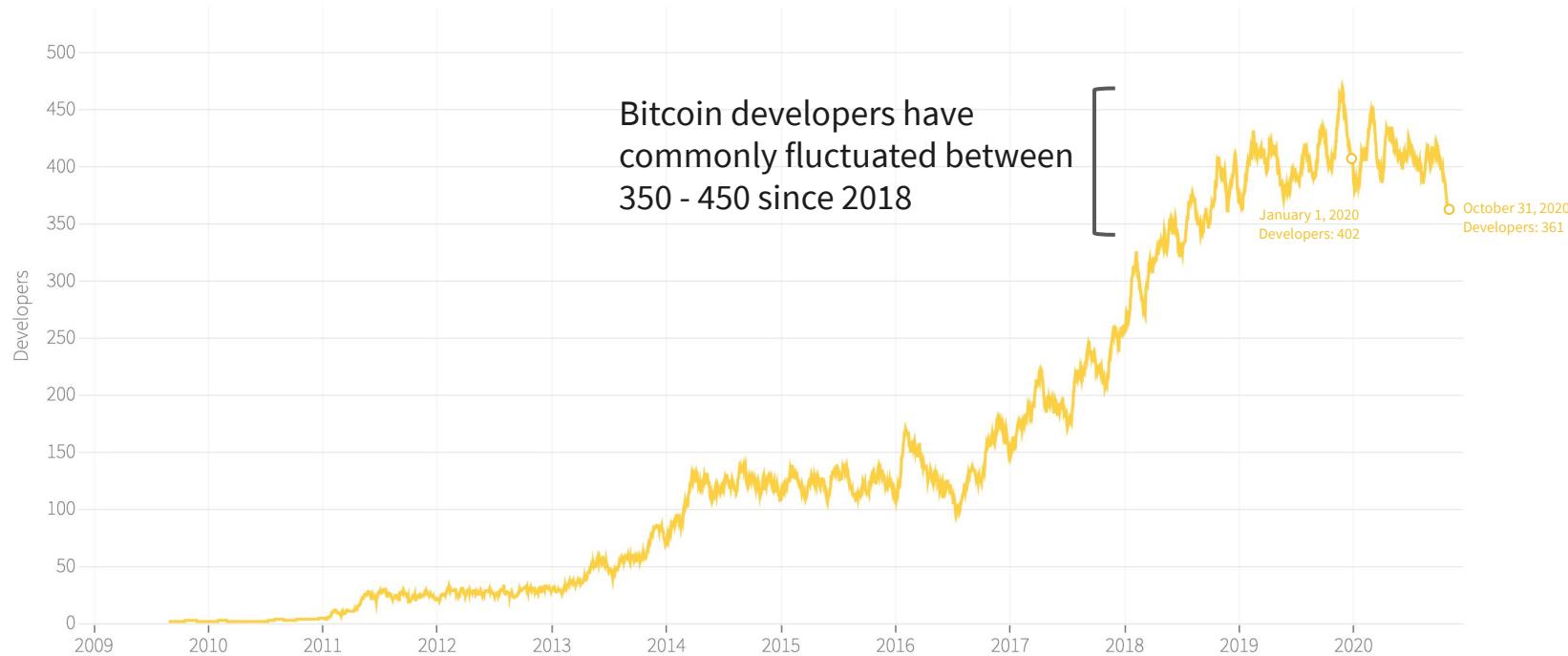


LAYER 1

BITCOIN

THE NUMBER OF BITCOIN DEVELOPERS HAVE STAYED AROUND THE SAME SINCE 2019

Bitcoin Monthly Active Developers



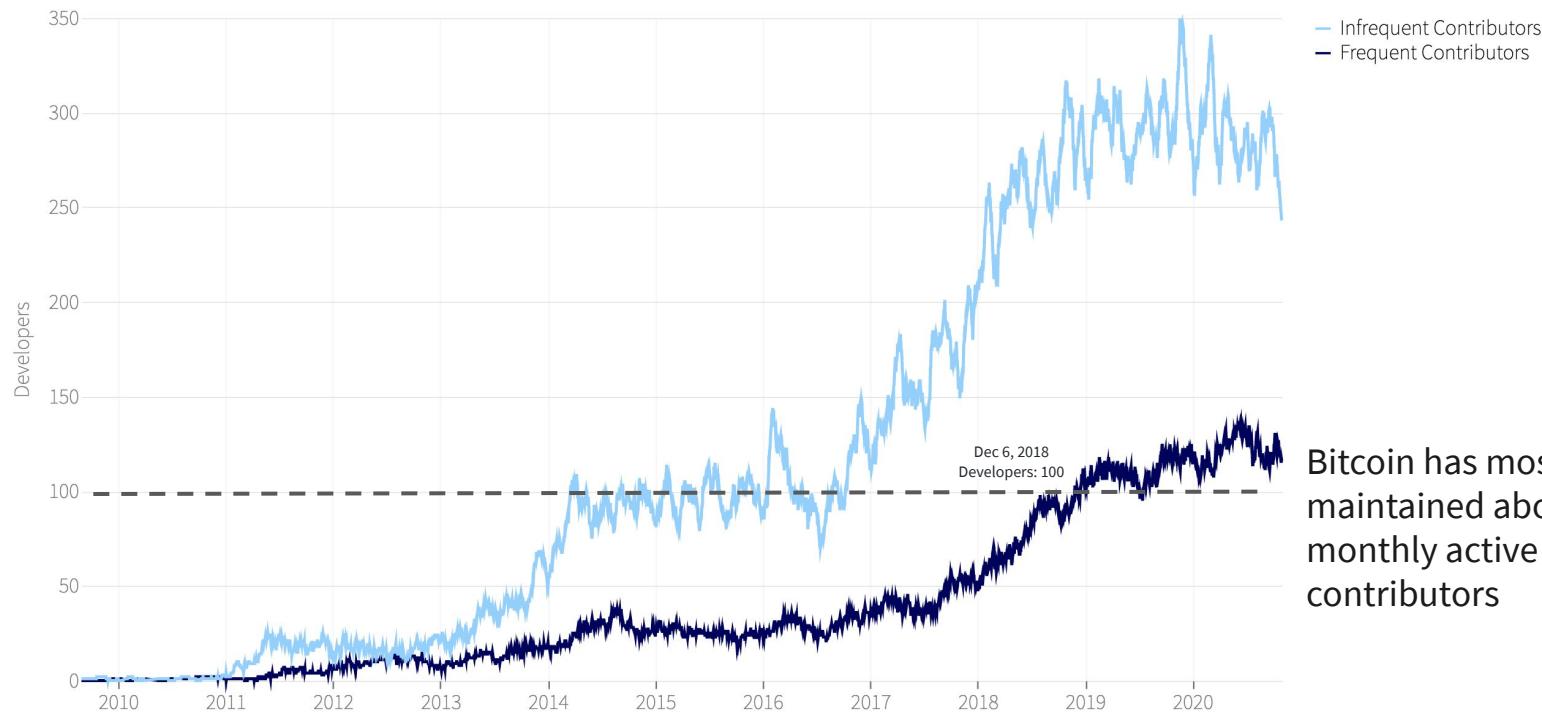
BITCOIN MONTHLY ACTIVE DEVELOPERS HAVE GROWN 70%+ IN 3 YEARS

Bitcoin Monthly Active Developers



BITCOIN HAS MAINTAINED ABOVE 100 MONTHLY ACTIVE FREQUENT CONTRIBUTORS

Bitcoin Monthly Active Developers



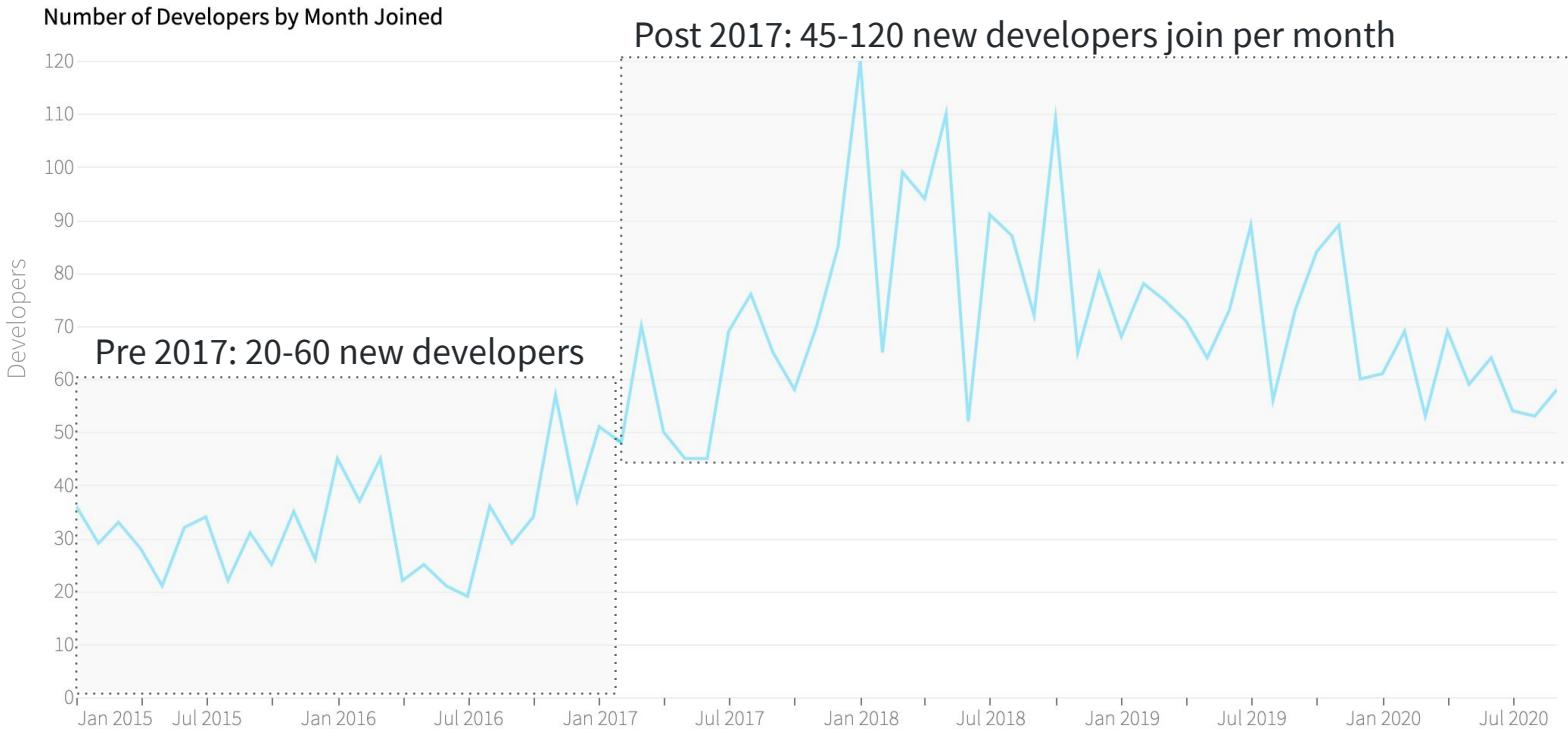
Bitcoin has mostly maintained above 100 monthly active frequent contributors

BETWEEN 45 - 120 NEW DEVELOPERS CONTRIBUTE TO BITCOIN PER MONTH SINCE 2017

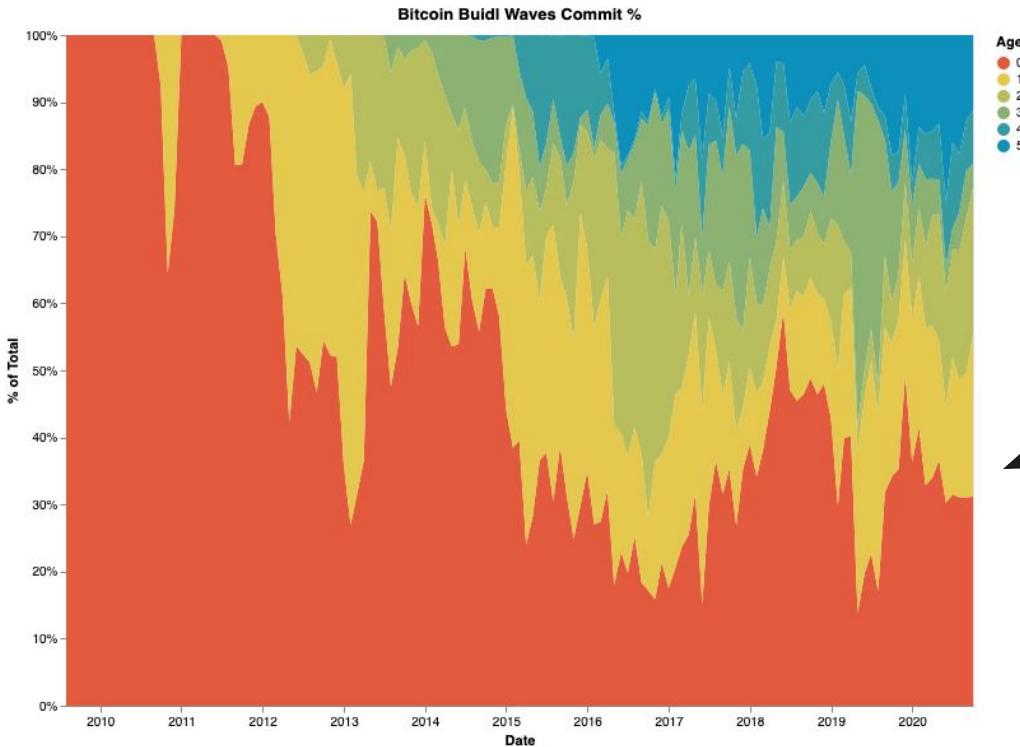
Number of Developers by Month Joined



THE NUMBER OF NEW DEVELOPERS THAT JOIN BITCOIN INCREASED AFTER 2017 BULL RUN



BITCOIN ECOSYSTEM BUILD* WAVES



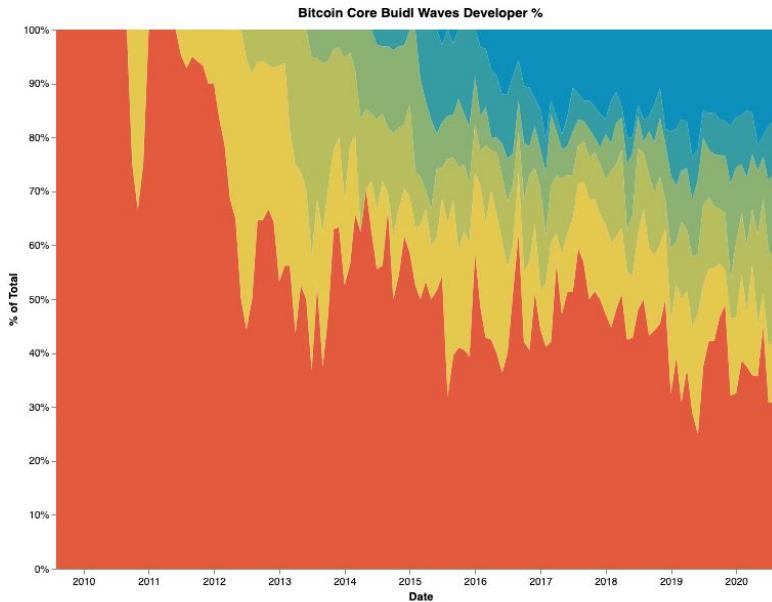
We can color code the age distribution of developers that contribute commits in Bitcoin...

