

Introduction to “How does the Internet work”





The Internet is for Everyone.

We work towards reaching our vision by building, promoting, and defending a bigger and stronger Internet.



About the Internet Society

Founded by Internet pioneers in 1992, the Internet Society is home to a global community driven by a common idea: when people have access to the Internet, incredible things happen. They share ideas, build communities, connect to education opportunities, improve health outcomes, and more.



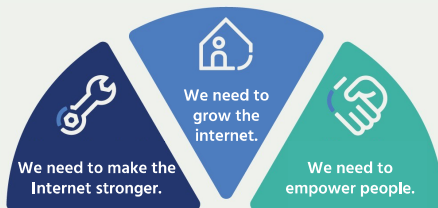
Volunteers from the NYC Mesh community installing Internet connections at new locations to connect underserved areas of New York City, October 2019. © Chris Gregory



About the Internet Society

The Internet Society is a global charity connecting and empowering communities to ensure the Internet remains **open, globally-connected, secure, and trustworthy.**

The organization defends and promotes policies, standards, and protocols that create access and build trust in the way the world exchanges information.



Internet Society Ethiopia Chapter Launch Event in Addis Ababa, Ethiopia. March 2020. © Internet Society



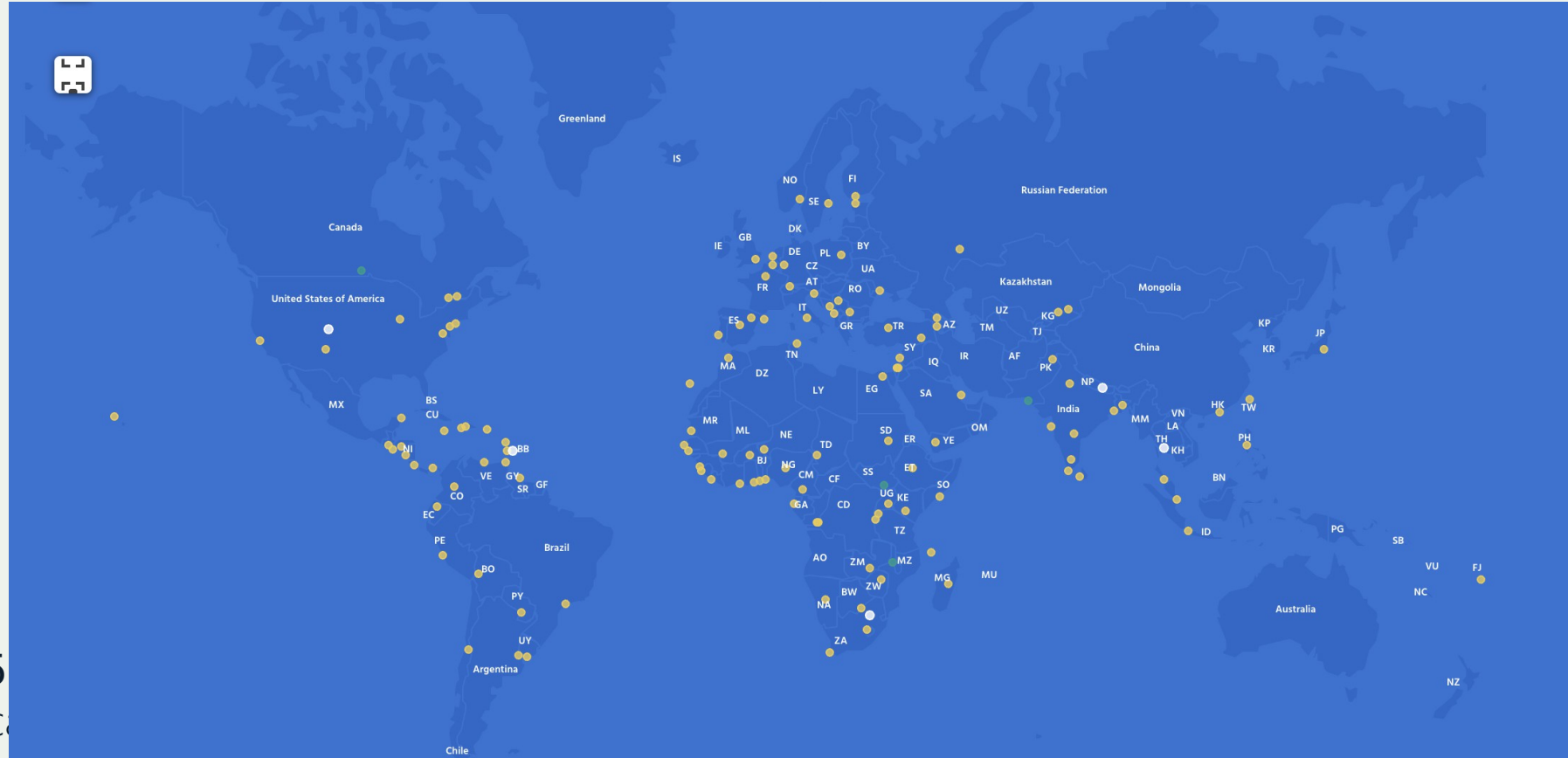
Inspiring people make the Internet Society

