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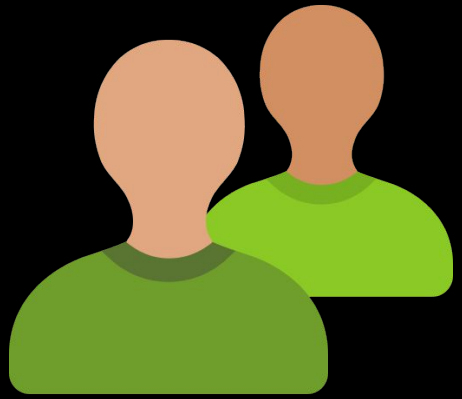
HOW NETWORKS WIN

We depend on networks to transport people, goods, and information around the world.



PEOPLE GOODS INFORMATION

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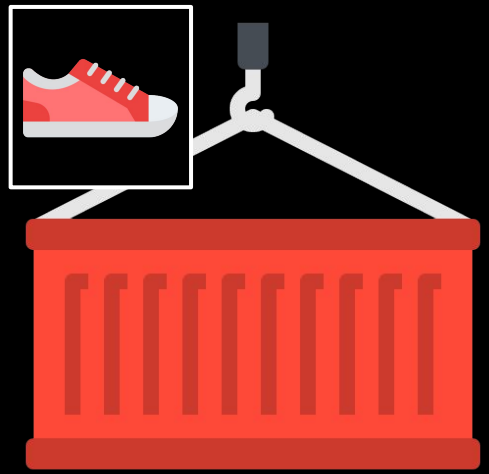
Networks provide the **infrastructure** that move things from **A** → **B**

PEOPLE



GOODS

INFORMATION

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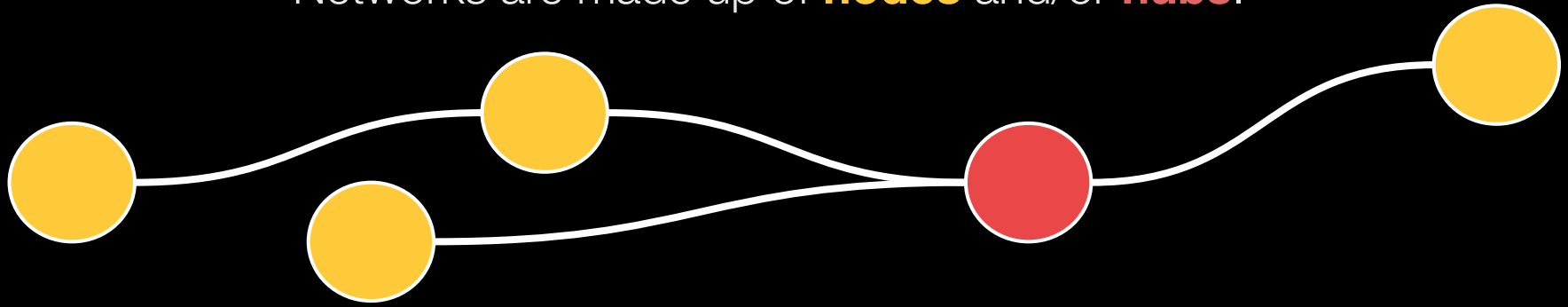
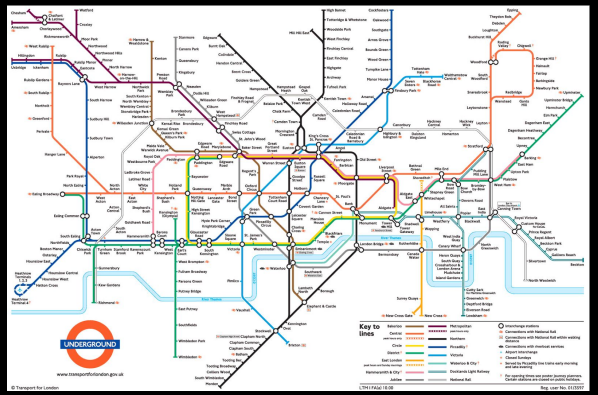
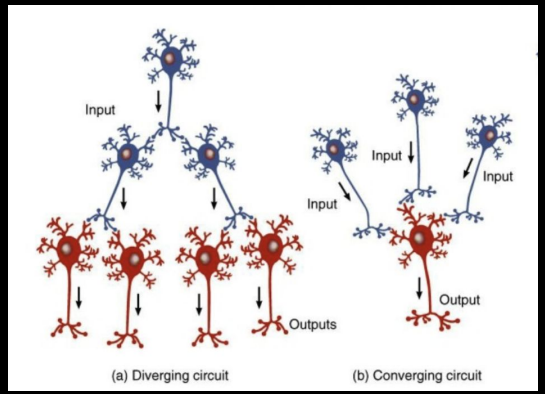
Networks are made up of **nodes** and/or **hubs**.