...spikes in warmer colors (red, yellow) indicate increased commits from newer developers

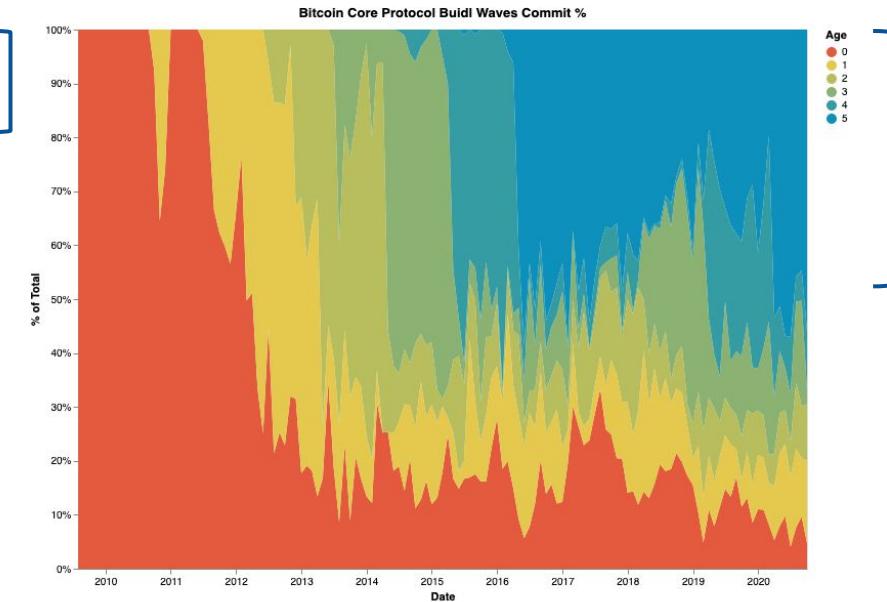


LOOKING ONLY AT BITCOIN CORE, 50% OF THE MONTHLY COMMITS ARE FROM DEVS INVOLVED FOR 5 YEARS OR MORE

~20% of developers in 2020 have been developing in Bitcoin Core for 5+ years...



