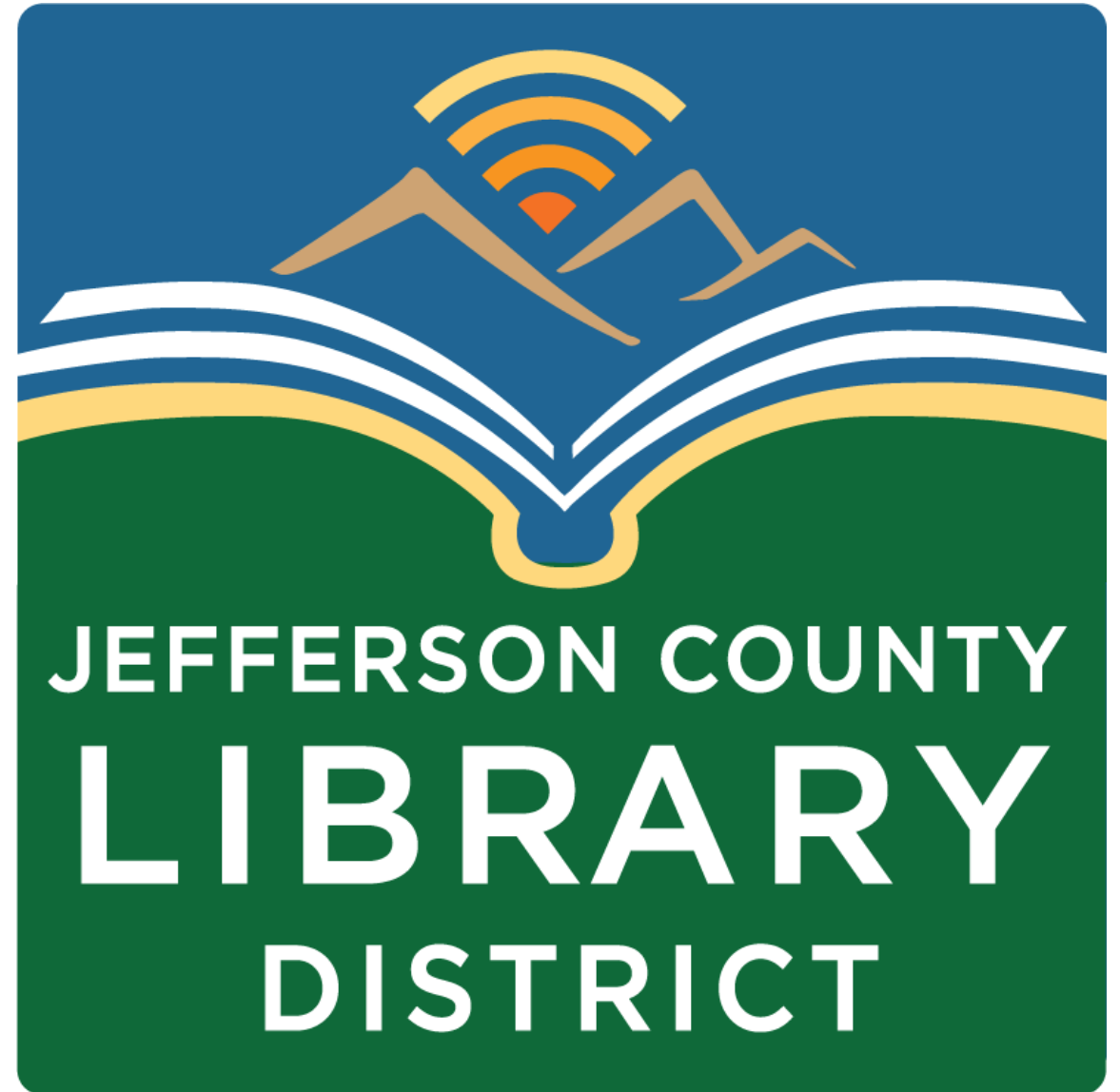




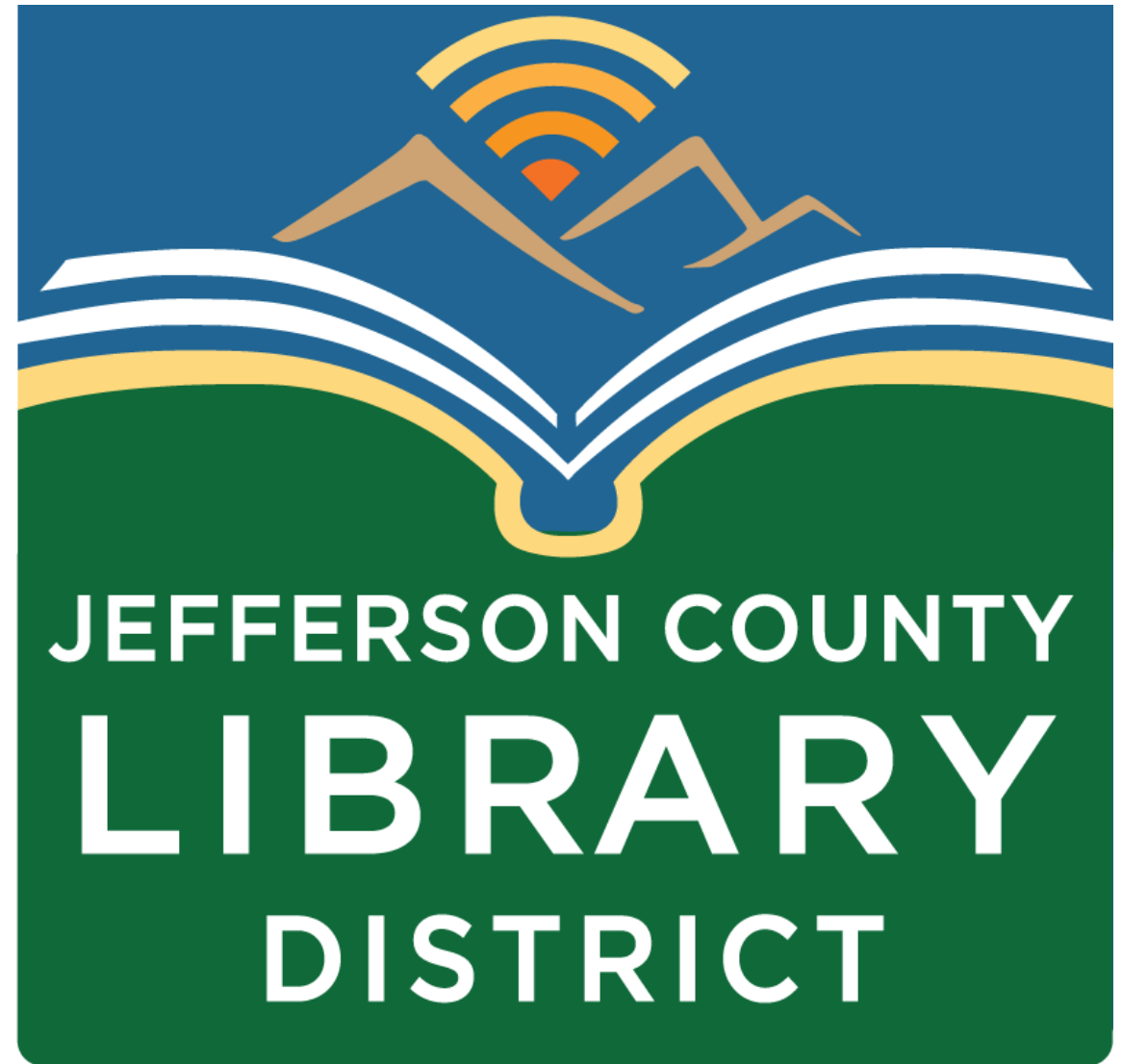
Cybersecurity and History of the Internet