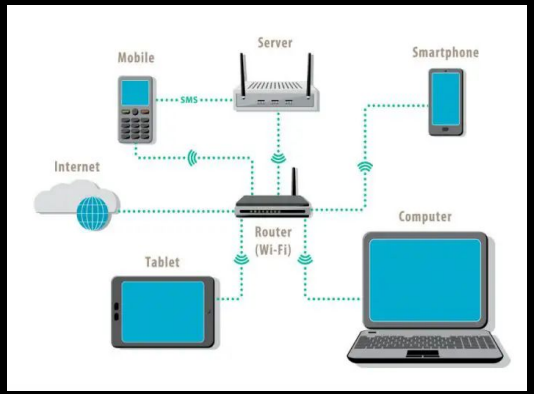




Transport Network



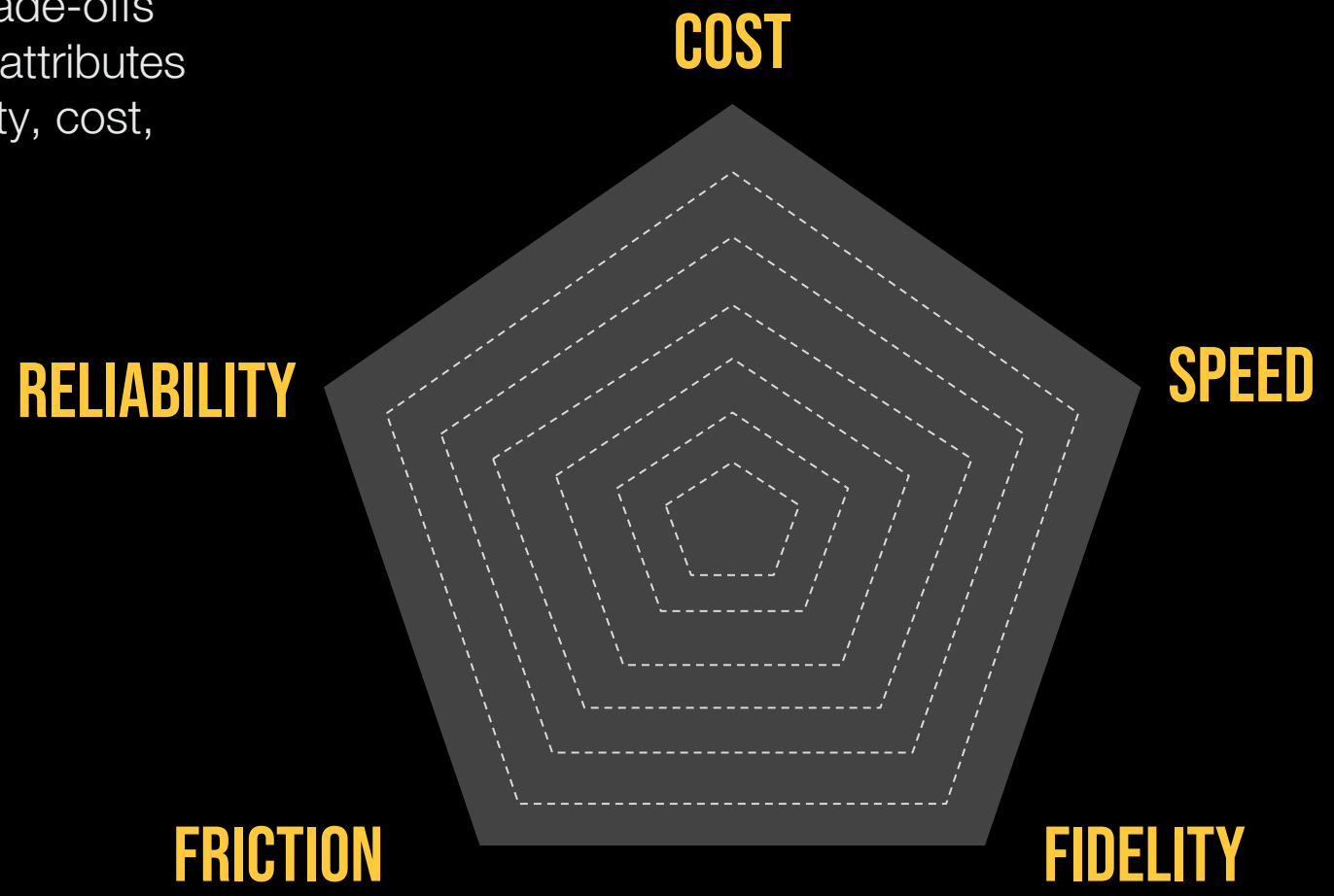
Biological Neural Network



Local Area Network

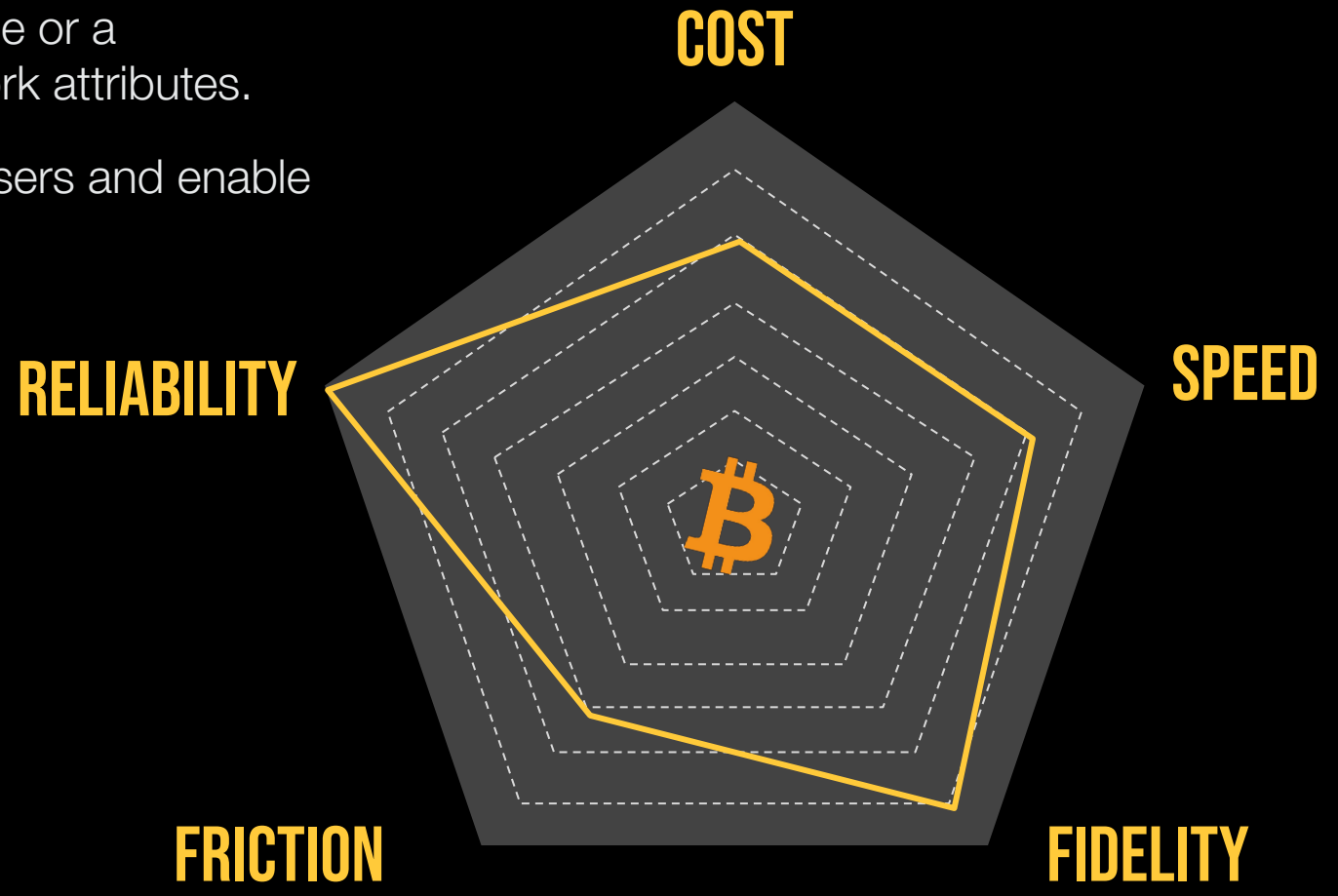
INFORMATION NETWORKS

All networks have trade-offs across their various attributes (e.g., speed, reliability, cost, etc.)