...and they contribute 50% of monthly commits

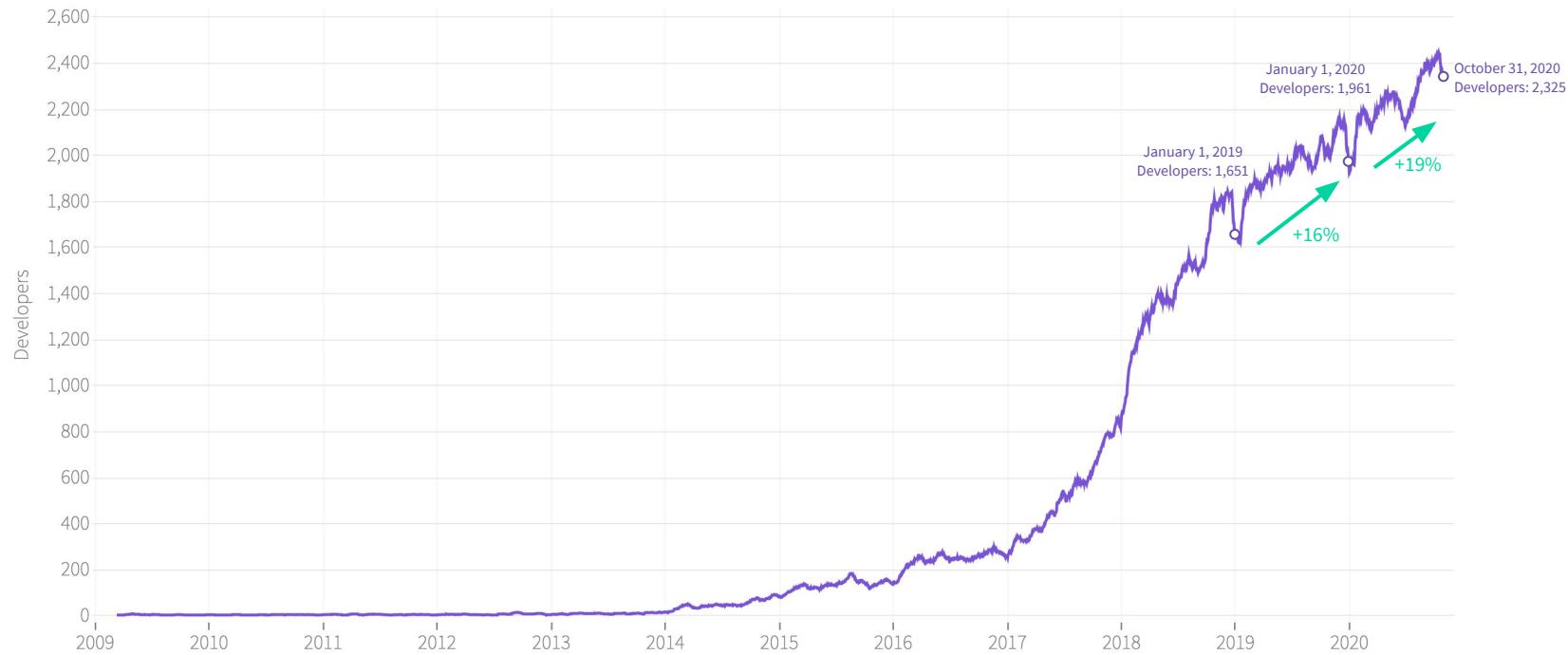


LAYER 1

ETHEREUM

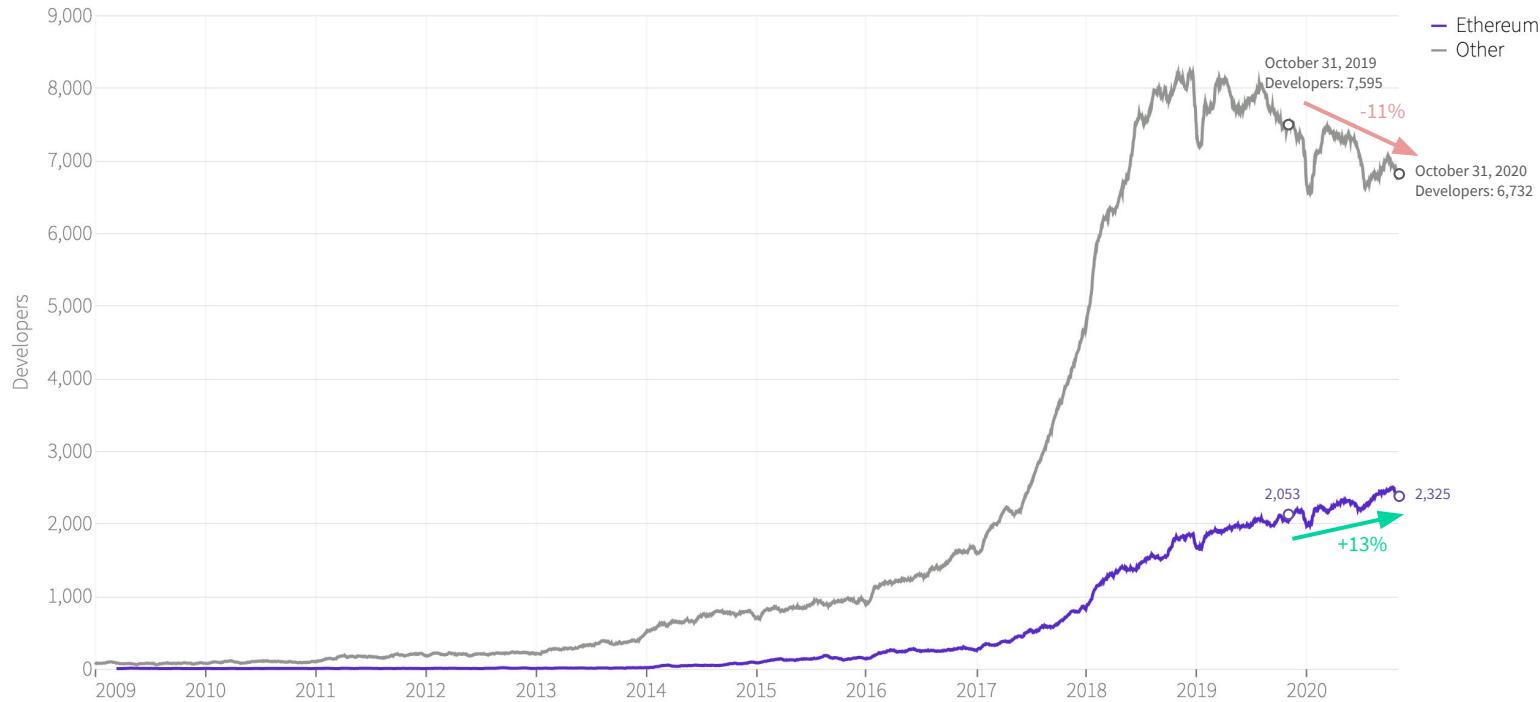
ETHEREUM HAS CONSISTENTLY INCREASED MONTHLY ACTIVE DEVELOPERS

Ethereum Monthly Active Developers



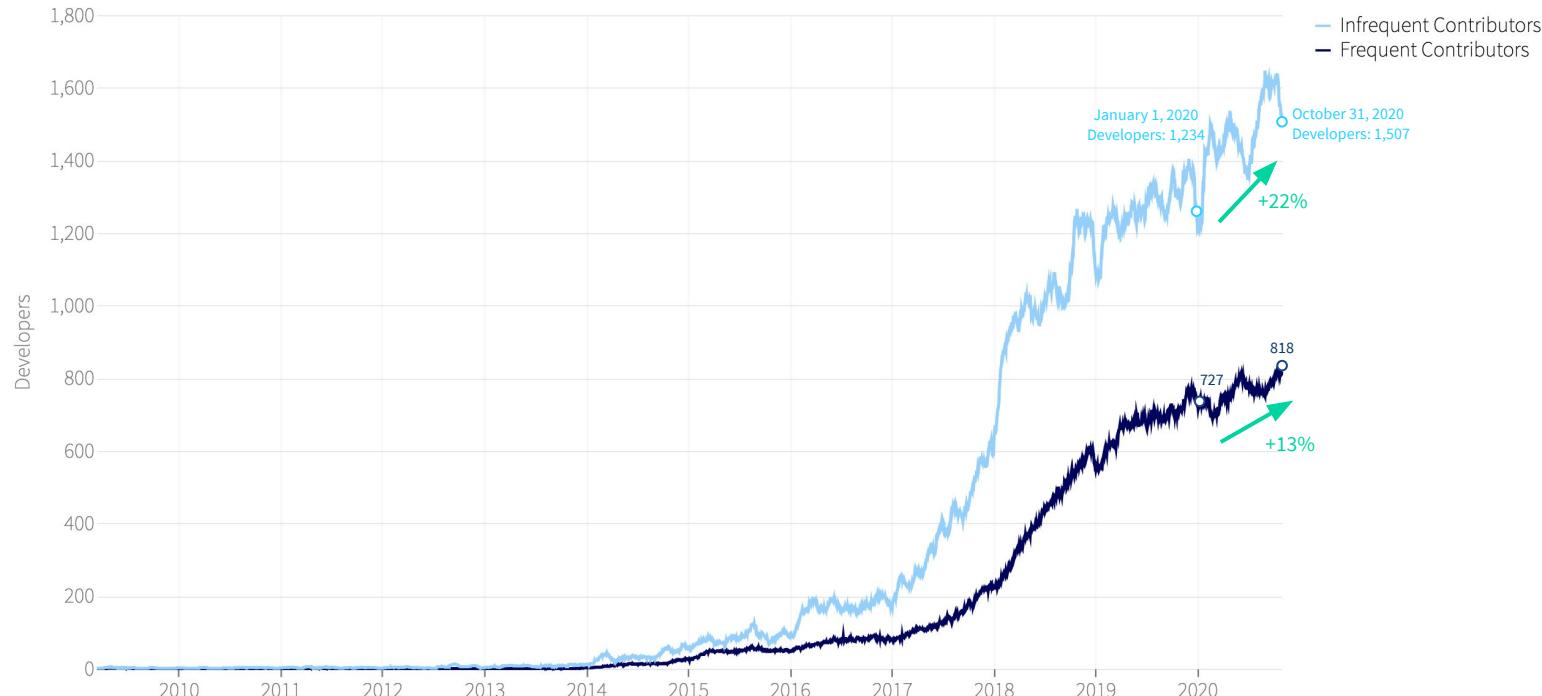
ECOSYSTEMS OUTSIDE OF ETHEREUM HAVE LOST DEVELOPERS SINCE OCT 2019

Ethereum vs Other Ecosystems



INFREQUENT CONTRIBUTORS INCREASED 22% WHILE FREQUENT CONTRIBUTORS INCREASED 13% IN ETHEREUM SINCE JAN 2020

Ethereum Monthly Active Developers



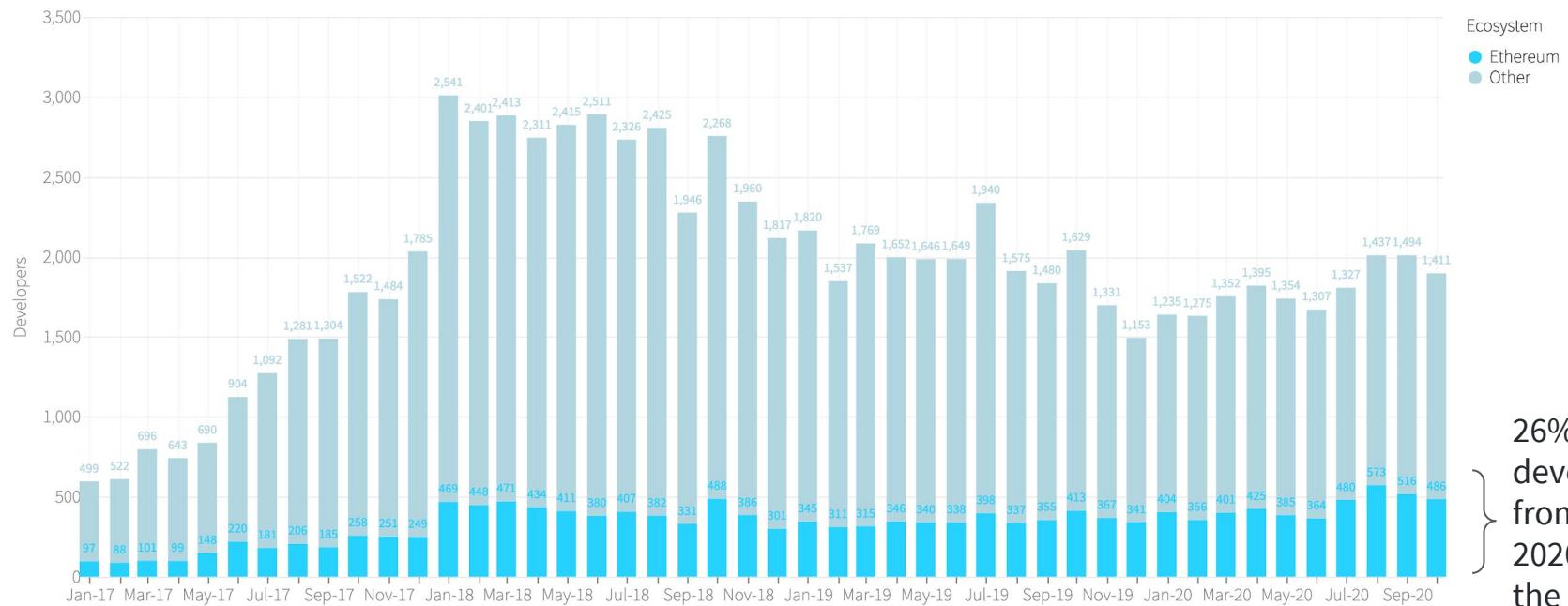
SINCE 2018, 300+ NEW DEVELOPERS COMMIT TO THE ETHEREUM ECOSYSTEM EACH MONTH

Number of Developers by Month Joined



ROUGHLY A QUARTER OF NEW DEVELOPERS IN CRYPTO CONTRIBUTE TO THE ETHEREUM ECOSYSTEM

Number of Developers by Month Joined



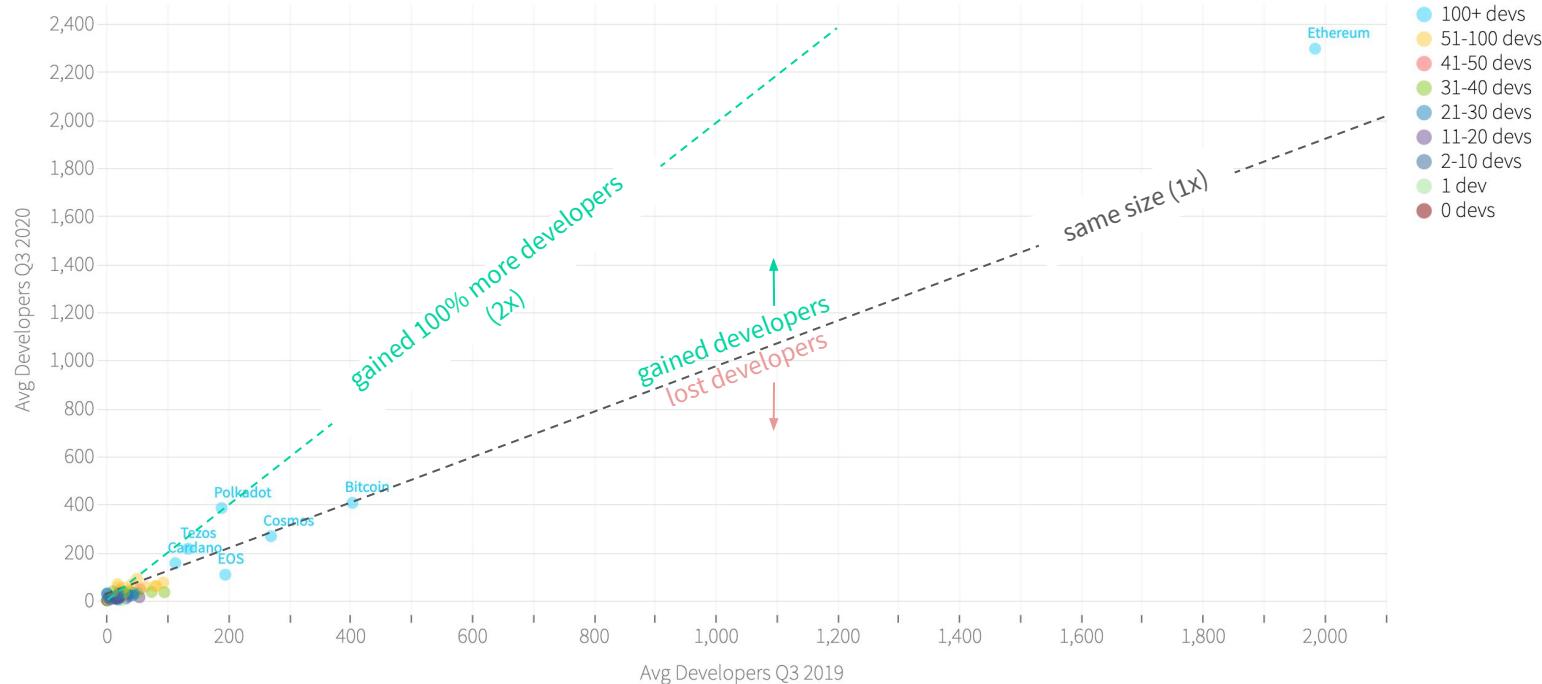
Ecosystem
● Ethereum
● Other

26% of new
developers
from October
2020 were in
the Ethereum
ecosystem

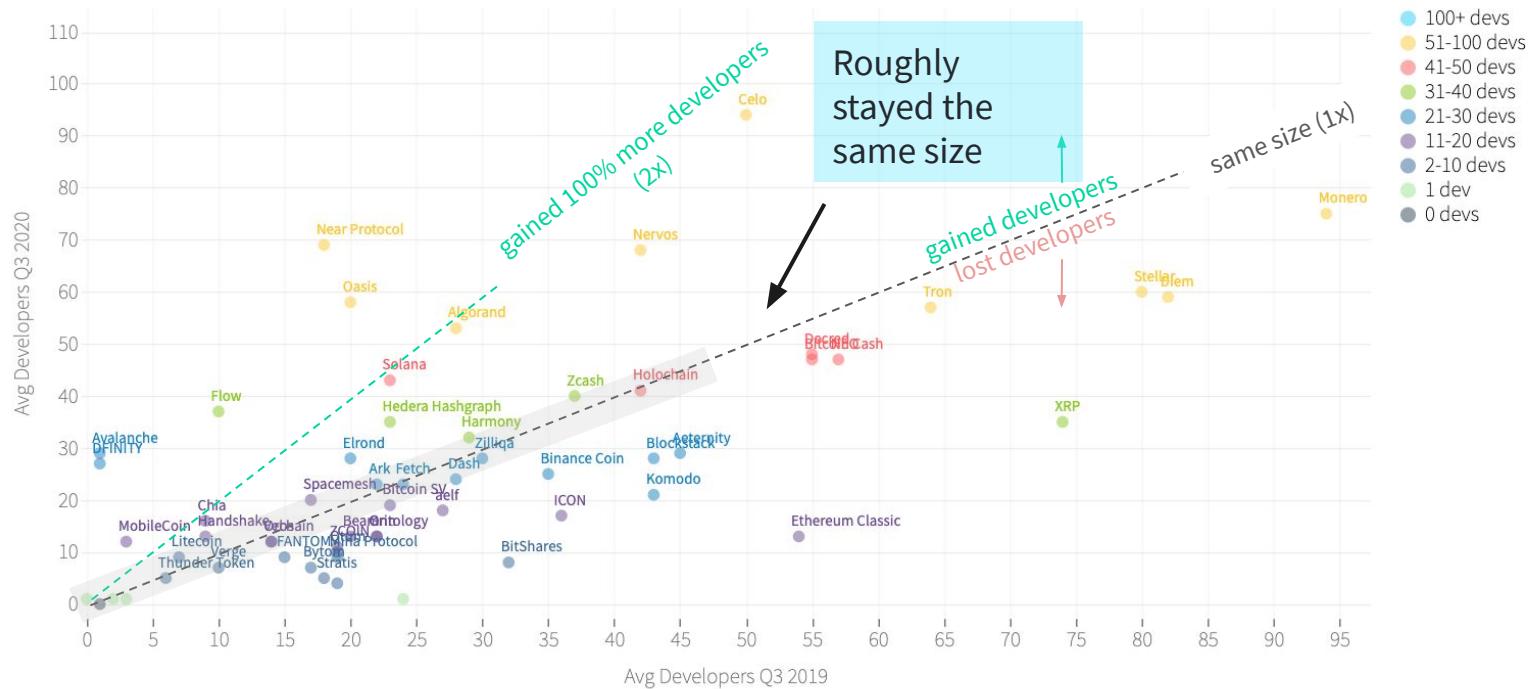
LAYER 1 ECOSYSTEMS

ALL LAYER 1 ECOSYSTEMS

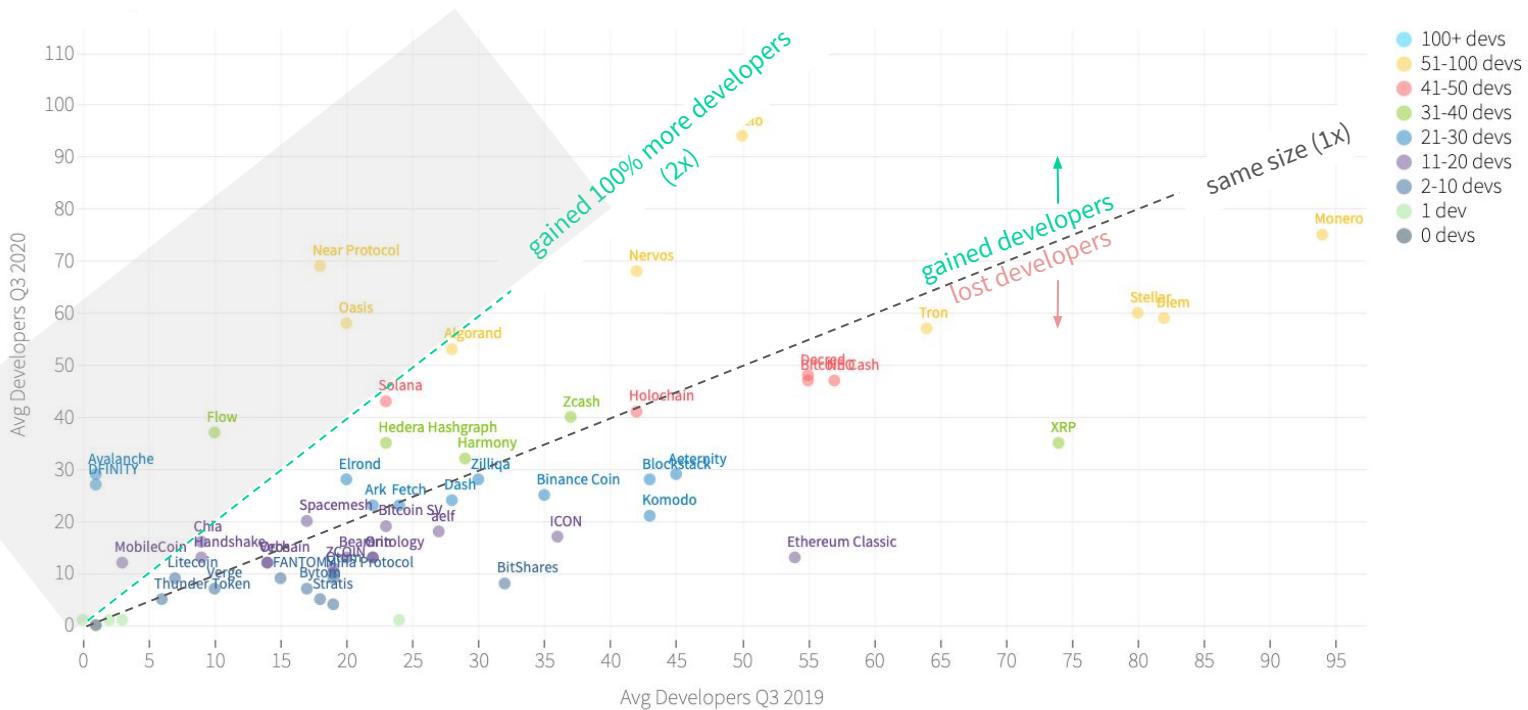
ETHEREUM, BITCOIN, POLKADOT, COSMOS, TEZOS, CARDANO, EOS ARE THE BIGGEST LAYER 1 ECOSYSTEMS



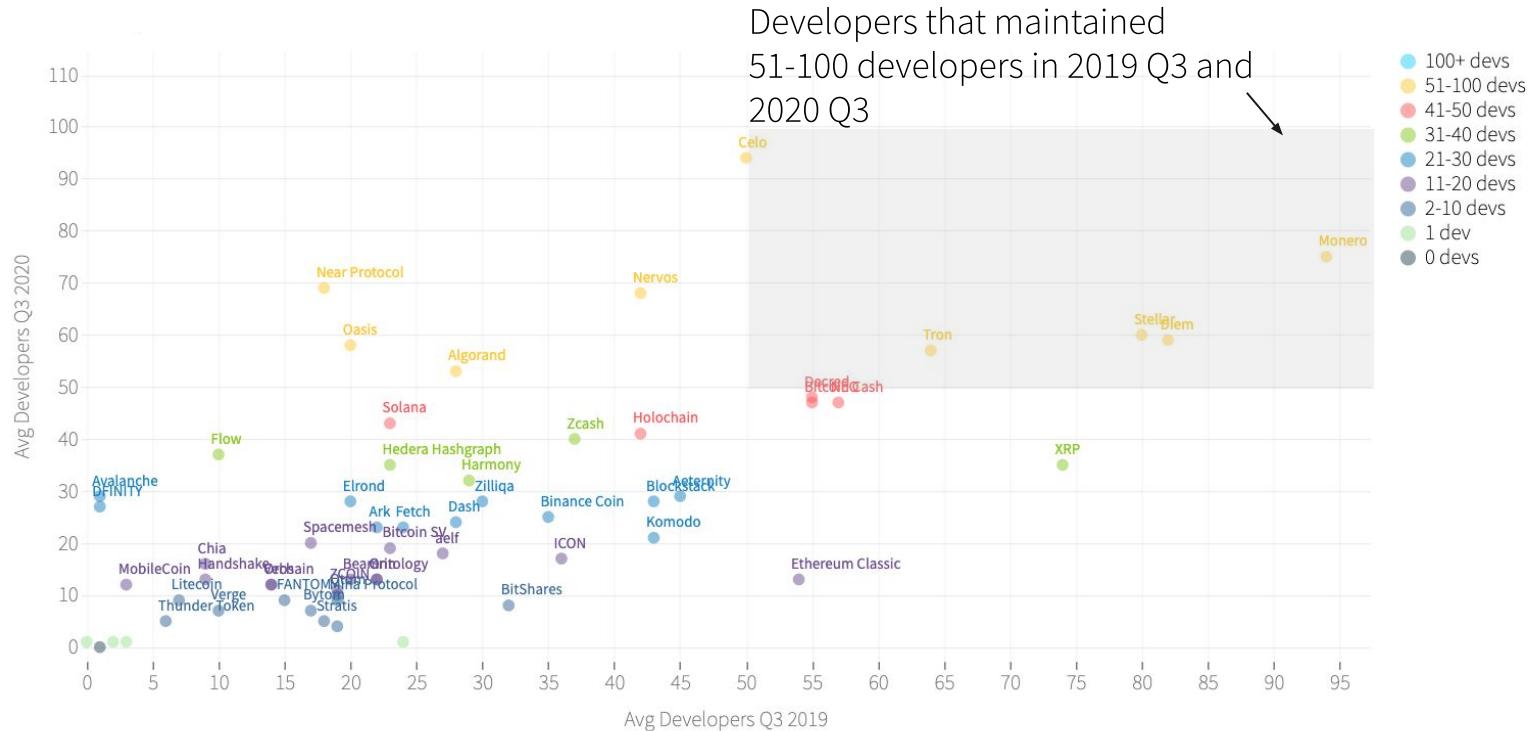
HOLO, ZCASH, HARMONY, ZILLIQA, FETCH, ARK, SPACEMESH, & OTHERS HAVE MAINTAINED ROUGHLY THE SAME NUMBER OF DEVELOPERS