Cybersecurity classes

Fridays – 2:30 – 4 pm

- **Cybersecurity and history of the Internet – 9/8**
- **Why strong passwords matter – 9/15**
- **Avoiding online scams and fraud – 9/22**
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- **Cybersecurity resources – 10/27**



Learning Objectives

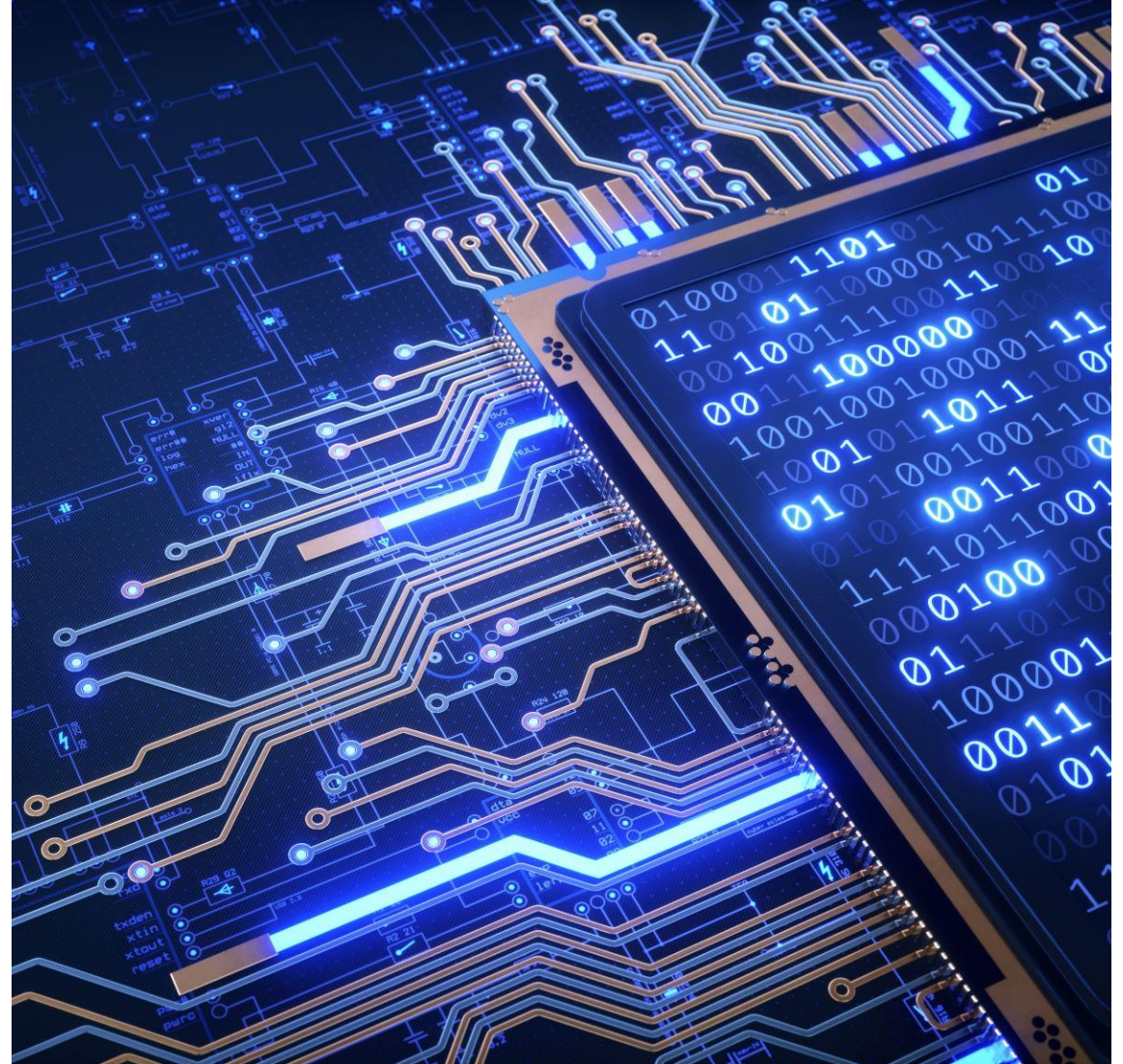
- In this class we will learn...

Why cybersecurity is important in today's world.



Warm up

- What does cybersecurity mean to you?
- Why is it important?
- What are some examples of cybersecurity?





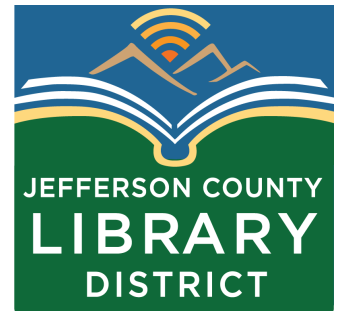
Vocabulary



Cybersecurity

The ability to protect or defend the use of cyberspace from cyber attacks.