Technological breakthroughs can drastically improve one or a combination of network attributes.

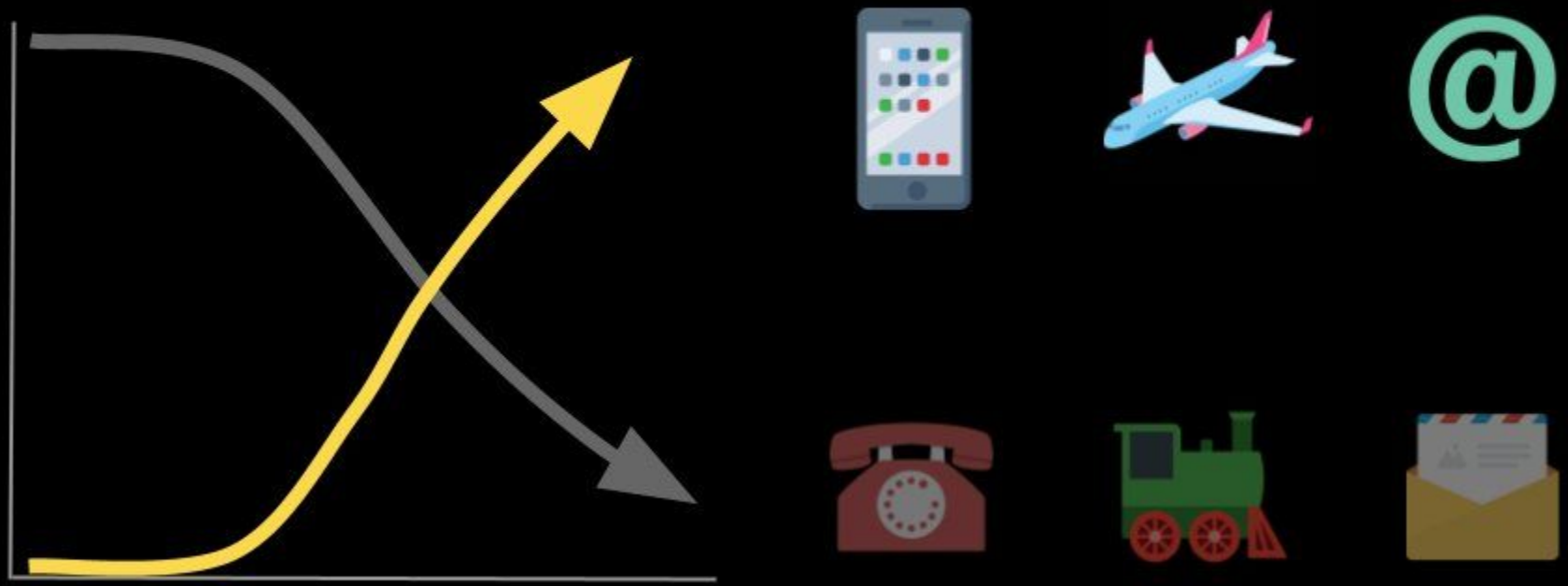
The benefits attract users and enable new use cases.



“As a good rule of thumb, proprietary technology must be at least 10 times better than its closest substitute in some important dimension to lead to a real monopolistic advantage.”