100945

Over **100k Members** have joined local chapters and participate in online forums and attend events.

130

Chapters and Groups in 125 countries, comprised of local chapters that run programs and activities that support our principles and mission.



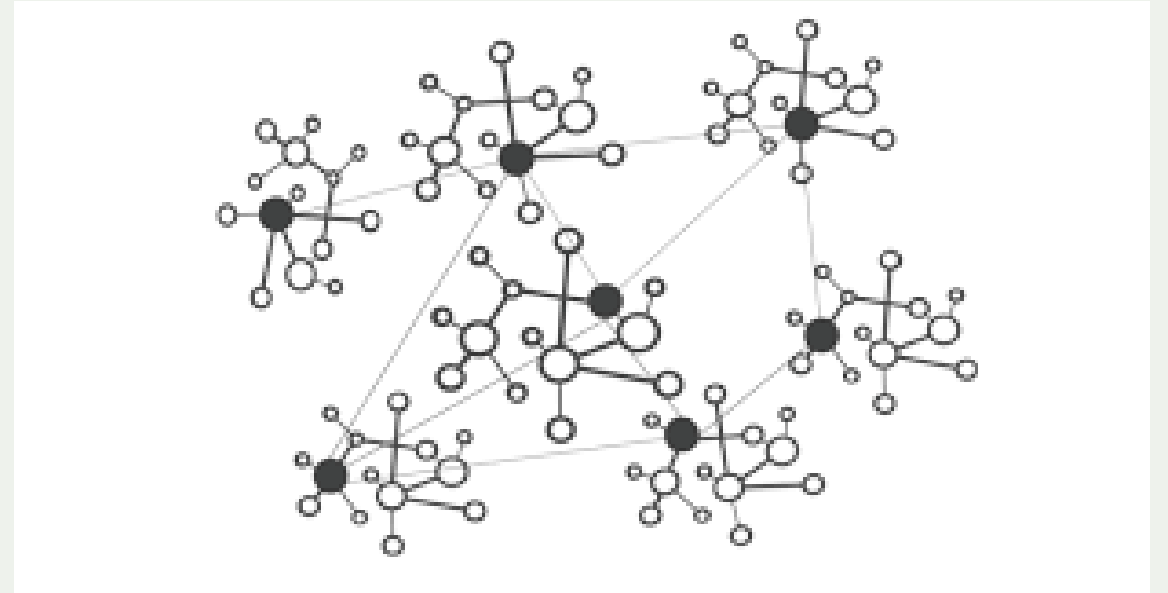
136

Over **135 staff** speaking **38 languages** in **28 countries**.



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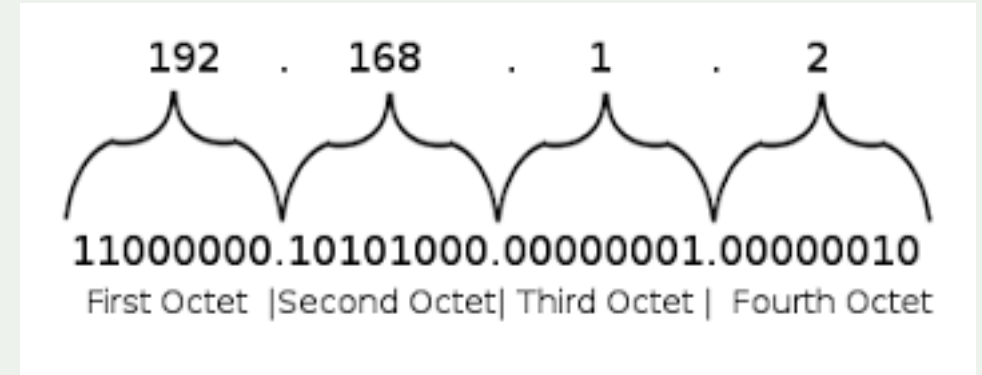
Internetwork



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What is needed to Interconnect?