National Institute for Standards and Technology <https://www.nist.gov/>





<https://youtu.be/-yqI6W8Ihes>

Arpanet



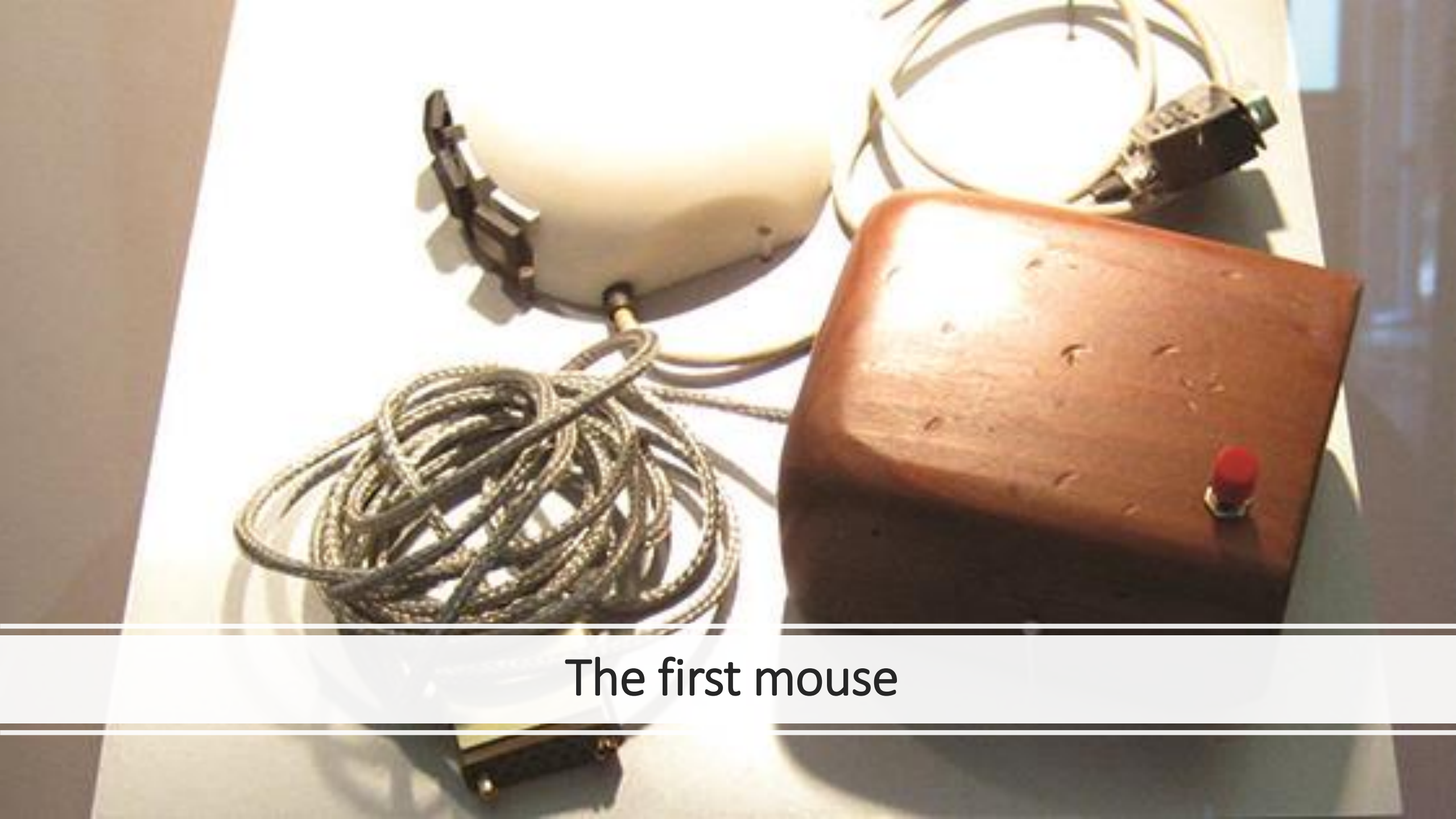
A closed computer network that transmitted its first successful message in 1969.

It was developed by the U.S. Department of Defense and the Massachusetts Institute of Technology during the Cold War as a closed, decentralized alternative to phone line networks, which were vulnerable to attack.

Arpanet is the major precursor to the internet.

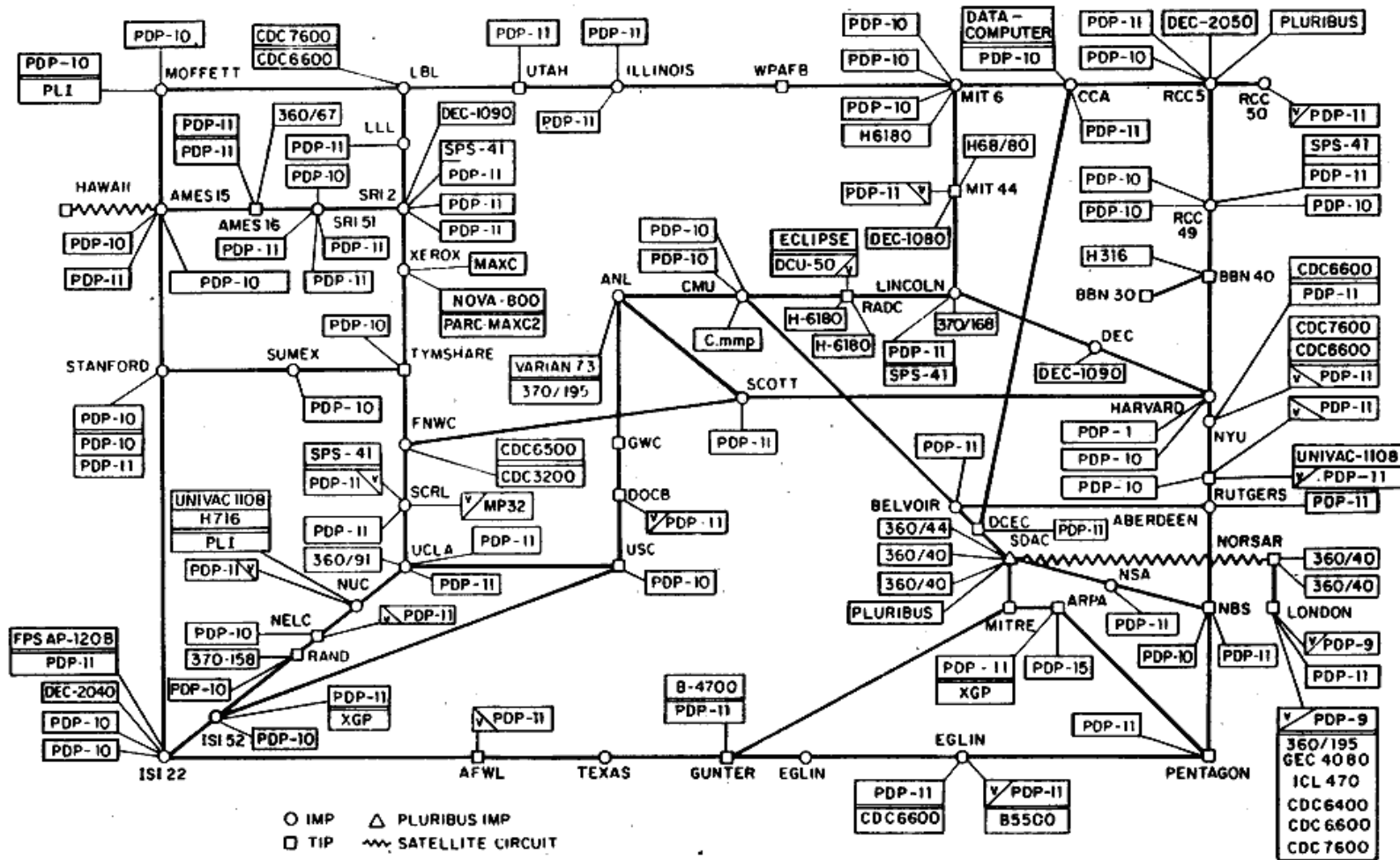
One of the first routers.