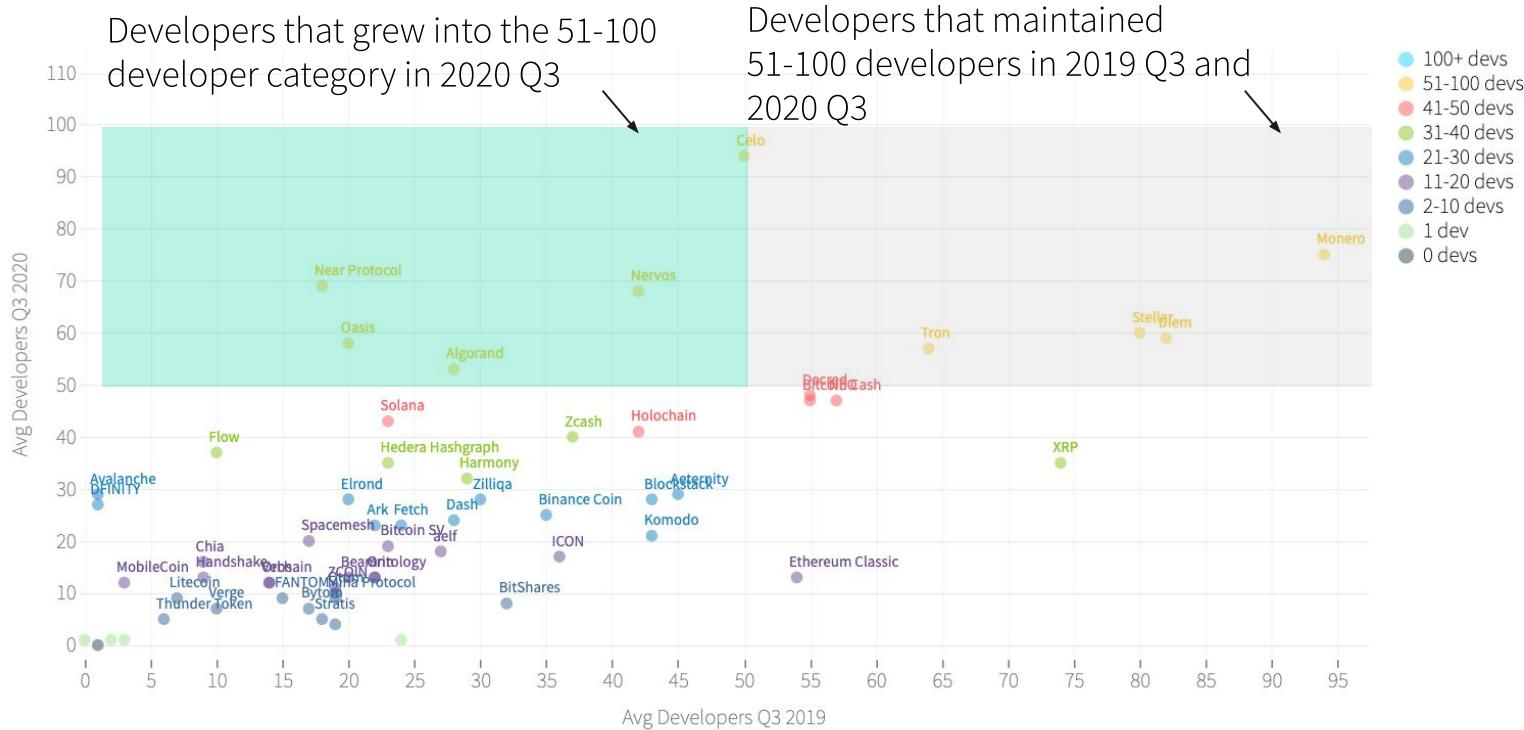
NEAR, OASIS, FLOW, AVALANCHE, DFINITY, & MOBILECOIN INCREASED AVERAGE MONTHLY DEVELOPERS BY 100%



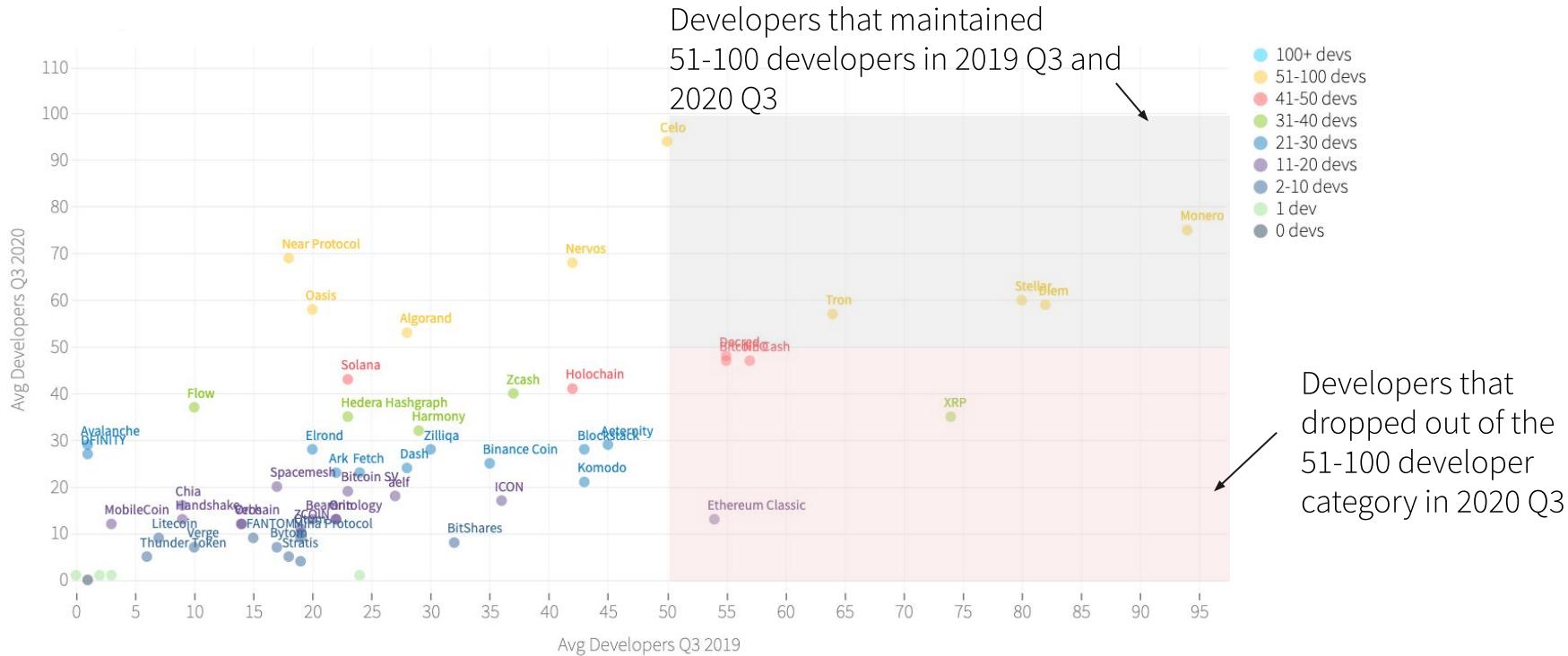
MONERO, TRON, STELLAR, & DIEM (LIBRA) MAINTAINED 51-100 DEVELOPERS BETWEEN 2019 Q3 AND 2020 Q3



CELO, NERVOUS, NEAR, OASIS LABS, & ALGORAND GREW INTO THE 51-100 DEVELOPER CATEGORY IN 2020 Q3



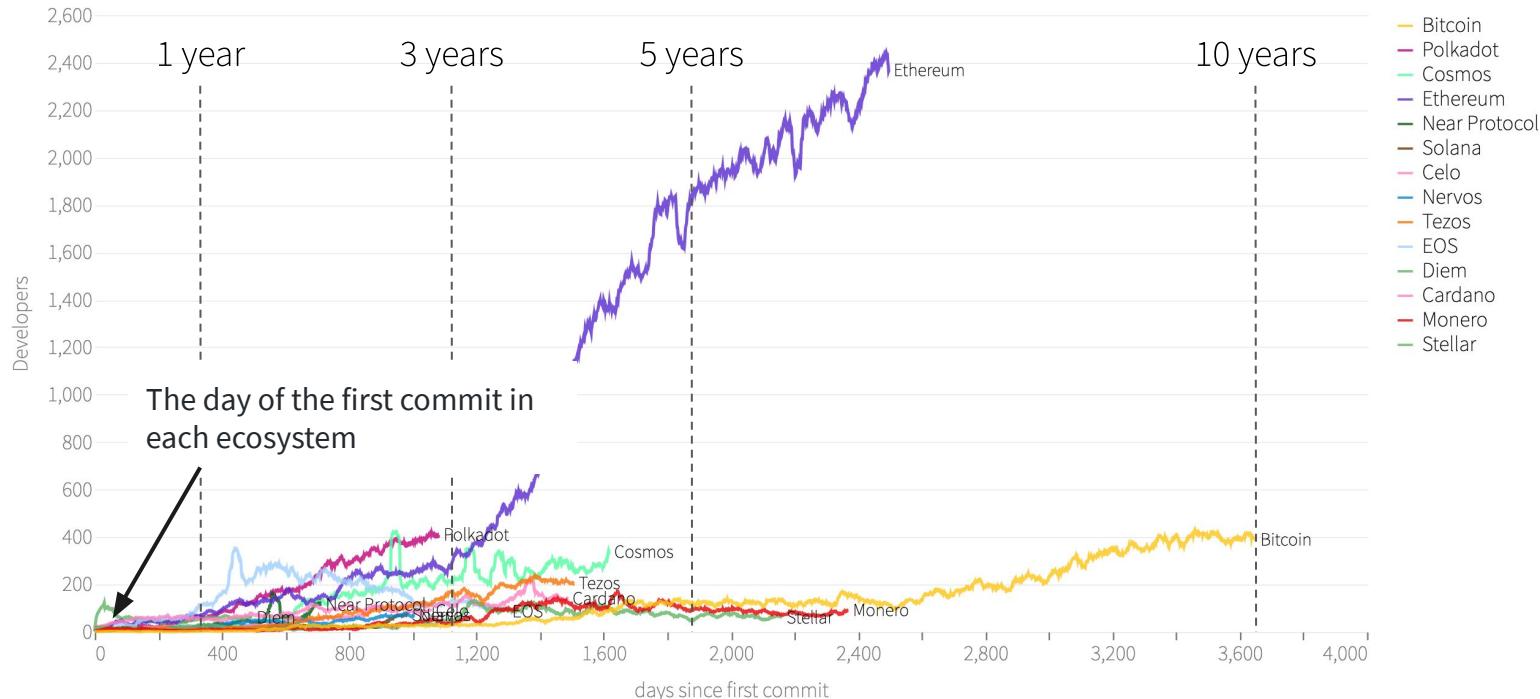
BITCOIN CASH, NEO, XRP, WAVES, & ETHEREUM CLASSIC DROPPED OUT OF THE 51-100 DEVELOPER CATEGORY IN 2020 Q3