—Peter Thiel

CREATIVE DESTRUCTION



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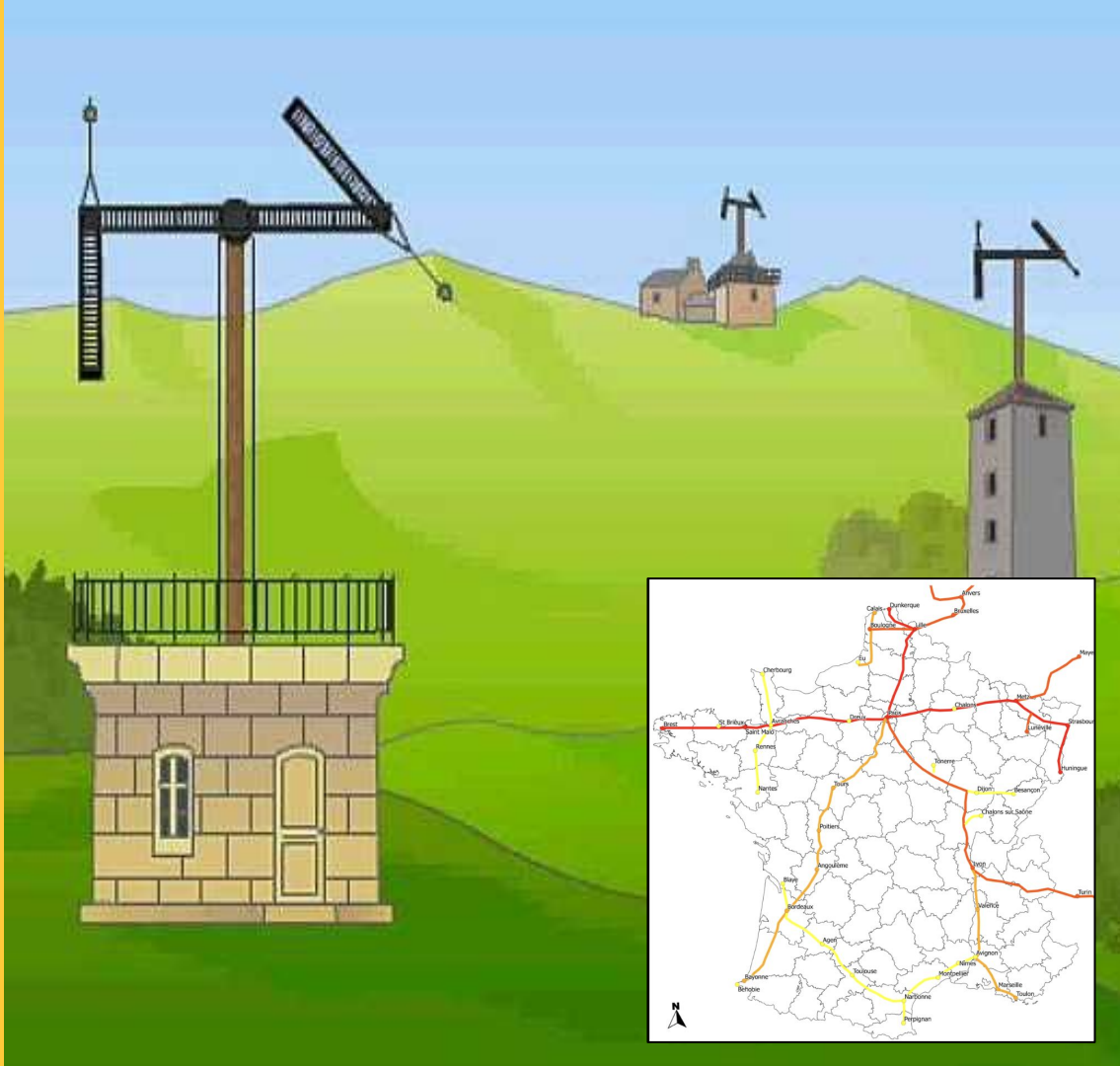
As engineering advances, networks (and infrastructure) may be rendered obsolete as more useful modes of moving things from A → B become economical.

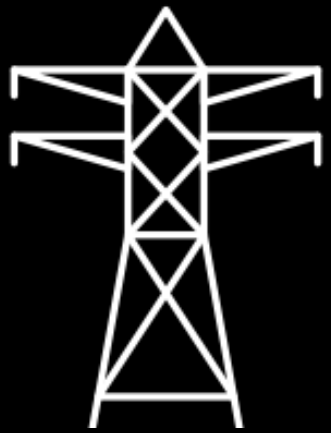
Case Study

The Chappe Telegraph was a series of towers that relayed messages via adjustable arms.

By 1844, France had built 500+ towers connecting 29 cities.

Eventually, obsoleted by electrical telegraphs.





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MANUAL ➡ WIRED ➡ WIRELESS

In the last century, we've witnessed several step-function innovations in information technology.

MANUAL

Smoke
Code

Mail
Text

WIRED

Ethernet
Data

Telegraph
Morse

Telephone
Sound

WIRELESS

Cellular
Sound, Data

Satellite
Data

Wi-Fi
Data

Bitcoin
Value

Innovation regularly births new ways of sending & receiving information, becoming additional layers for humans to coordinate, communicate and cooperate.

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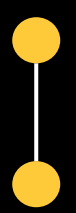
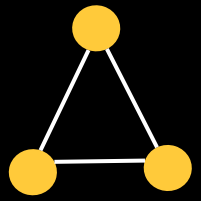
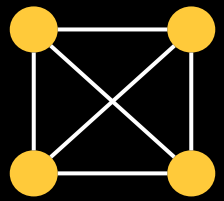
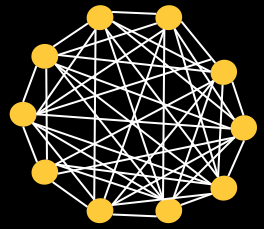
NETWORK EFFECTS

(METCALFE'S LAW)

# PARTICIPANTS	2	3	4	....	8
					
# POTENTIAL CONNECTIONS	1	3	6	....	28

Networks that are superior across one or a combination of the previously mentioned dimensions, can experience network effects: non-linear, exponential growth with the addition of each marginal user.

"Money is a network.

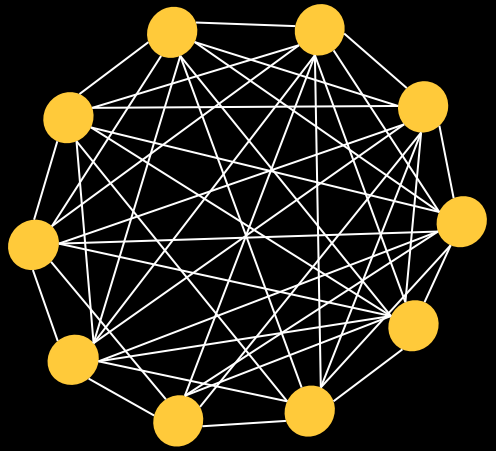
Some networks are singular, winner-takes-all.