Image courtesy of darpa.mil.



The first mouse

ARPANET LOGICAL MAP, MARCH 1977



(PLEASE NOTE THAT WHILE THIS MAP SHOWS THE MOST POPULATION OF THE NETWORK ACCORDING TO THE BEST INFORMATION OBTAINABLE, NO CLAIM CAN BE MADE FOR ITS ACCURACY)

NAMES SHOWN ARE IMP NAMES, NOT (NECESSARILY) HOST NAMES

World Wide Web

In 1991, Tim Berners-Lee, a computer programmer at the European Organization for Nuclear Research introduces us to the World Wide Web.

- The technologies he developed helped connect us through the use of web pages.

The First Web Browser

Mosaic was the first web browser that allowed users to open media and text on the same page.

It also allowed for clickable links and scrolling windows.

By Charles Severance - Screenshot, CC0,
<https://commons.wikimedia.org/w/index.php?curid=75617889>

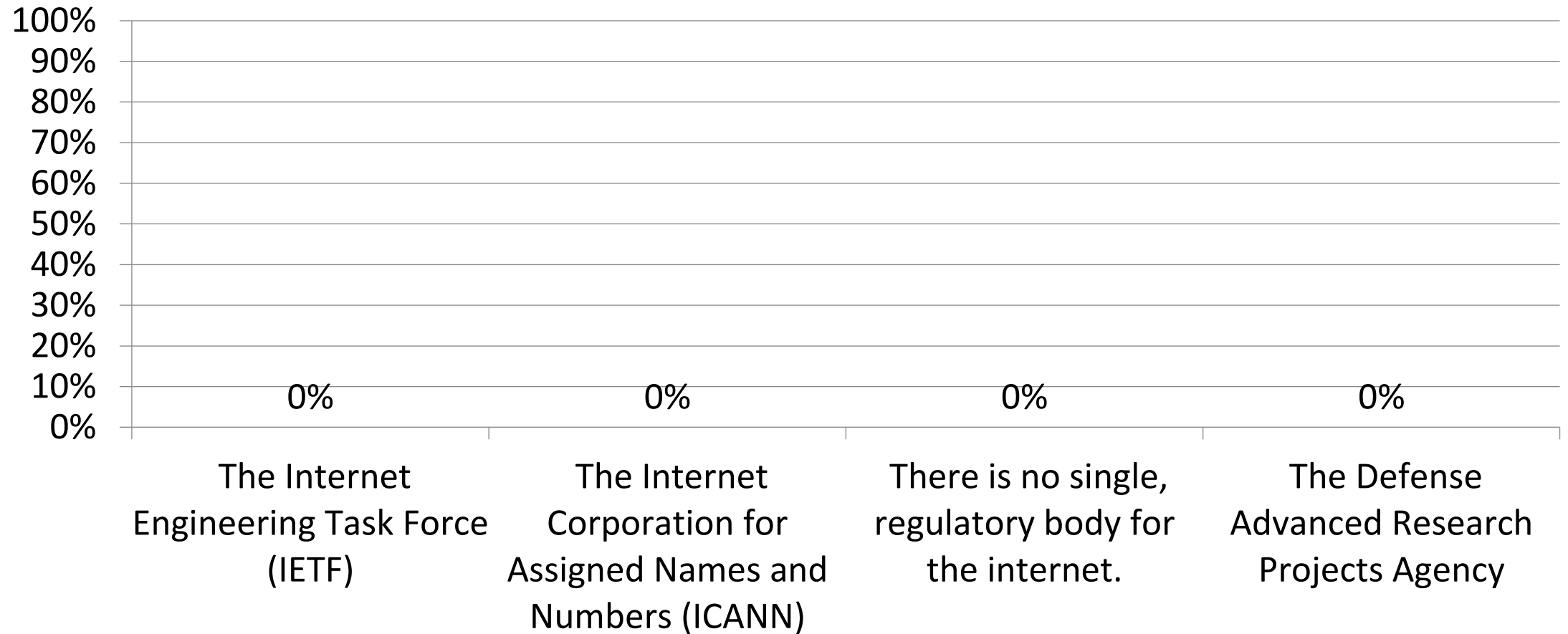


Who manages the internet?