**LET'S FILTER TO ECOSYSTEMS WITH MORE THAN 60
DEVELOPERS IN THE LAST MONTH....**

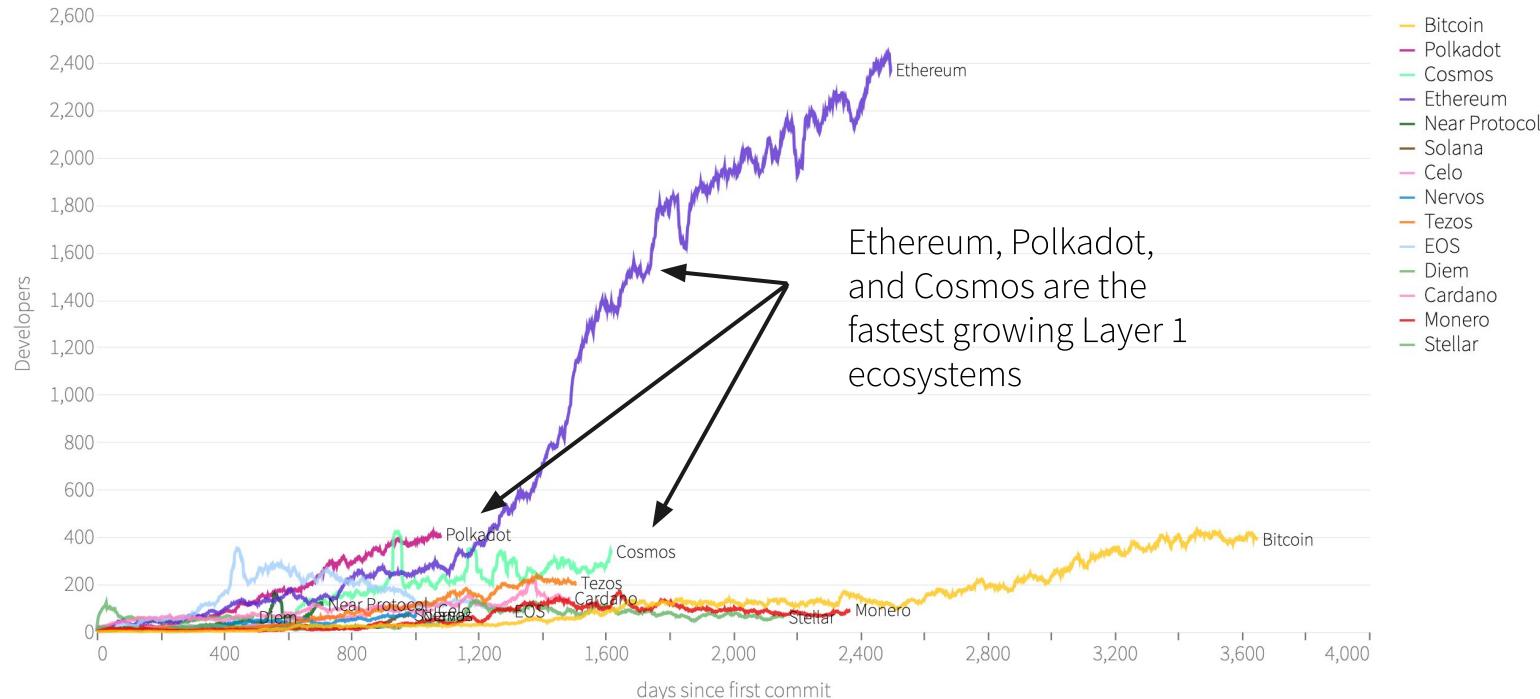
WE CAN COMPARE GROWTH BY LOOKING AT DEVELOPERS FROM THE DAY OF THE FIRST COMMIT

Monthly Active Developers Since Launch | 60+ Avg Developers



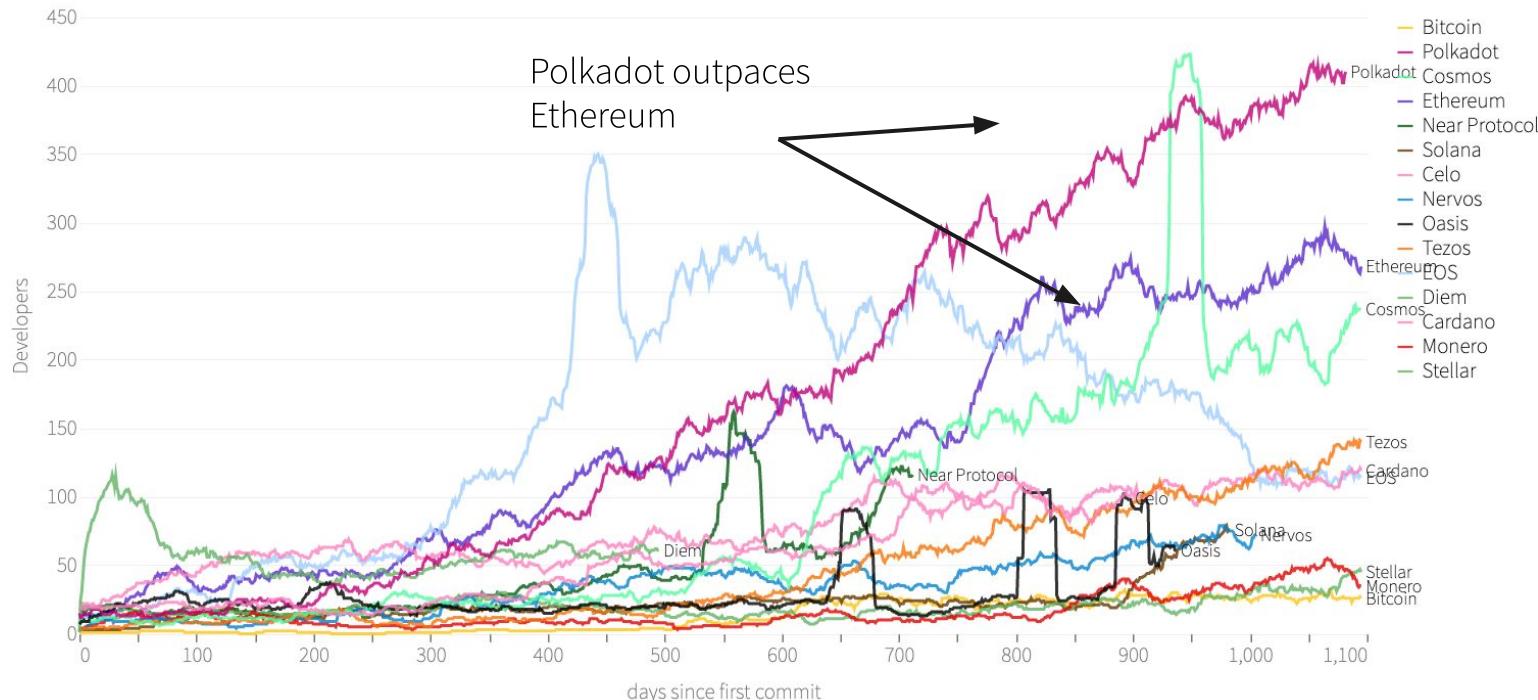
ETHEREUM, POLKADOT, AND COSMOS OUTPACE OTHER LAYER 1 PLATFORMS IN GROWTH

Monthly Active Developers Since Launch | 60+ Avg Developers



AT 3 YEARS SINCE FIRST COMMIT....POLKADOT HAS MORE DEVELOPERS THAN ETHEREUM AT THE SAME POINT IN TIME

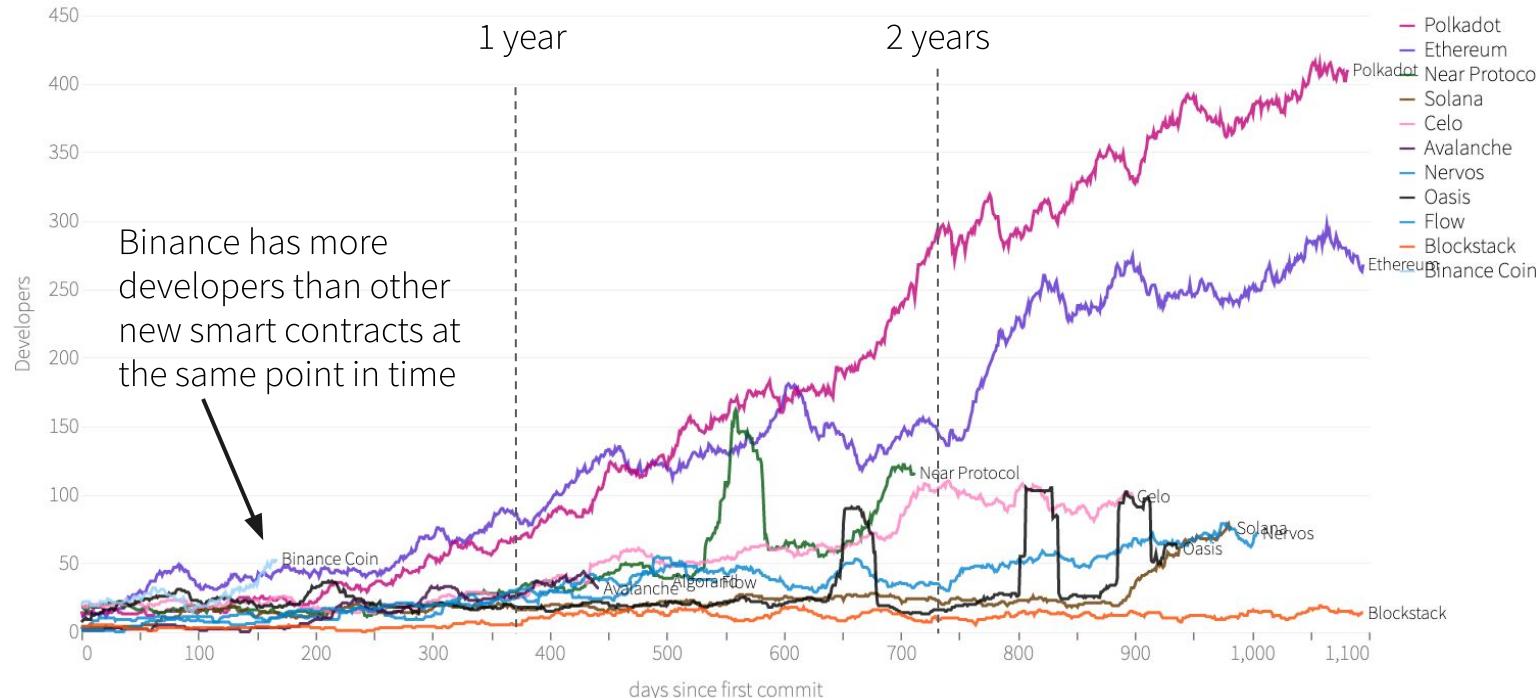
Monthly Active Developers Since Launch | 60+ Avg Developers | 3 Year Cutoff



FILTERING TO NEW SMART CONTRACT PLATFORMS LAUNCHED LESS THAN 3 YEARS AGO

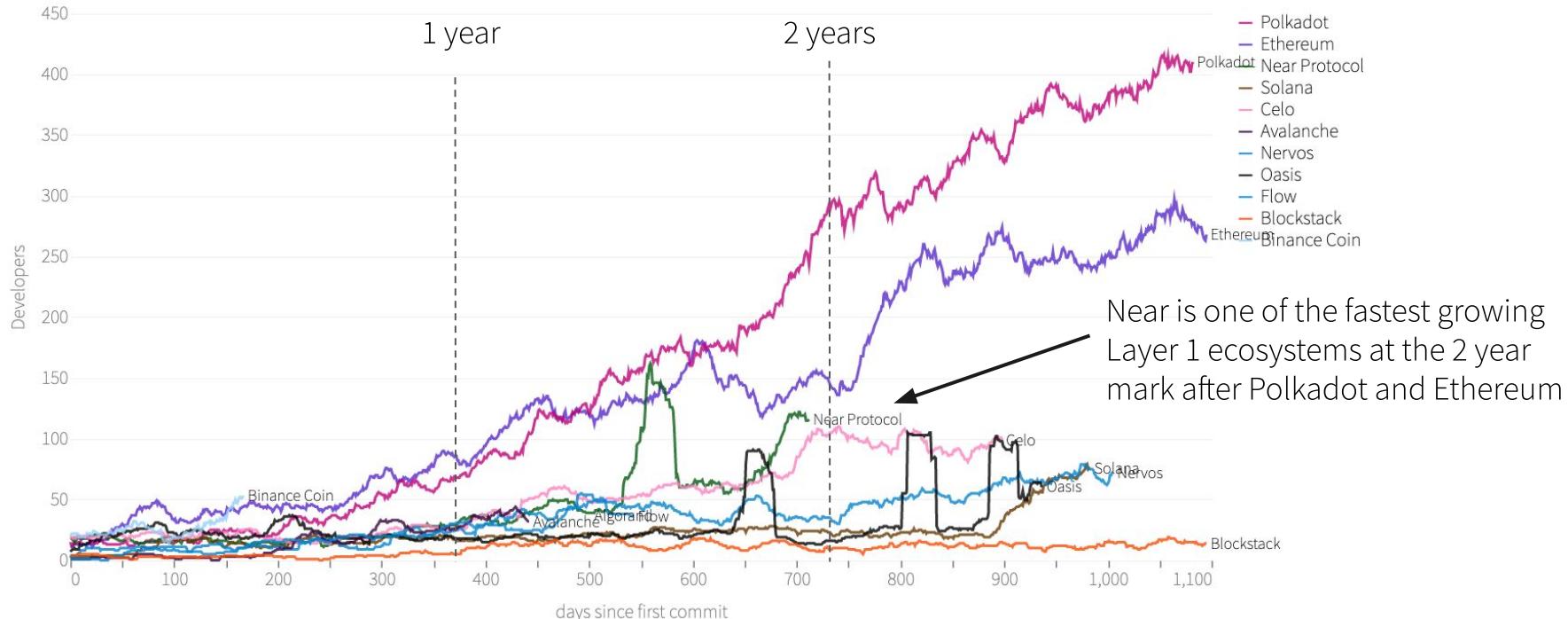
BINANCE SMART CONTRACT PLATFORM OUTPACES OTHER LAYER 1 ECOSYSTEMS AT THE SAME POINT OF DEVELOPMENT

Monthly Active Developers Since Launch | 30+ Avg Developers | 3 Year Cutoff



NEAR IS WITHIN 20 DEVS OF ETHEREUM AT THE 2 YEAR MARK, CAN IT KEEP GROWING IN YEAR 3?