Money is such a network."

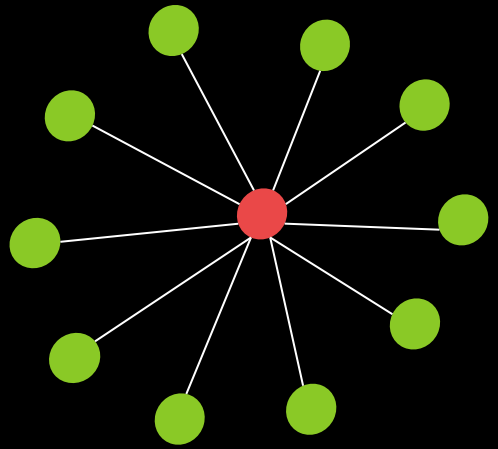
—Gigi

In the case of a monetary network, redundancy of information storage is critical.

Bitcoin's network of independent nodes enables retrieval, recreation, and validation of the entire chain with just one other peer, allowing the network to function without a central authority.

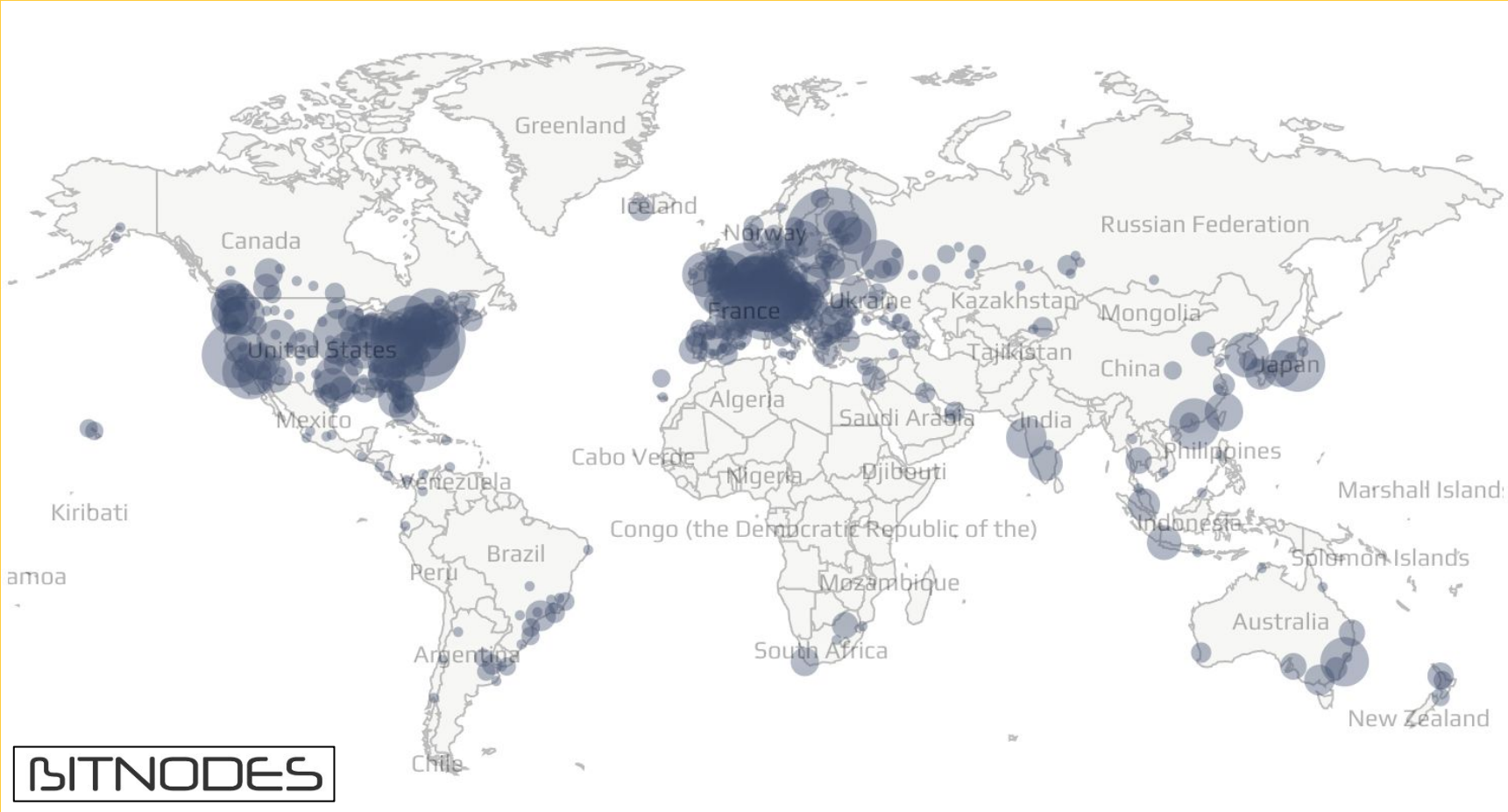


The centralized and permissioned networks that make up the traditional fiat financial system inherently have single points of failure.