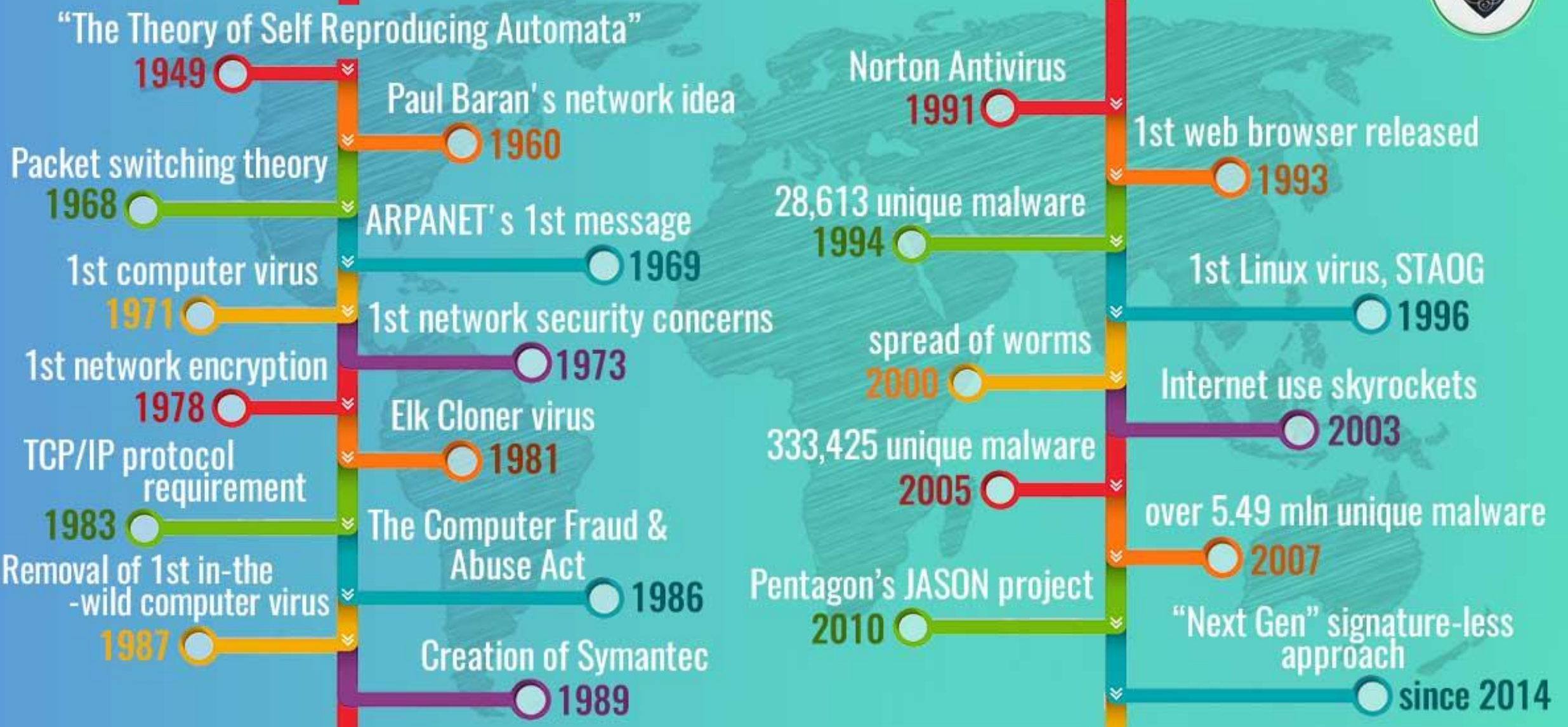
1. The Internet Engineering Task Force (IETF)
2. The Internet Corporation for Assigned Names and Numbers (ICANN)
3. There is no single, regulatory body for the internet.
4. The Defense Advanced Research Projects Agency



Who manages the internet?



ORIGIN OF INTERNET SECURITY



“I’m the Creeper: Catch Me If You Can”

In 1971, the first virus struck Arpanet, named *Creeper*. This was an experiment to create a self-replicating program. It is considered the first **worm**.

In response, *Reaper* was the first anti-virus software, designed to delete Creeper.

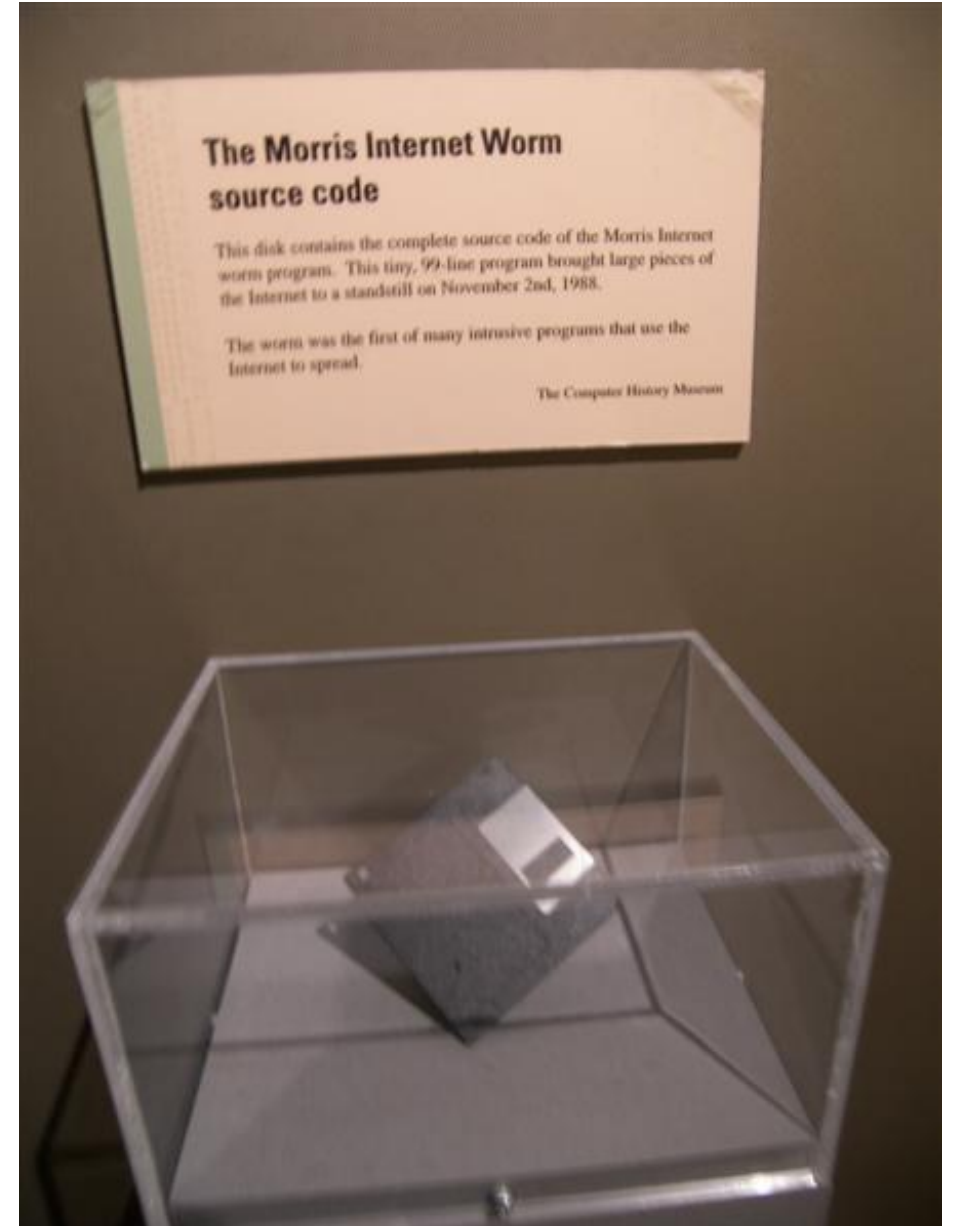


Gah4 / CC BY-SA (<https://creativecommons.org/licenses/by-sa/4.0>)

The Morris Worm

An internet worm released in 1998. It affected 6,000 computers or 10% of all networked users at the time.