Monthly Active Developers Since Launch | 30+ Avg Developers | 3 Year Cutoff



ECOSYSTEMS

DECENTRALIZED FINANCE

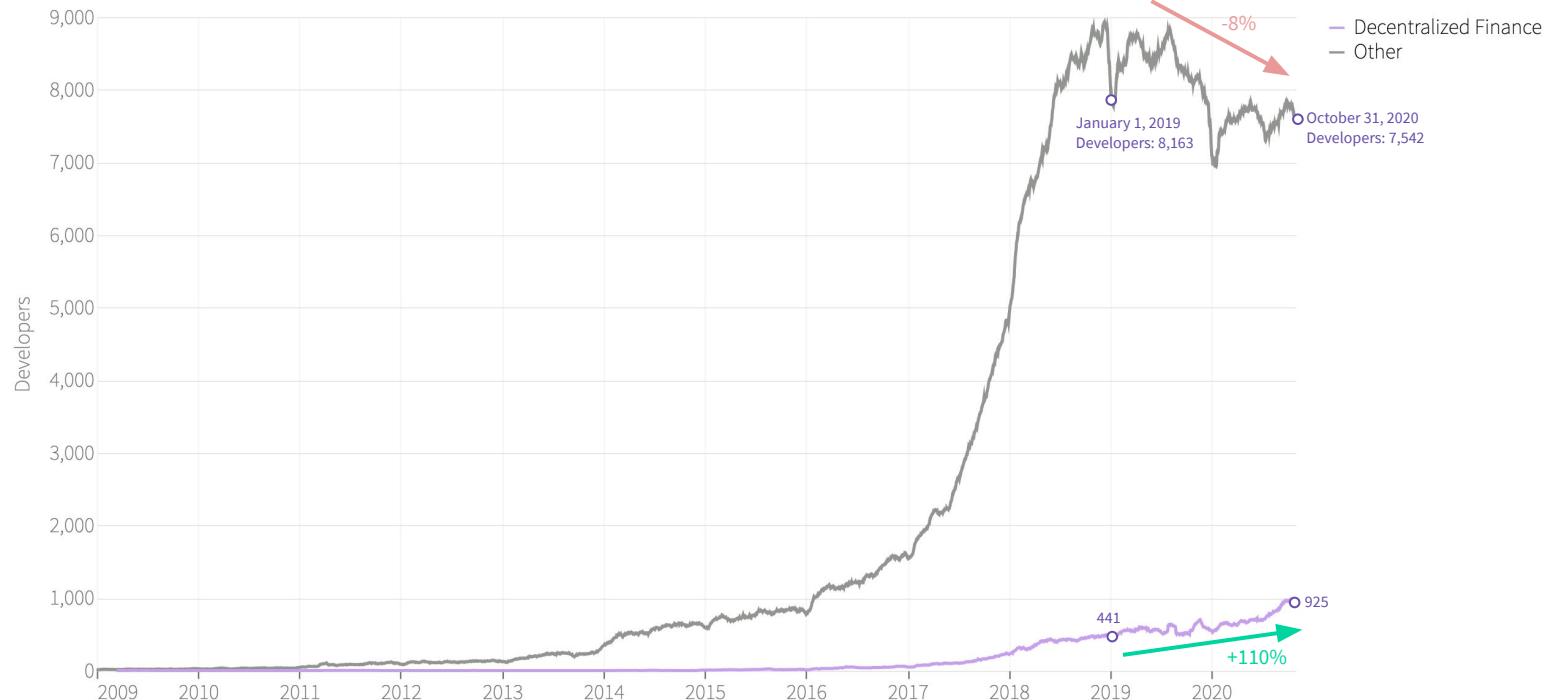
67% INCREASE IN MONTHLY ACTIVE DEFI DEVELOPERS SINCE JANUARY 2020

Decentralized Finance Monthly Active Developers



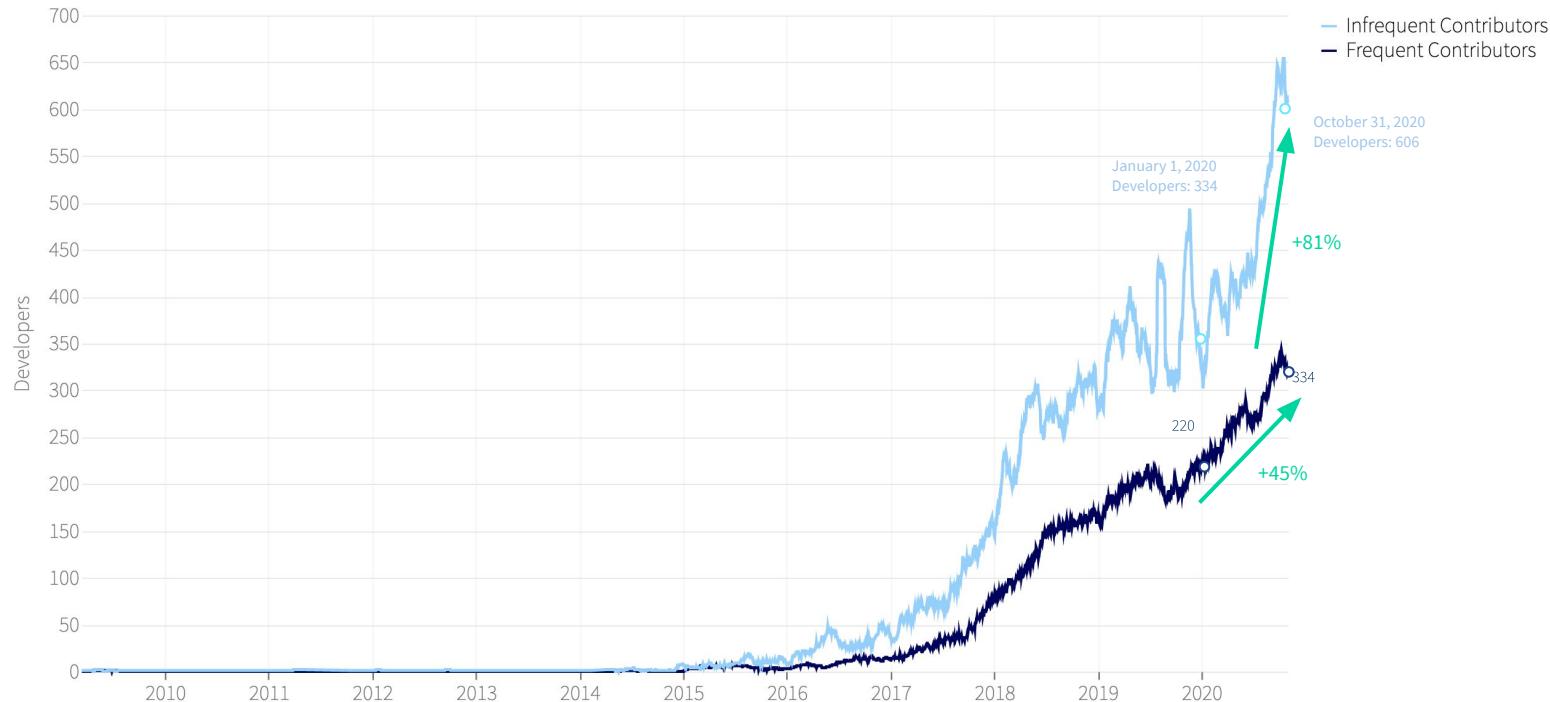
DEFI DEVELOPERS INCREASED +110% SINCE 2019 WHILE OTHER DEVELOPERS DECREASED -8%

Decentralized Finance Monthly Active Developers Compared to Other Ecosystems



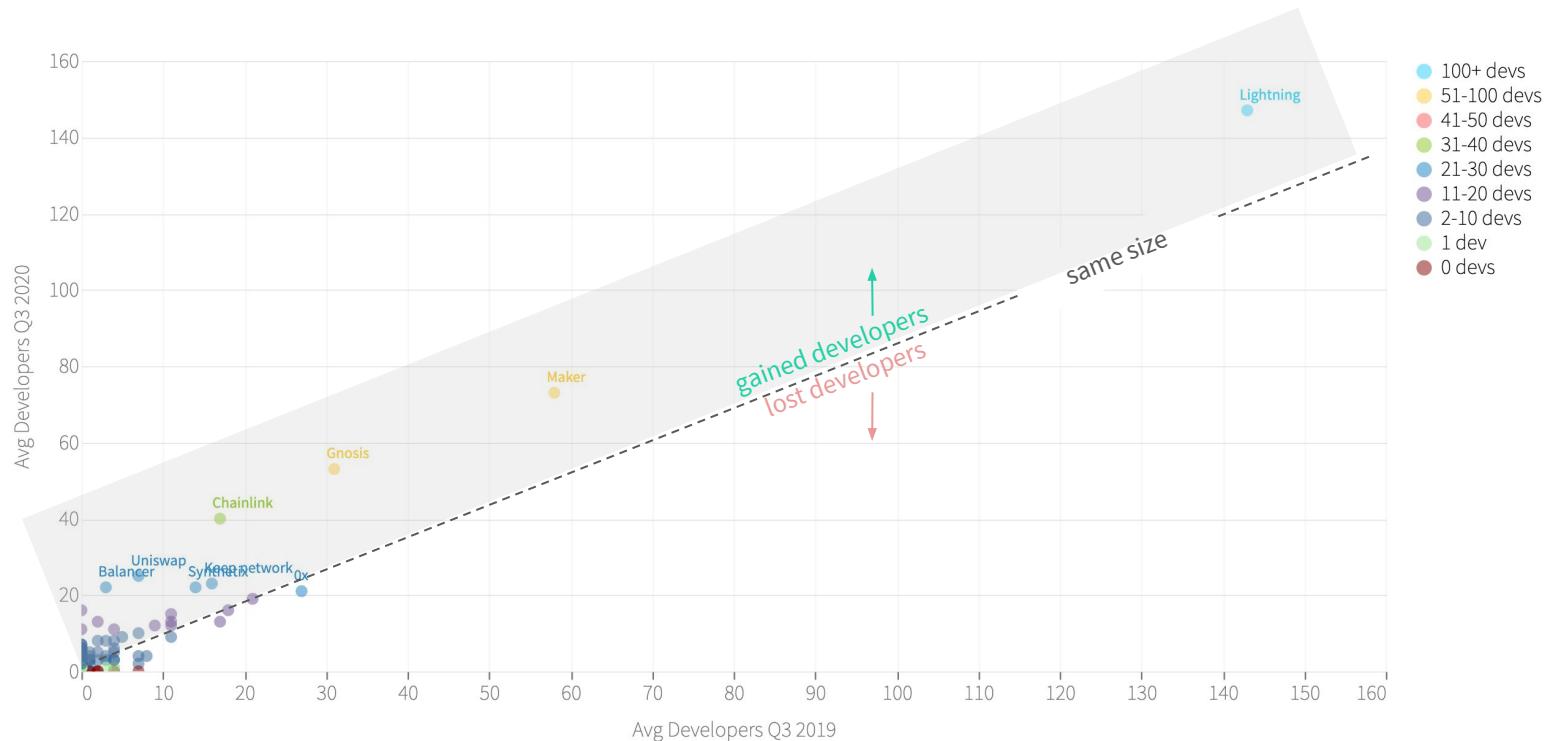
FREQUENT AND INFREQUENT DEVELOPERS IN DEFI HAVE BOTH INCREASED SINCE BEGINNING OF 2020

Decentralized Finance Monthly Active Developers

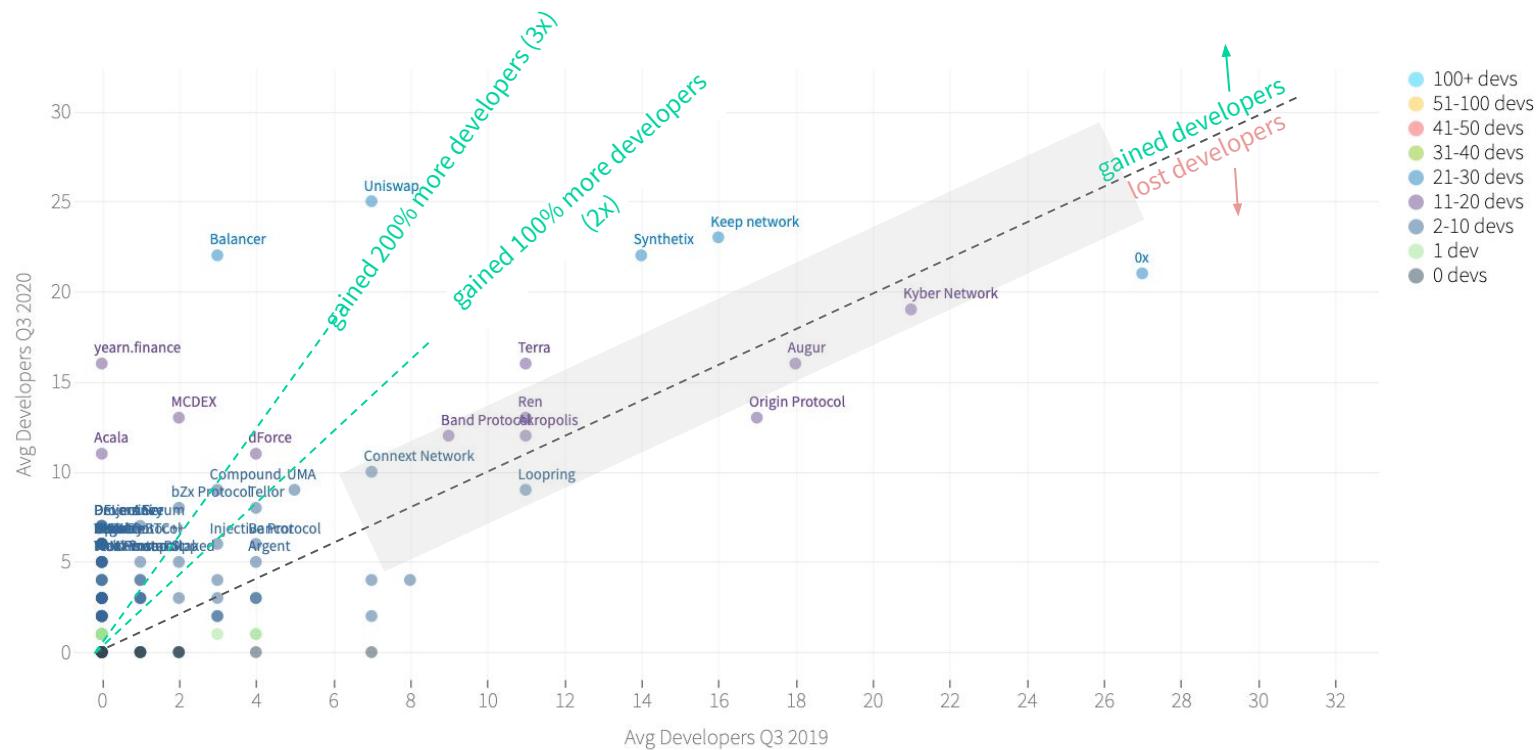


**WE CAN TAKE A SNAPSHOT OF DEFI ECOSYSTEMS IN 2019 &
2020 TO SEE HOW DEVELOPER NUMBERS CHANGED**

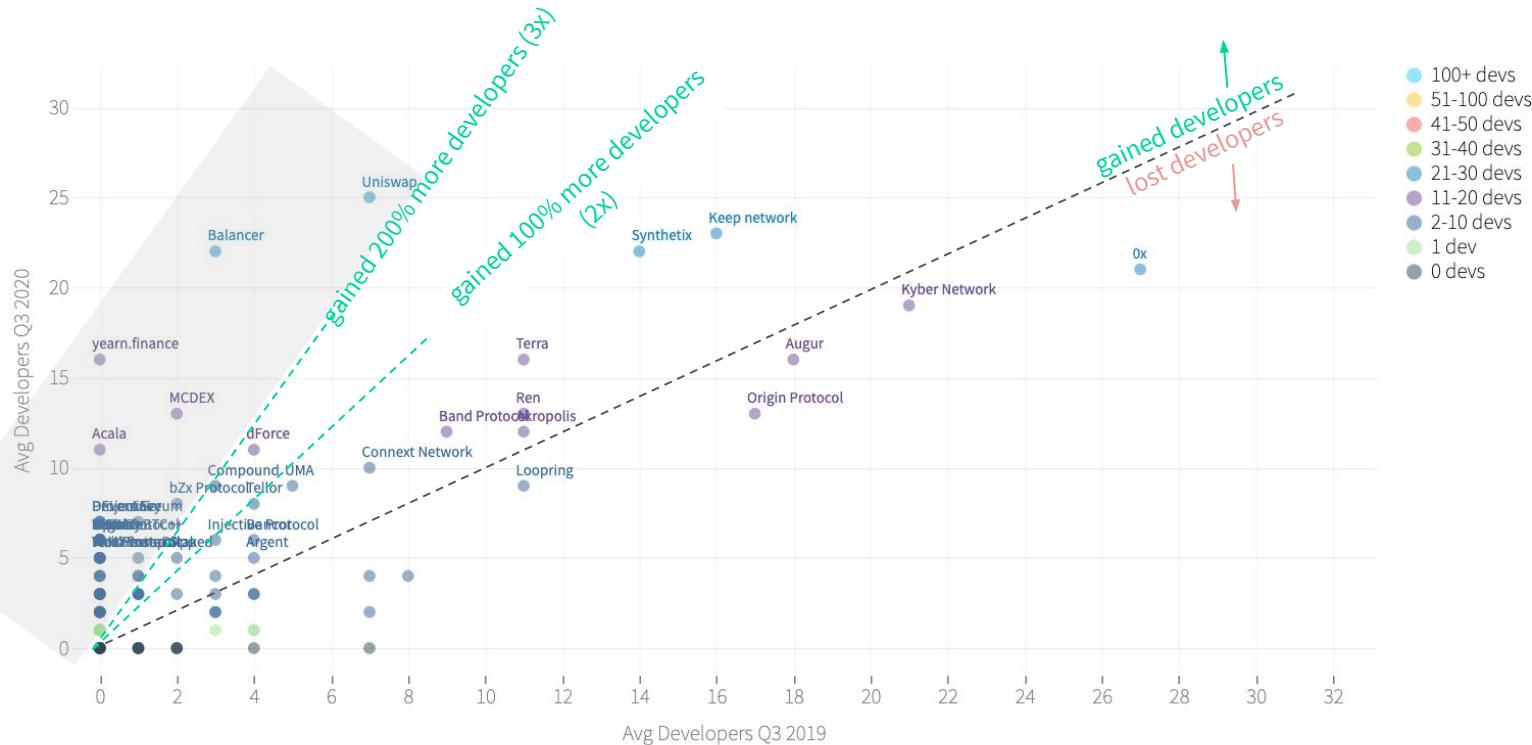
LIGHTNING, MAKER, GNOSIS, CHAINLINK, KEEP, SYNTHETIX, UNISWAP, BALANCER, & MORE GAINED DEVELOPERS