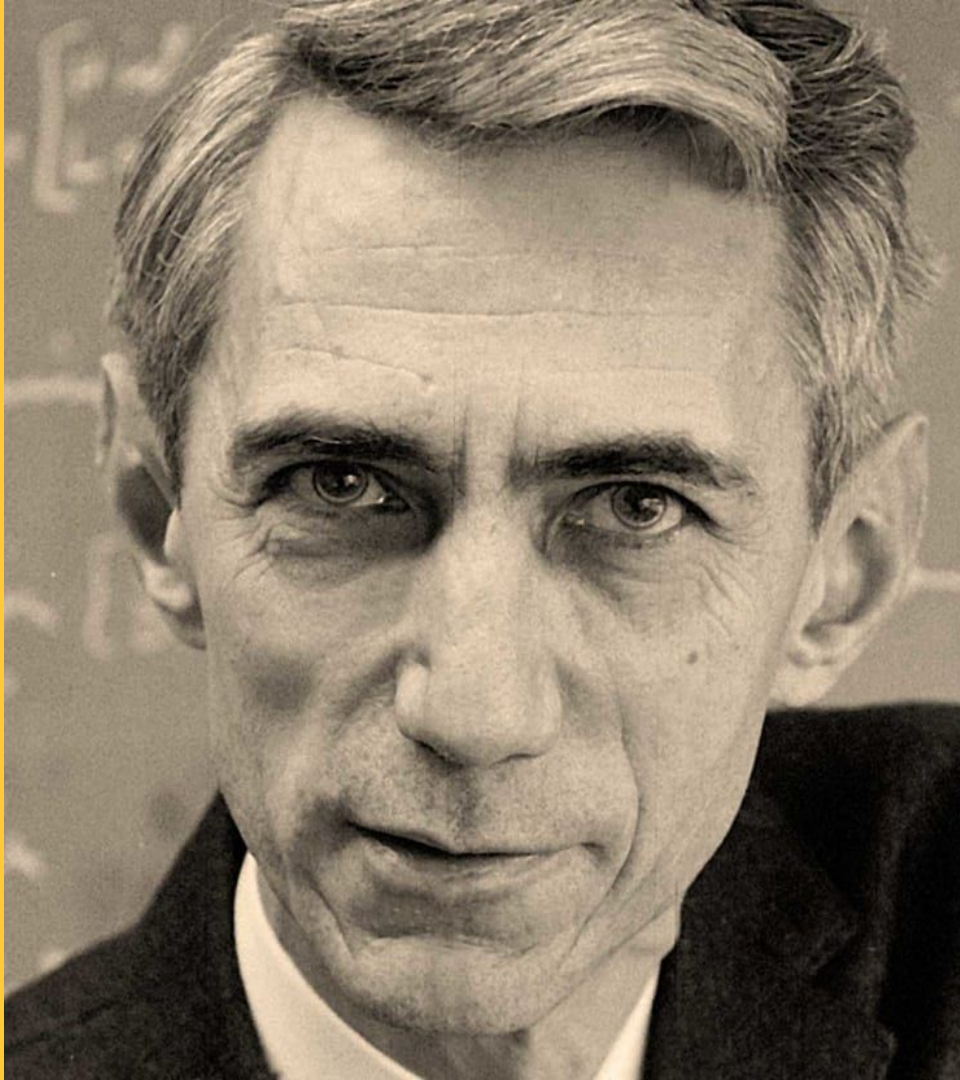
REACHABLE BITCOIN FULL NODES: 16,644

AS OF 4 JULY 2023



"The fundamental problem of communication is that of reproducing at one point.. a message selected at another point."

—Claude Shannon



THE BITCOIN NETWORK UPTIME:

99.988369152 76 %

SINCE INCEPTION (JANUARY 3, 2009)

source: buybitcoinworldwide.com

POSITIVE-SUM MARKETS

ZERO-SUM MARKETS

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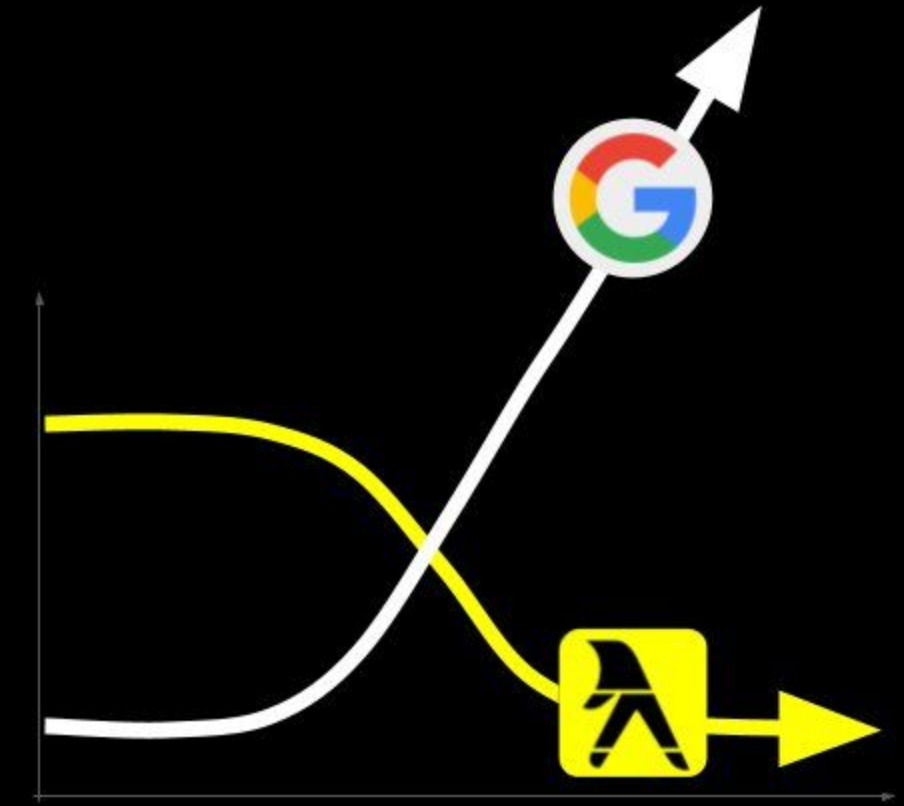
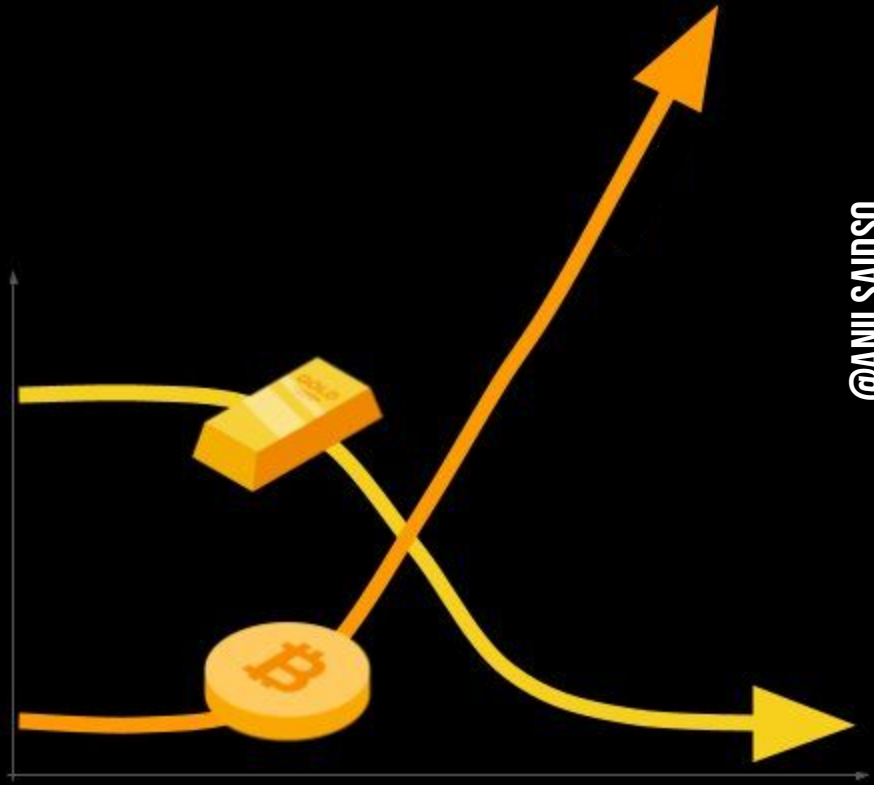
Digital networks create new opportunities for value creation that previously were not possible. They expand the pie.