By Go Card USA, CC BY-SA 2.0,
<https://commons.wikimedia.org/w/index.php?curid=3959700>



Vocabulary

Worm

A computer program that can run independently, can propagate a complete working version of itself onto other hosts on a network, and may consume computer resources destructively.





WannaCry Ransomware

Ransomware encrypts a user's files making them unreadable. A key to unlock the files is offered in exchange for a ransom.

In 2017, WannaCry was reported in 150 countries with an estimated cost of \$4 billion dollars

https://en.wikipedia.org/wiki/WannaCry_ransomware_attack

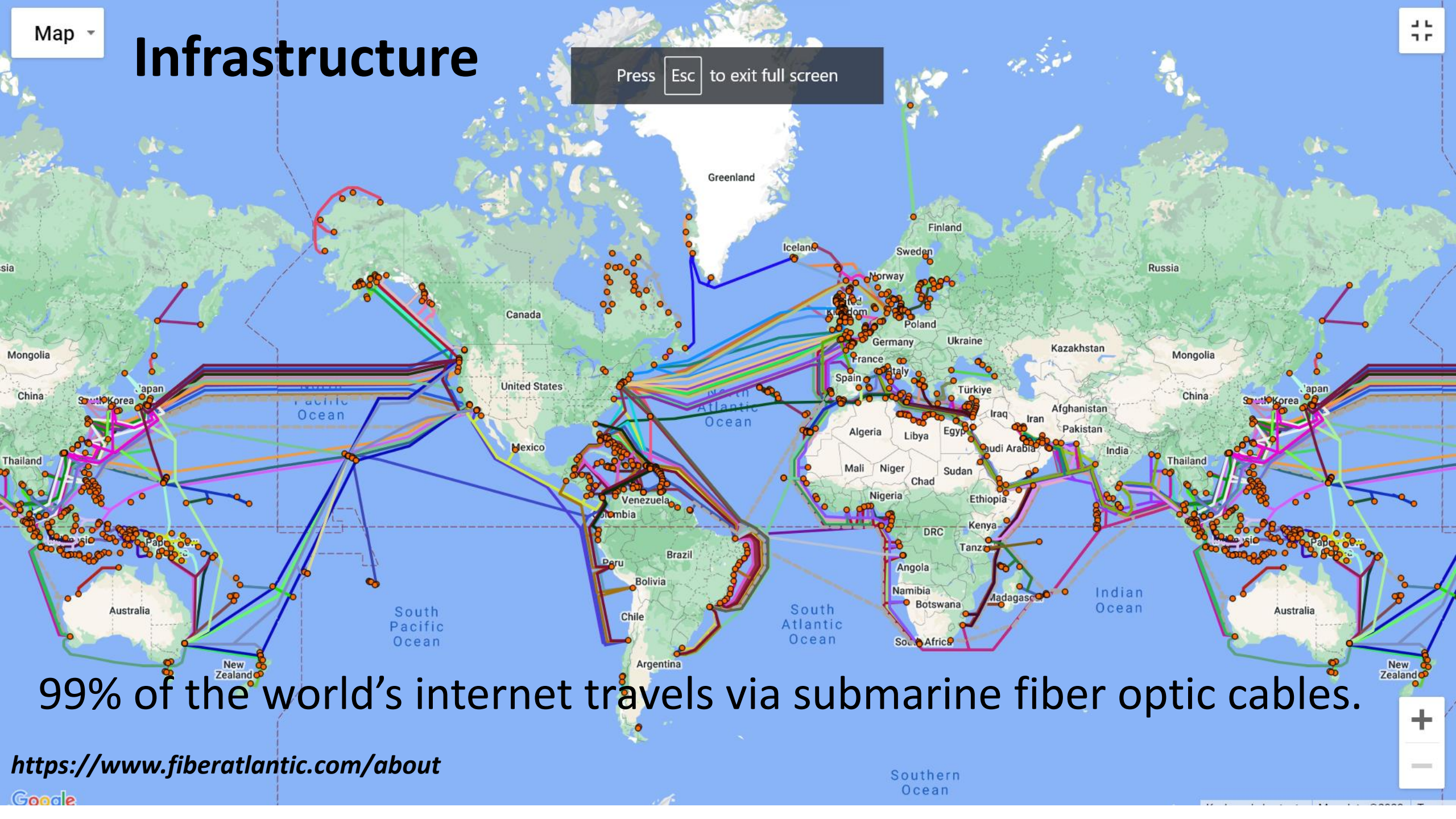
By © 황승환, CC BY-SA

4.0, https://commons.wikimedia.org/wiki/Category:WannaCry_ransomware_attack#/media/File:%EA%B0%90%EC%97%BC%EC%82%AC%EC%A7%84.png