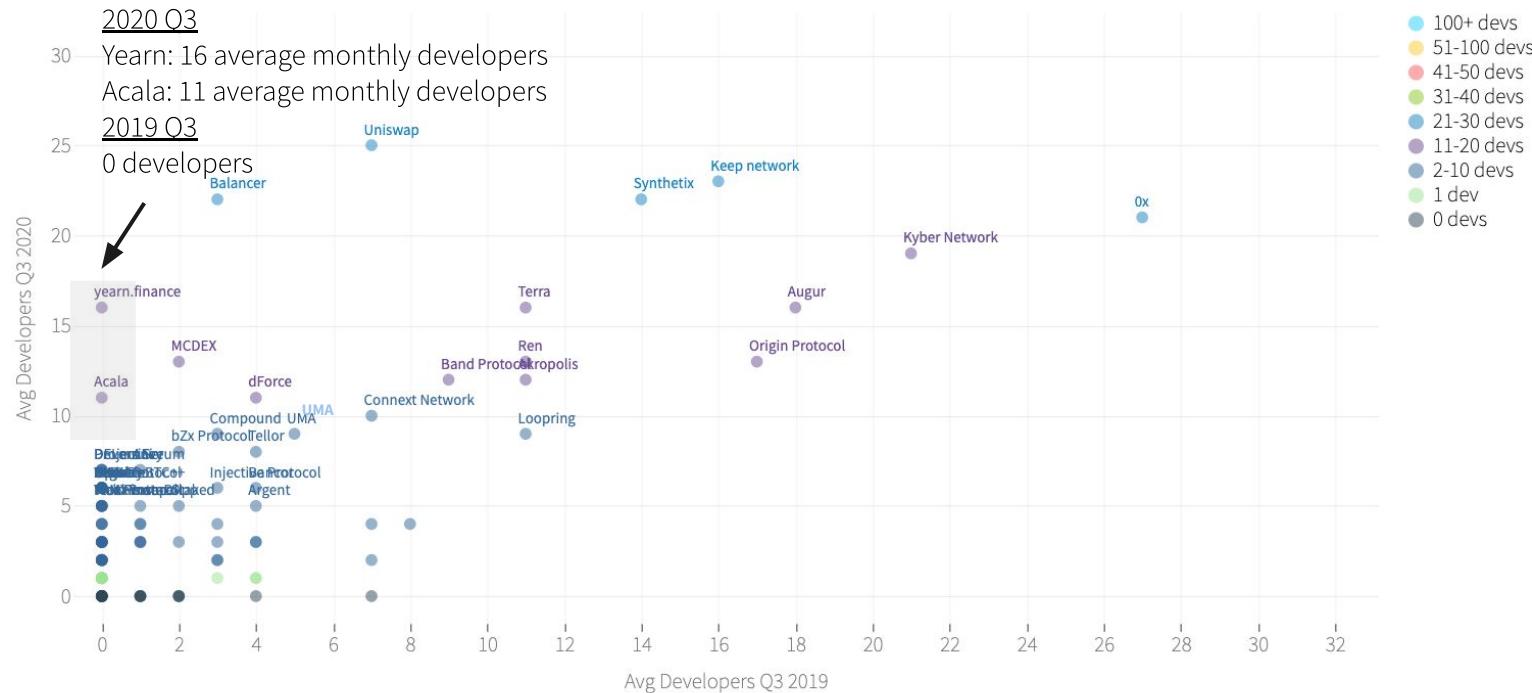
KYBER, AUGUR, REN, AKROPOLIS, BAND, CONNEXT, LOOPRING ALL ROUGHLY STAYED THE SAME SIZE



UNISWAP, BALANCER, YEARN, MCDEX, ACALA, & MORE GAINED 200%+ DEVELOPERS

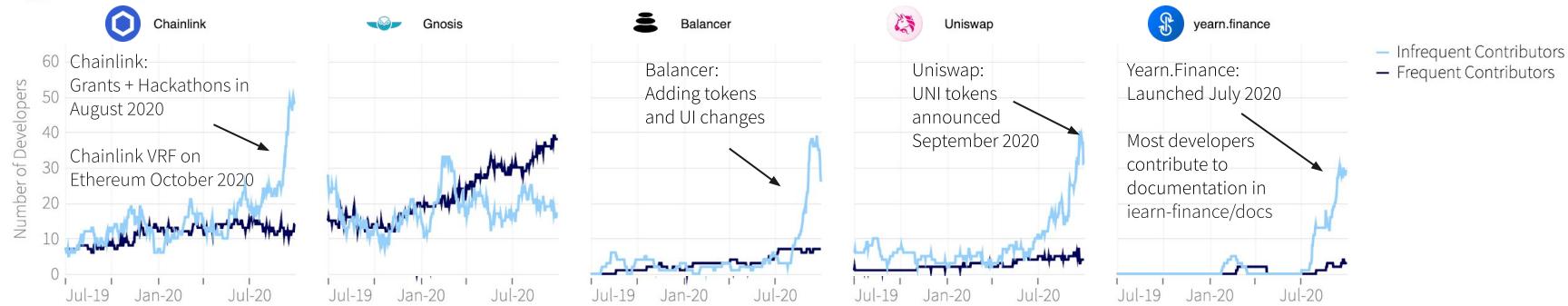


YEARN & ACALA ARE THE BIGGEST NEW DEFI ECOSYSTEMS IN Q3 2020



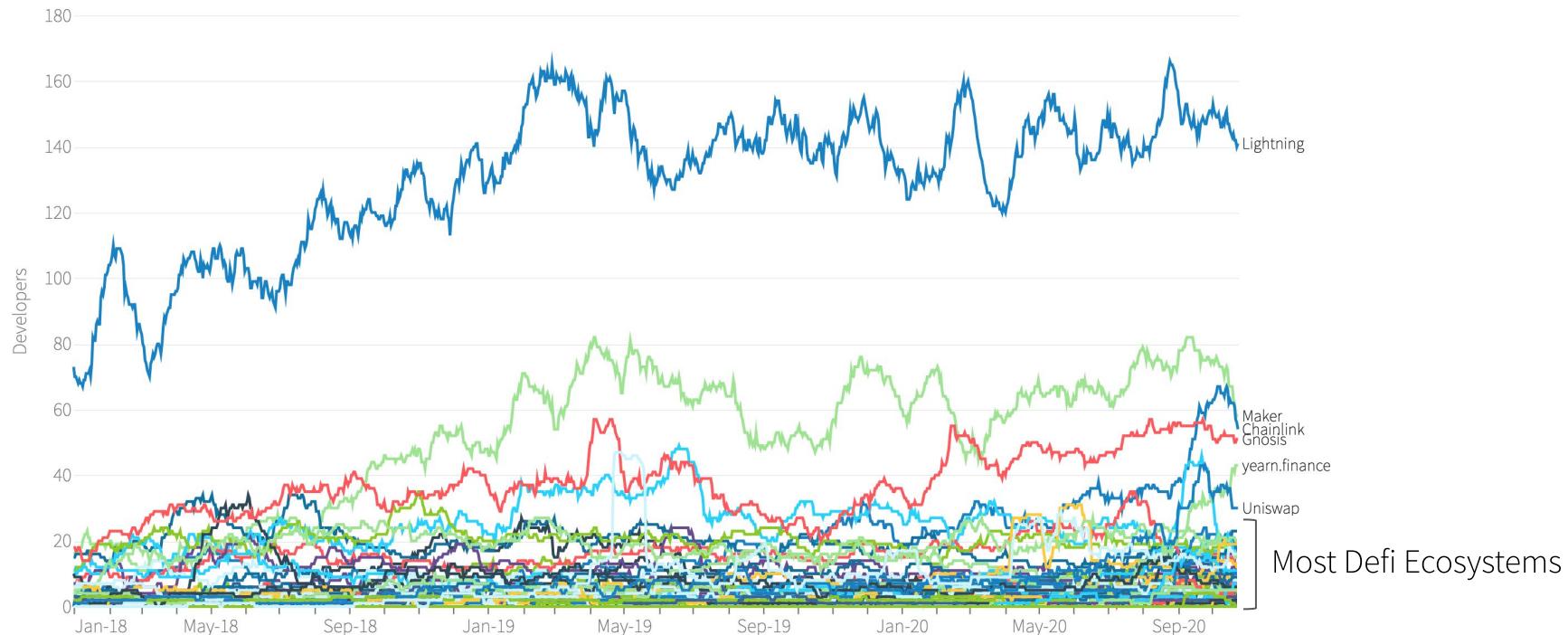
LOOKING AT THE TOP 5 BIGGEST GAINERS IN DECENTRALIZED FINANCE...

Biggest Developer Gains



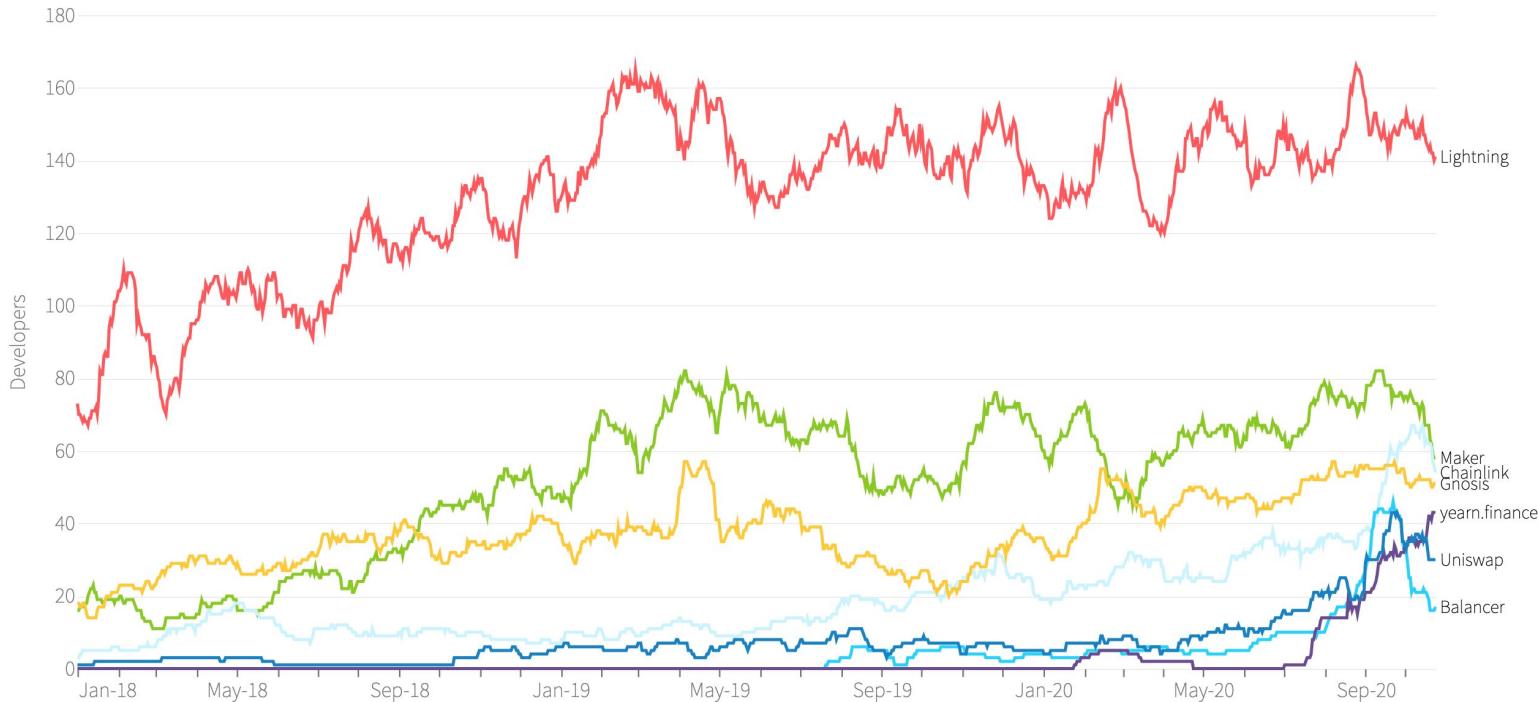
MOST DEFI ECOSYSTEMS HAVE SMALL TEAMS OF FEWER THAN 25 MONTHLY DEVELOPERS

Monthly Active Developers



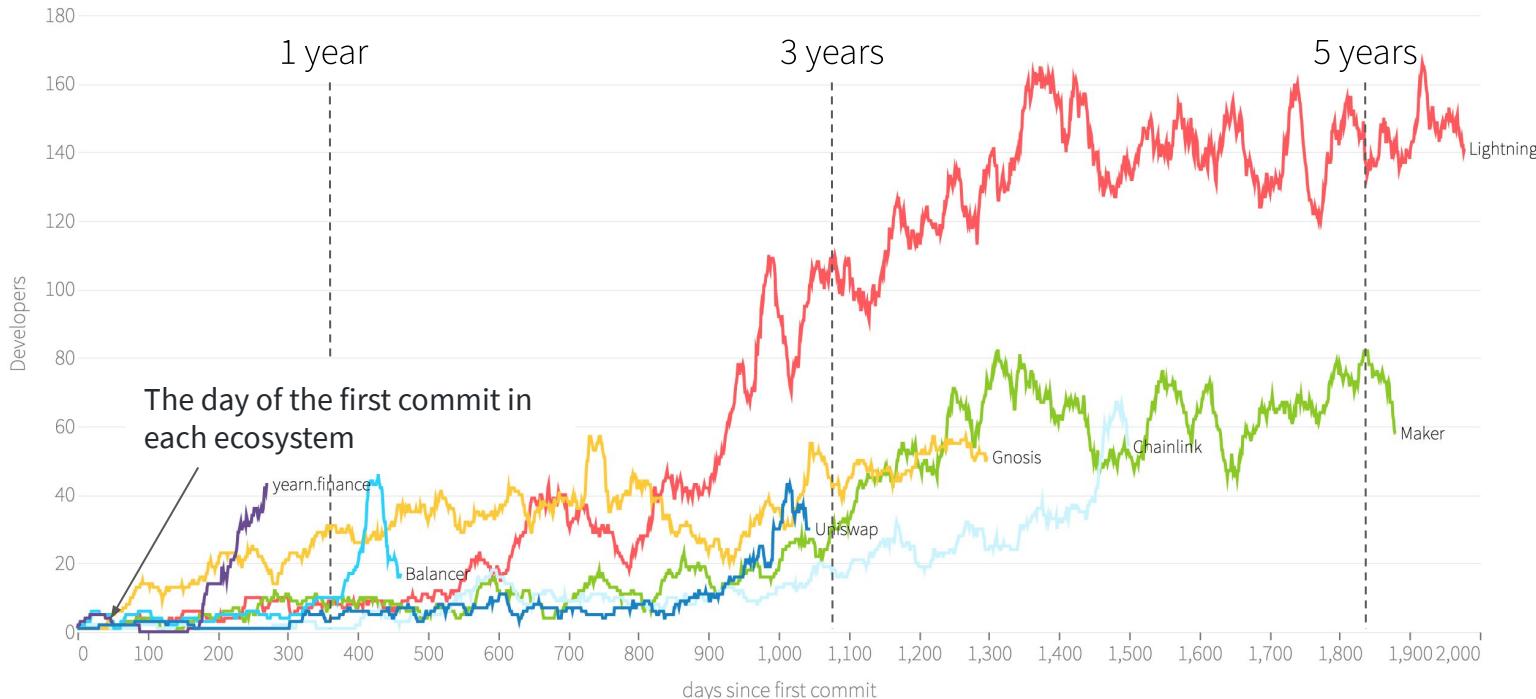
FILTERING TO JUST ECOSYSTEMS WITH 25+ MONTHLY DEVELOPERS...