"If history's going to repeat itself, every time a digital successor has replaced an analog predecessor, [it] has dwarfed the analog predecessor by a tremendous amount."

—Eric Weiss





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$100B+
DOMINANT DIGITAL NETWORKS

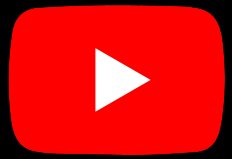

Social


Mobile


Retail


Speech


Information


Video


Monetary

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"The winning formula for the past 10-15 years has been to find a dominant digital network that dematerialized some fundamental thing. Bitcoin is the monetary network."

—Michael Saylor

“The bitcoin network itself does not define any financial services or applications. It doesn’t require membership registration or identification. It doesn’t control the types of devices or applications that can live on its edge. Bitcoin allows any application to be developed independently, without permission, on the edge of the network.”

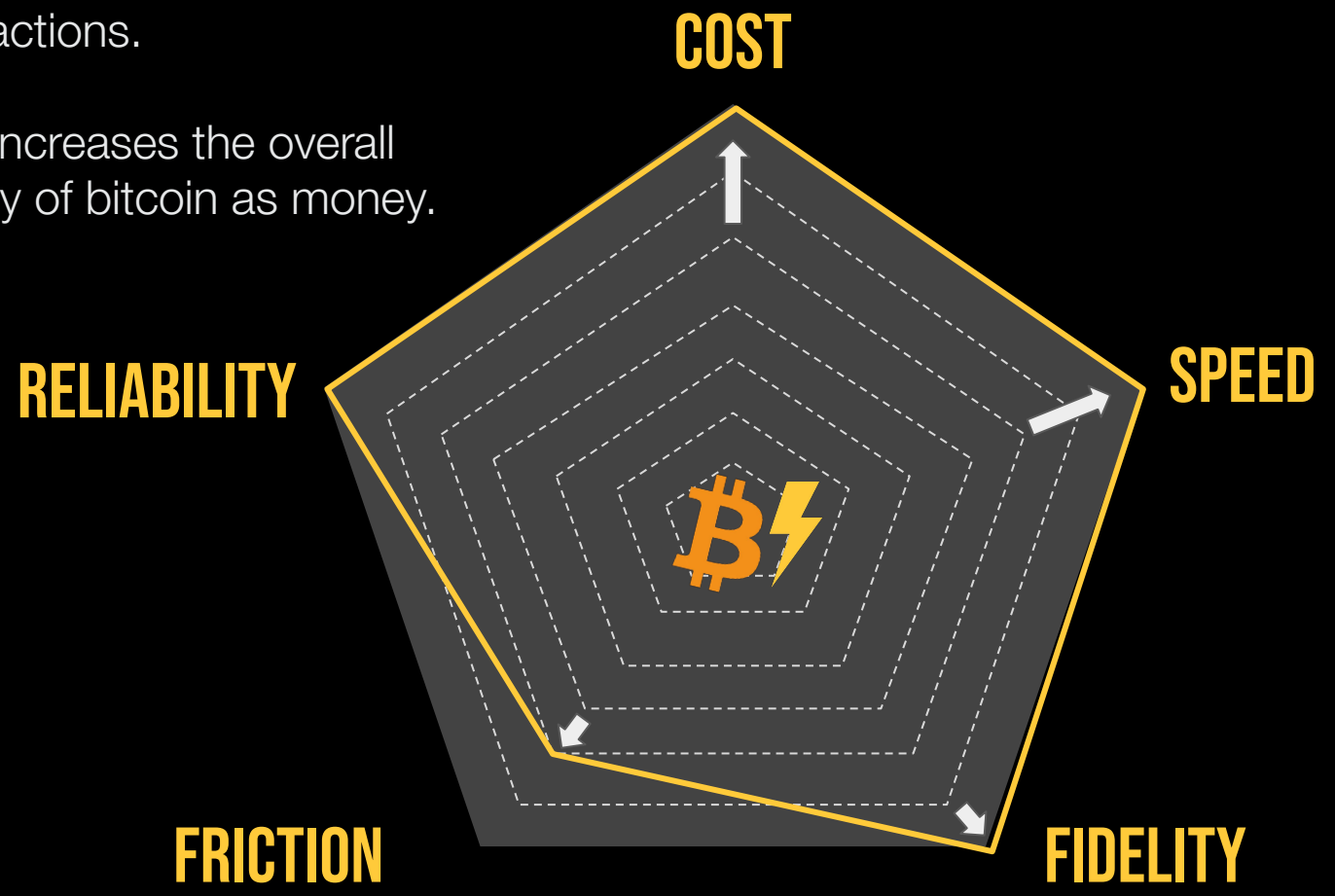
—Andreas M. Antonopoulos

(Decentralization: Why Dumb Networks Are Better, 2015)

PERMISSIONLESS INNOVATION: *THE LIGHTNING NETWORK*

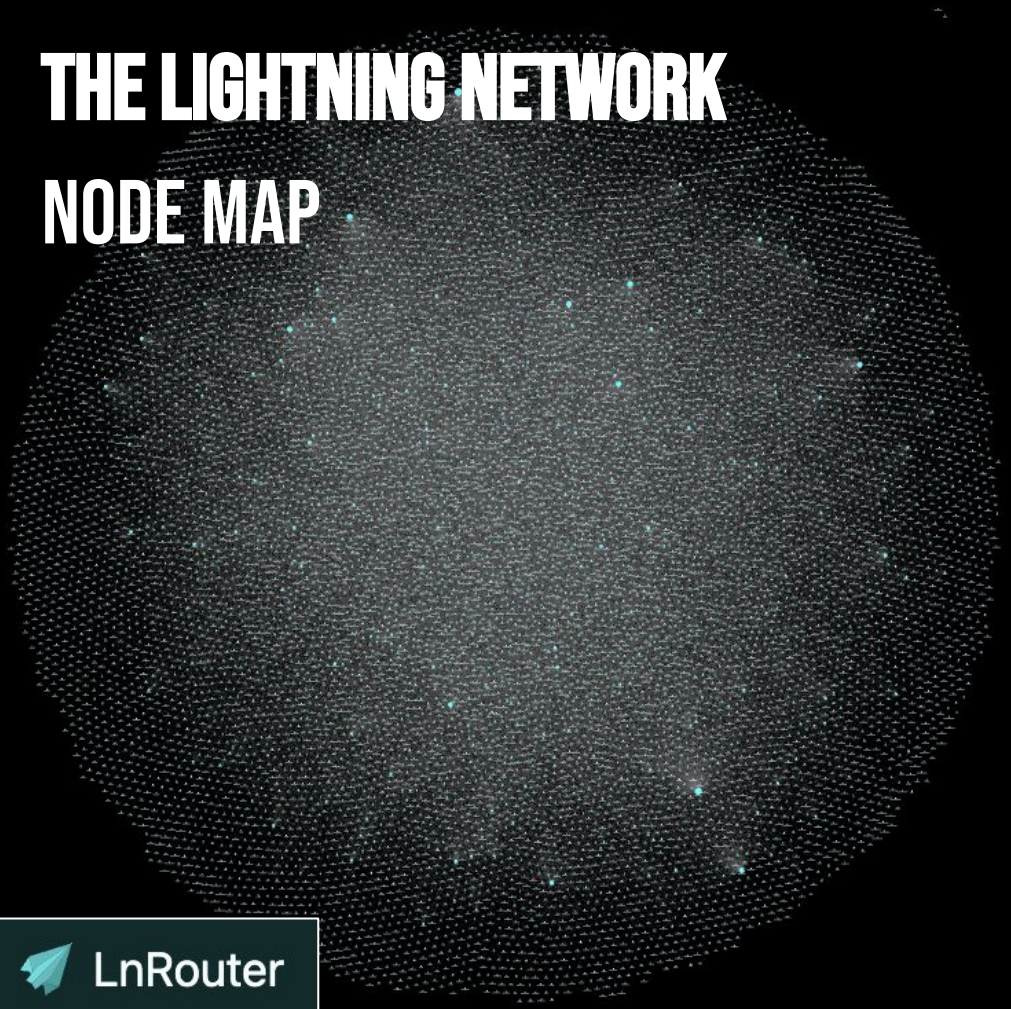
The Lightning network enables instant and near-free microtransactions.

This additional layer increases the overall functionality and utility of bitcoin as money.



THE LIGHTNING NETWORK

NODE MAP

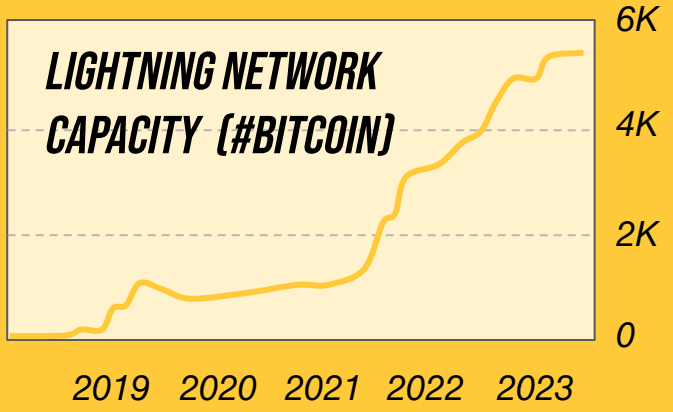


LnRouter

12,411 NODES

61,101 CHANNELS

AS OF 4 JULY 2023



Anil

@anilsaidso