Map

Infrastructure

Press Esc to exit full screen

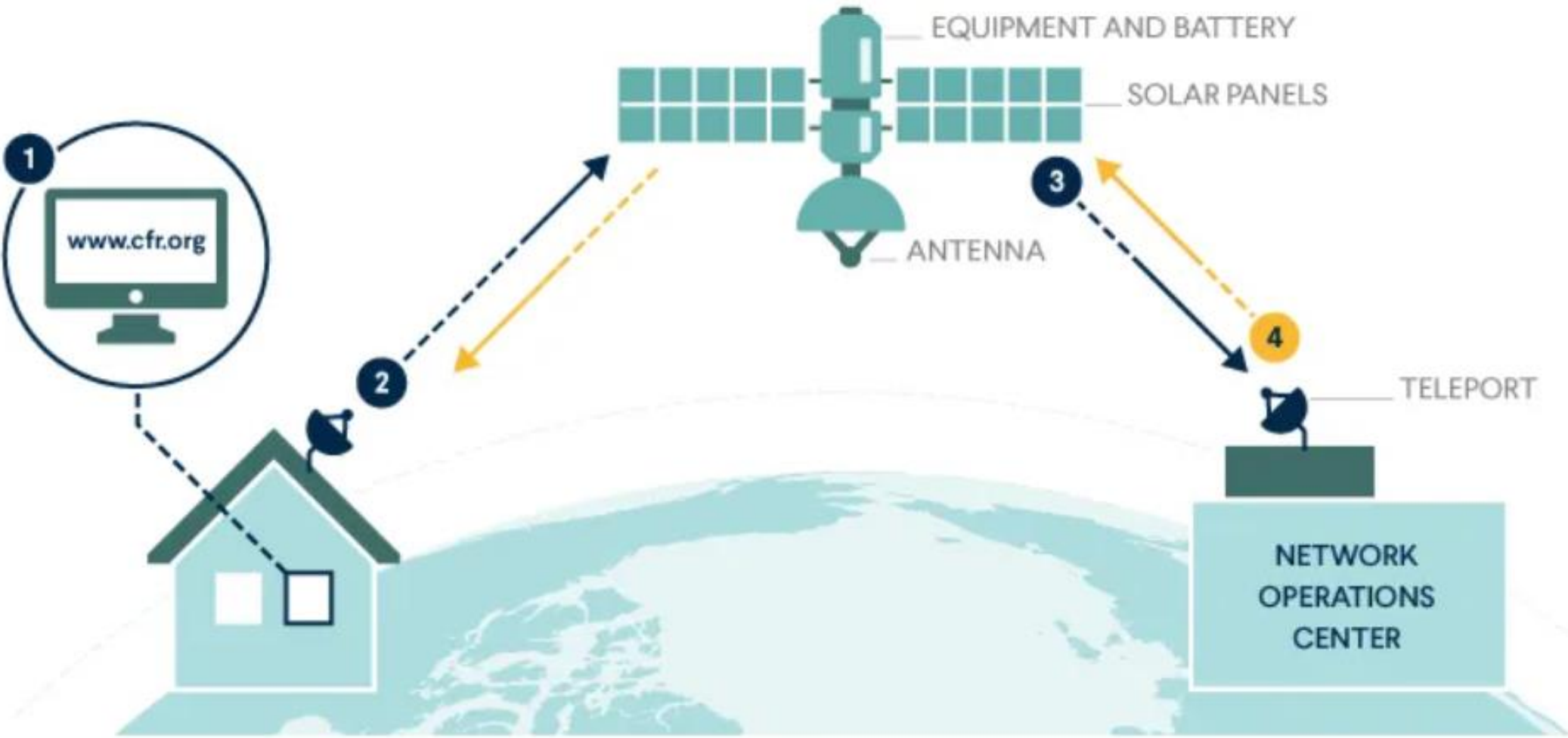


99% of the world's internet travels via submarine fiber optic cables.

<https://www.fiberatlantic.com/about>

How Satellite Internet Works

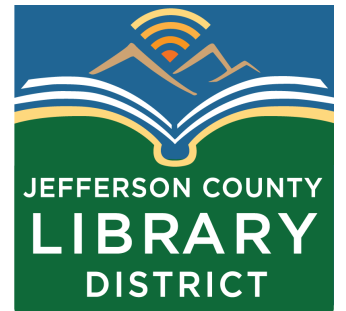
This example satellite orbits at more than 22,000 miles above the equator and moves in concert with Earth, so it hovers over a fixed position.



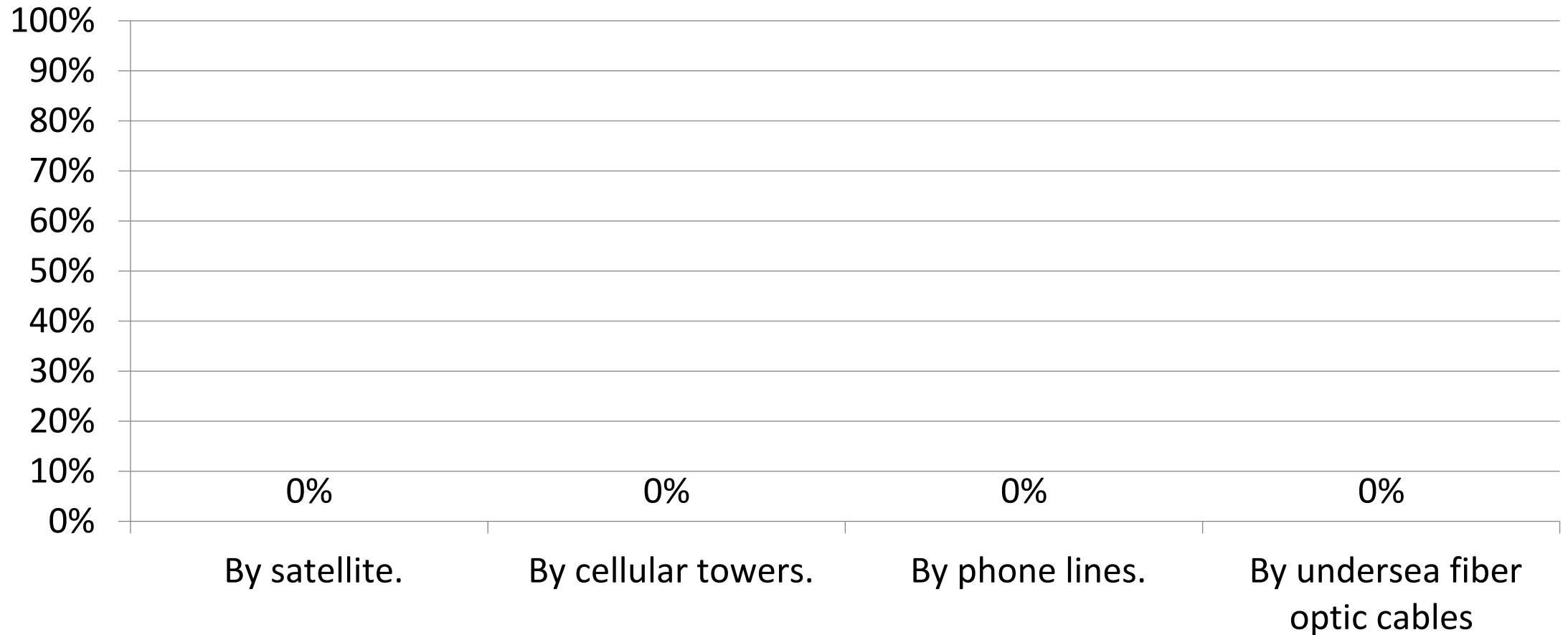
The remaining 1% is provided via satellite.