Monthly Active Developers | 25+ Avg Developers



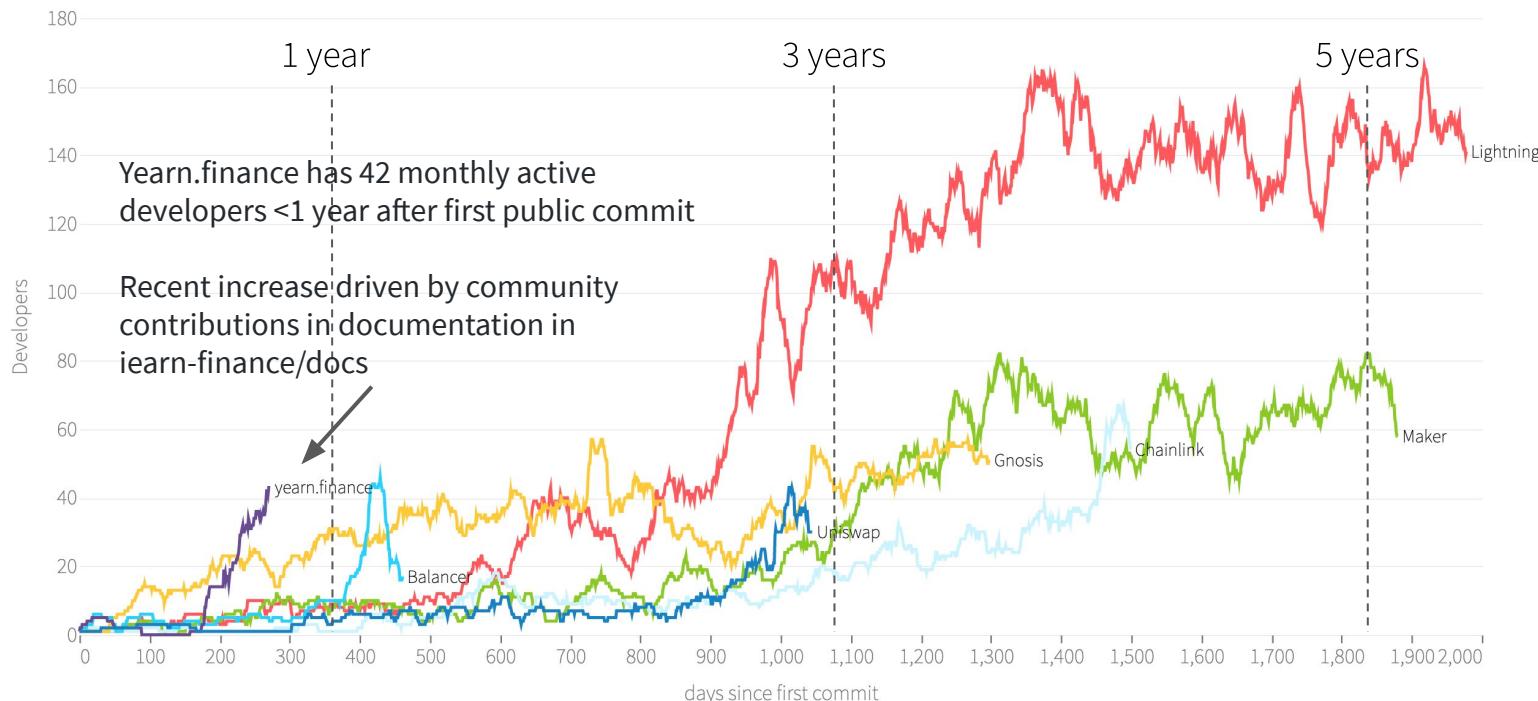
WE CAN INDEX MONTHLY ACTIVE DEVELOPERS TO THE DAY OF THE FIRST COMMIT IN EACH ECOSYSTEM

Monthly Active Developers Since Launch | 25+ Avg Developers



YEARN.FINANCE IS ONE OF THE FASTEST GROWING DEFI ECOSYSTEMS

Monthly Active Developers Since Launch | 25+ Avg Developers



EXECUTIVE SUMMARY

1. **The number of new crypto developers is growing for the first time since 2017**
 - a. New monthly crypto developers grew **15%** in 2020, increasing for the first time since 2017
 - b. **80%+** of all active developers today came in the last two years
2. **There is a flight to quality: high quality ecosystems are growing while others are shrinking**
 - a. Monthly active crypto developers have stayed flat even as new developers joined due to developer loss outside of the Top 200 ecosystems by network value
 - b. The number of developers outside of the Top 200 decreased by **30%** from December 2018
3. **Developer activity is particularly strong across Bitcoin, Ethereum, some Layer 1s, and Decentralized Finance**
 - a. Bitcoin ecosystem has **70%+** more developers than it did 3 years ago
 - b. **300+ new developers per month** commit to the Ethereum ecosystem
 - c. **67%** increase in monthly active developers in Decentralized Finance since January 2020

THANK YOU TO EVERYONE WHO GAVE FEEDBACK ON EARLY DRAFTS

Anatoly Yakovenko
[@aeyakovenko](https://twitter.com/aeyakovenko)

Austin Virts
[@austinvirts](https://twitter.com/austinvirts)

Casey Caruso
[@caseykcaruso](https://twitter.com/caseykcaruso)

Dmitriy Berenzon
[@dberenzon](https://twitter.com/dberenzon)

Rene Reinsberg
[@followrene](https://twitter.com/followrene)

Katherine Wu
[@katherineykwu](https://twitter.com/katherineykwu)

Matt Taylor
[@mattytay](https://twitter.com/mattytay)

Steve Lee
[@moneyball](https://twitter.com/moneyball)

Scott Moore
[@notscottmoore](https://twitter.com/notscottmoore)

Ryan Shea
[@ryaneshea](https://twitter.com/ryaneshea)

Yulian Lavysh
[@yulianNEAR](https://twitter.com/yulianNEAR)

Aliaksandr [Sasha] Hudzilin
[@AliaksandrH](https://twitter.com/AliaksandrH)

Ben Sparango
[@bennybitcoins](https://twitter.com/bennybitcoins)

Corey Soreff
[@csoreff](https://twitter.com/csoreff)

Eddy Lazzarin
[@eddylazzarin](https://twitter.com/eddylazzarin)

Ian Lee
[@ianjohnlee](https://twitter.com/ianjohnlee)

Linda Xie
[@ljxie](https://twitter.com/ljxie)

Meltem Demirors
[@Melt_Dem](https://twitter.com/Melt_Dem)

Muneeb Ali
[@muneeb](https://twitter.com/muneeb)

Kevin Owocki
[@owocki](https://twitter.com/owocki)

Eric Williams
[@sciencethedata](https://twitter.com/sciencethedata)

Dominic Tsang

Anne Fauvre
[@AnnieFauv](https://twitter.com/AnnieFauv)

Bruno Skvorc
[@bitfalls](https://twitter.com/bitfalls)

Dawn Song
[@dawnsongtweets](https://twitter.com/dawnsongtweets)

Evan Mair
[@ETM612](https://twitter.com/ETM612)

Jane Lippencott
[@janehk](https://twitter.com/janehk)

Marek Olszewski
[@marek_](https://twitter.com/marek_)

Mildred Idada
[@MI_Idada](https://twitter.com/MI_Idada)

Siddhartha Dutta
[@NihilistSid](https://twitter.com/NihilistSid)

Raj Gokal
[@RajGokal](https://twitter.com/RajGokal)

Tiffany Gao
[@TiffanyYijiaGao](https://twitter.com/TiffanyYijiaGao)

Praneeth Srikanti
[@bees_neeth](https://twitter.com/bees_neeth)

APPENDIX & METHODOLOGY

LAYER 1 ECOSYSTEMS

Classic Layer 1s	Smart Contract Platforms		Privacy Chains	New PoW Chains
Bitcoin	Aelf	Hedera Hashgraph	Beam	Chia
Bitcoin Cash	Aeternity	Holo	Grin	Mina (Coda)
Bitcoin Gold	Aion	Icon	Mobilecoin	Spacemesh
Bitcoin SV	Algorand	lost	Monero	
Dash	Ark	Komodo	Verge	
Decred	Avalanche	Diem (Libra)	Zcash	
Digibyte	Binance	Near	Zcoin	
Dogecoin	Bitshares	Neo		
Handshake	Bytom	Nervos		
Litecoin	Cardano	Oasis		
NEM	Celo	Ontology		
XRP	Coda	Orbs		
	Cosmos	Polkadot		
	Dfinity	Qtum		
	Elrond	Solana		
	Eos	Stellar		
	Ethereum	Stratis		
	Ethereum Classic	Tezos		
	Fantom	Thunder		
	Fetch	Tron		
	Flow	Vechain		
	Forte	Waves		
	Harmony	Zilliqa		

DECENTRALIZED FINANCE ECOSYSTEMS

Lending	Decentralized Stable Assets & Synthetic Assets	Token Swaps & Dexes	Token Baskets & Asset Management	Tokenized Crypto	DeFi Aggregators	Prediction Markets	Oracles	Risk Management & Hedging	Payments	DeFi Frontend	Investing
Aave	Acala	0x	Betoken	Keep network	APY.Finance	Augur	API3	Auctus	Connex	Argent	Fairmint
Akropolis	Ampleforth	1inch	Deftf	PolkaBTC (Interbtc)	Beefy.Finance	Erasure	Band	Charm Finance	Flexa	DeBank	
bZx Protocol	ARCx	Alpha Homora (A Index Coop	pTokens	Definer	Flux	Chainlink	Cover	Lightning		Dharma Protocol	
Compound	Based	Balancer	Melon	Ren	Harvest Finance	Gnosis	DIA	Hegic	rDai	Linen	
Cream	Basis Cash	Bancor	PieDao	Wrapped Bitcoin	Idle Finance	Guesser	Nest	Nexus	xDai	ZenGo	
DeFiner	DefiDollar	Curve	Rari Capital	InstaDApp	Helena	Razor Network		Nsure Network			
ForTube	dForce	DDEX (Hydro Pro	Set Protocol	OctoFi	Omen	Telor		Obyn			
Kava	Empty Set Dollar	Derivadex		Pickle	PlotX						
Mainframe	Frax	Diversifi		Ray (Staked)	Polymarket						
PoolTogether	HadesFinance	DODO		Snowball.money	Reality Cards						
Maker	dydx			Totle	Veil						
Metronome	Futureswap			yAxis							
Instable	IDEY			yearn.finance							
Origin Protocol (Injective Protocol				YFill							
Reflexer	Kyber Network			Zapper							
Synthetix	Loopring			Zerion							
Terra	Market Protocol										
UMA	Matcha										
Yam	MCDEX										
	Mooniswap										
	Narwhalswap										
	Opium Network										
	Pancakeswap										
	Paraswap										
	Project Serum										
	Shell Protocol										
	Sifchain										
	StableXswap										
	Sushi Swap										
	Swerve										
	Uniswap										
	Vega Protocol										

HELP MAP THE CRYPTO ECOSYSTEM

We've opened our ecosystem map on GitHub so that anyone can contribute:

1. Check our ecosystem mapping via <https://electric-capital.github.io>
2. Submit a new ecosystem via our form through <https://airtable.com/shrN4vZMIBLm3Dap8>
3. Or submit a pull request in <https://github.com/electric-capital/crypto-ecosystems>

We will use this data for our reports going forward.

COMMIT COUNTING METHODOLOGY: NOT ALL CODE COMMITS ARE CREATED EQUAL.

1. Forks: Only new code counts towards developer activity. We omit code and developer activity from merging changes from the upstream codebase.
2. 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.
3. Commits from Integrating Open Source Libraries: Integrating common libraries does not count toward code activity.
4. Branches: We look at commits from all branches (master/development, etc.) and tags. We look beyond Github's default view, which can be misrepresentative.
5. Limitations: We only look at open source repositories. There are many teams that are not yet open source.

HOW ARE DEVELOPERS COUNTED?

1. Developers: We count original code authors as developers. This means that a developer who merges a pull request is not counted as an active developer on the project, but the original authors of the commits are.
2. Frequent Contributors: contributed code 10+ days out of a month
3. Infrequent Contributors: contributed code fewer than 10 days out of a month
4. 3-month window: We look at the last 3 months of a developer's activity to determine their category.

WHAT IS AN ECOSYSTEM?

Maker Ecosystem

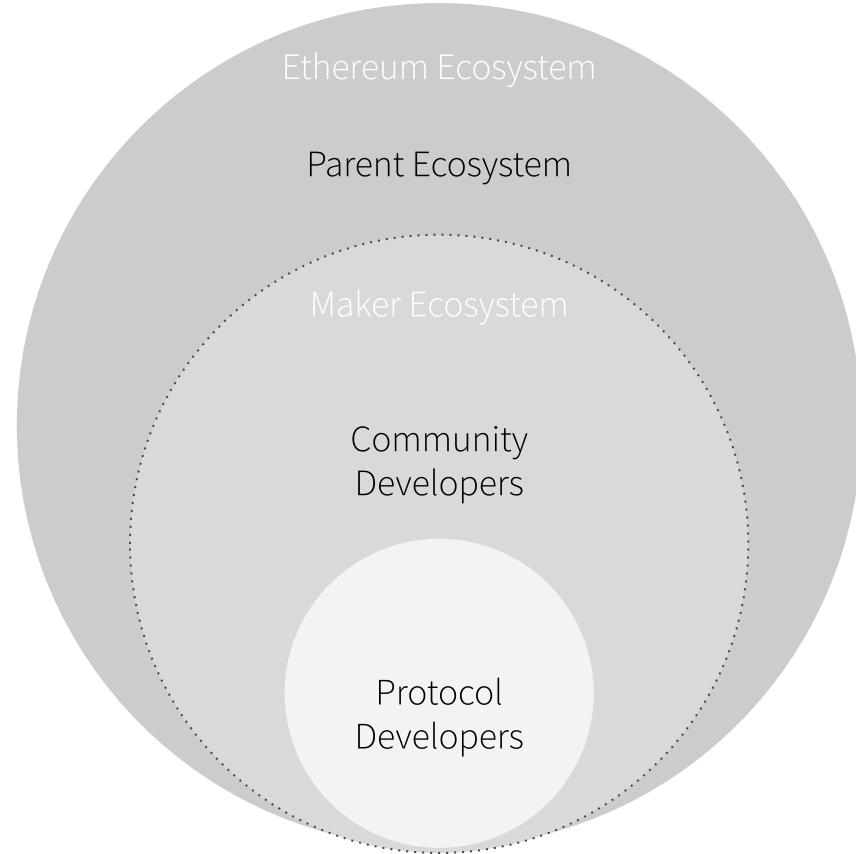
1. **Maker Community:**

- xDai
- awesome-makerdao
- Market-maker-keeper
- daipay
- ...and more.

2. **Maker Protocol**

- makerdao/sai
- ...and more.

Ecosystems can live in other ecosystems.
The Maker ecosystem lives inside the
Ethereum ecosystem.



CAVEATS

1. We consider open source repositories only. There are many more developers working on important closed source projects or ecosystems. Some teams will open source their code later.
2. This methodology undercounts developers in other roles besides original code contribution such as backporting, testing, release engineering or code review/feedback that aren't reflected in git repositories.
3. It will require more than just software engineers to build product and reach mainstream adoption.
4. Not all commits are created equal. Some may be routine, mechanical changes, whereas others represent hours of accumulated research and analysis.

Despite these caveats, we consider the analysis in this report directionally accurate and indicative of the overall health of the ecosystem.

We are always looking to improve so please share feedback with us at info@electriccapital.com

DISCLAIMER & DISCLOSURE

The Content is for informational purposes only, you should not construe any such information or other material as legal, tax, investment, financial, or other advice. Nothing contained in this report constitutes a solicitation, recommendation, endorsement, or offer by Electric Capital or any third party service provider to buy or sell any securities or other financial instruments in this or in any other jurisdiction in which such solicitation or offer would be unlawful under the securities laws of such jurisdiction.

Electric Capital has positions in some of the projects mentioned in this report. For a list of past and present investments, please visit electriccapital.com.