How is most of the world's internet provided?

1. By satellite.
2. By cellular towers.
3. By phone lines.
4. By undersea fiber optic cables



How is most of the world's internet provided?



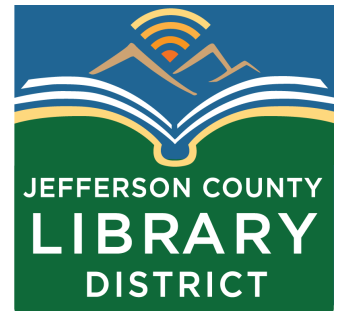
WHAT IS STUXNET?

W101

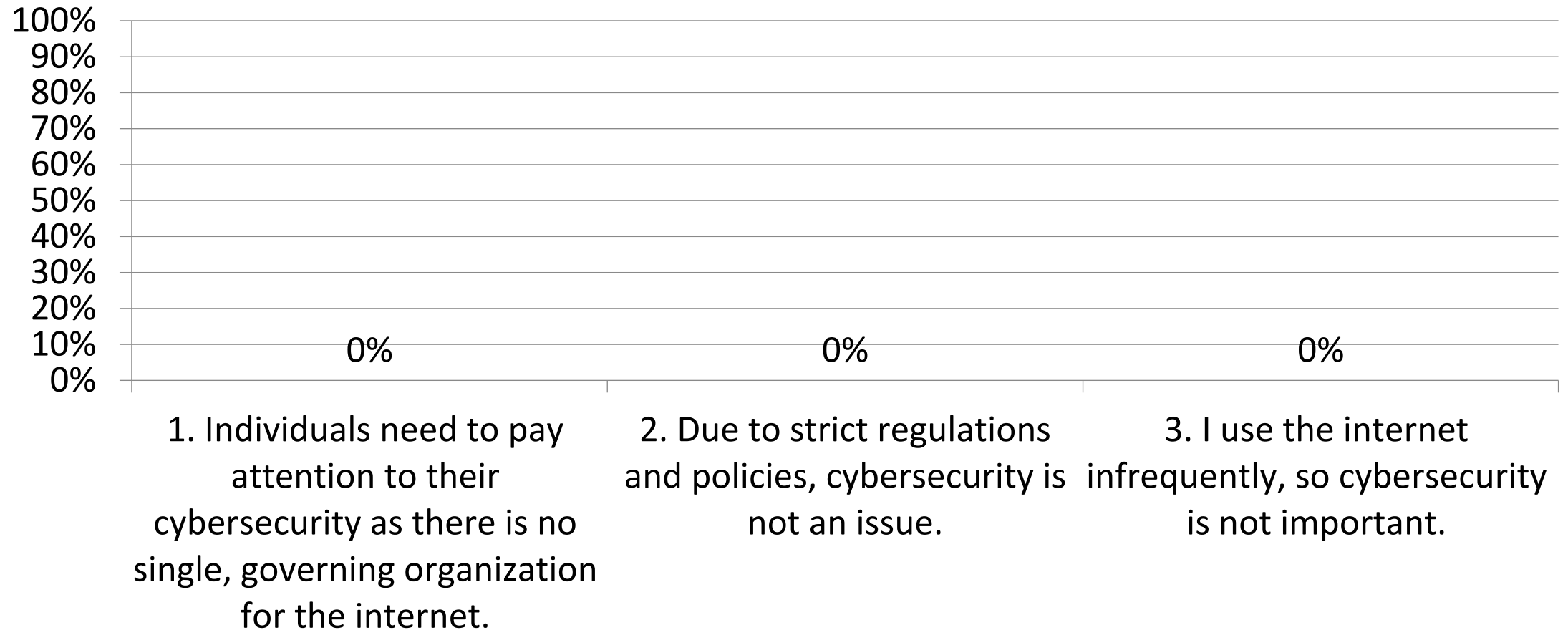
<https://youtu.be/djUHvCyPYhY>

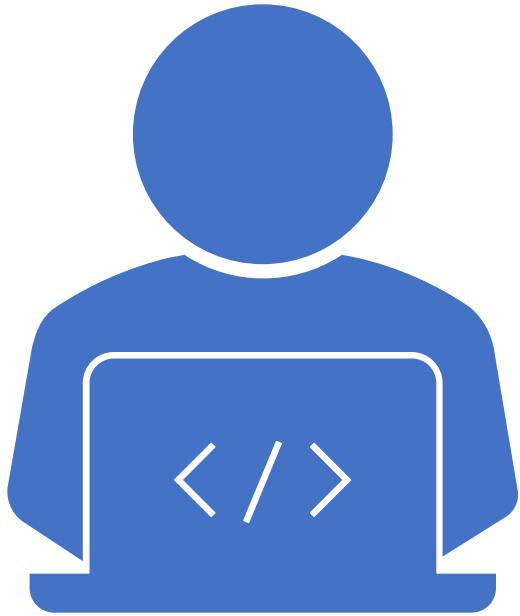
Why is cybersecurity important for everyone?

1. Individuals need to pay attention to their cybersecurity as there is no single, governing organization for the internet.
2. Due to strict regulations and policies, cybersecurity is not an issue.
3. I use the internet infrequently, so cybersecurity is not important.



Why is cybersecurity important for everyone?





Vocabulary

- **Arpanet** - A closed computer network that transmitted its first successful message in 1969 and the precursor to the internet.
- **Cybersecurity** - The ability to protect or defend the use of cyberspace from cyberattacks.
- **Ransomware** - a type of malicious software designed to block access to a computer system until a sum of money is paid.
- **Worm** - A computer program that can run independently, can propagate a complete working version of itself onto other hosts on a network, and may consume computer resources destructively.



Resources

National Institute for Standards and Technology

<https://www.nist.gov/>

Council of Foreign Relations

<https://world101.cfr.org/global-era-issues/cyberspace-and-cybersecurity>

Le VPN (History of Cybersecurity)

<https://www.le-vpn.com/internet-privacy-cyber-security/>

Undersea cables

<https://theconversation.com/in-our-wi-fi-world-the-internet-still-depends-on-undersea-cables-49936>

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Thank you!

“You wasted \$150,000 on an education you coulda got for \$1.50 in late fees at the public library.”

- Good Will Hunting

“The Library is a fine-free institution and does not assess fines on materials that are returned after their due date.”

- Jefferson County Library Fees Policy