- Same language
- Agree on a number of protocols
- For packet switching
 - Size of the packets
 - Source and destination locations
 - How recipient acknowledges receipt of packets
 - What happens if the recipient does not acknowledge a packet



History of the Internet

Spread information

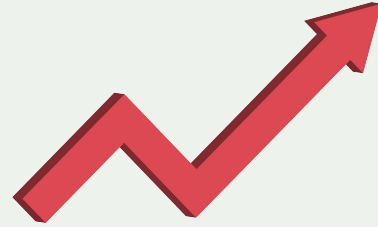
Allow collaboration and interaction

Overcome limits of geographic location

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History of the Internet

PRIVATE SECTOR



ARPANE
T



Click icon to add picture

The need for governance institutions

- Before 1985, all the TCP/IP networks were under ARPANET
- There were coordination bodies such as Internet Activities Board (IAB)
- But with NSFTNET and others interconnecting, there was a need of governance institutions

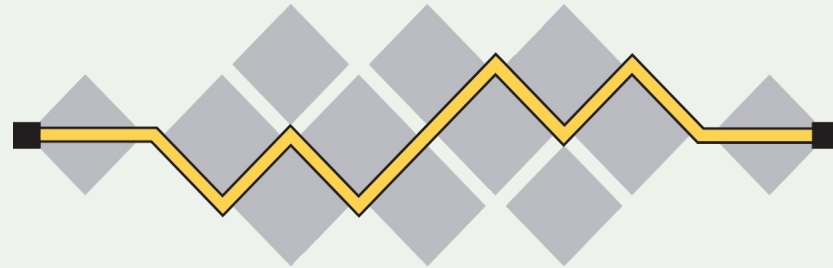


ARPANET



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The need for governance institutions ...



I E T F®

- ✓ Decentralized and collegial nature
- ✓ No centralized governance
 - ↳ No central planning



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Resources management

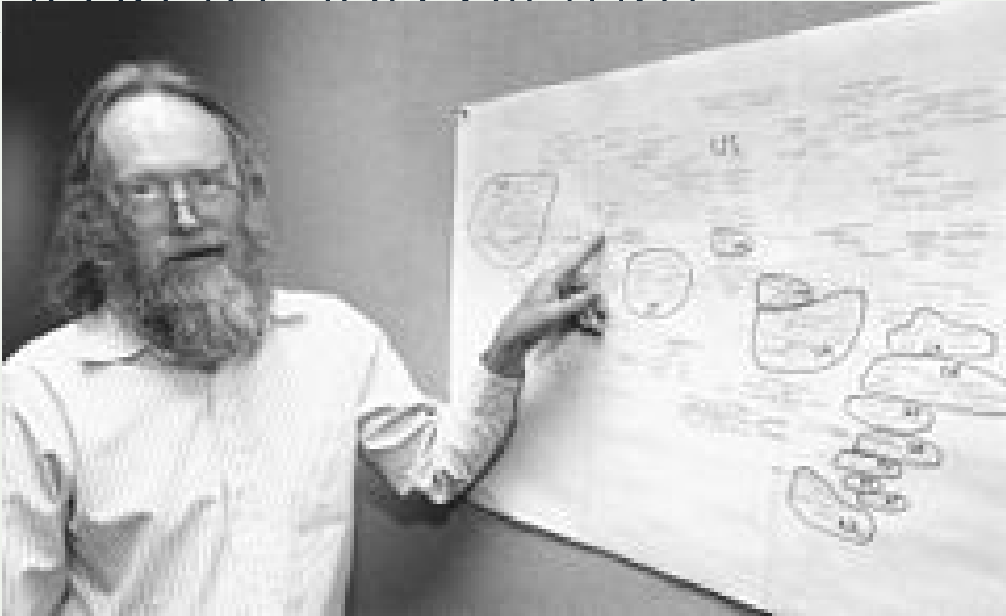
In addition to protocols, the Internet needs a few resources amongst which include:

- Internet numbers
- Domain names



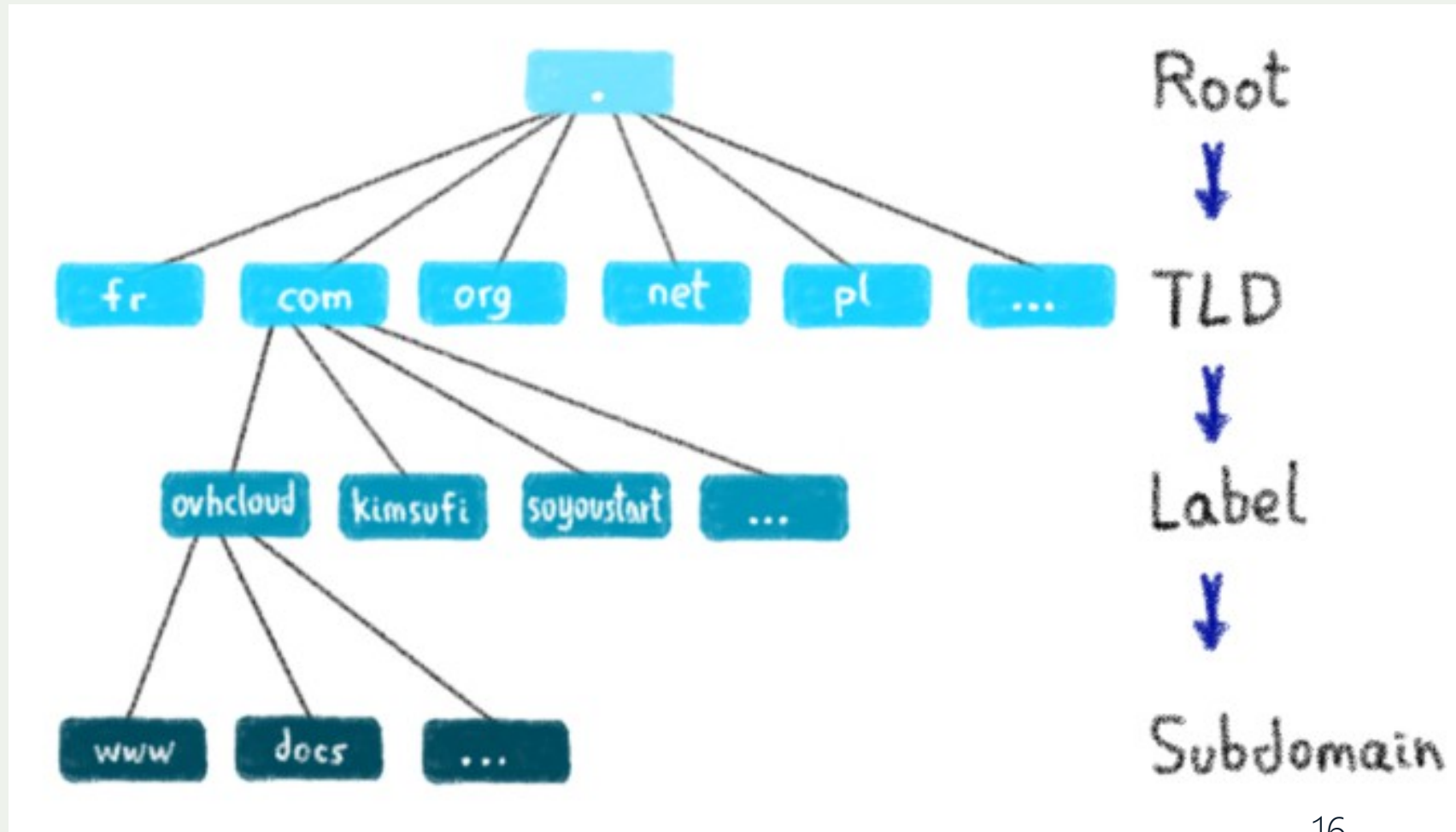
Click icon to add picture

Resources management: Internet numbers



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Resources management ...



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- Established in 1998 by the DoC as a non-profit public benefit
- Responsibilities
 - Addresses
 - Domain names
 - Protocols
- RIRs, Registries/Registrars and IETF were delegated by ICANN to perform these tasks
- In 2016, freed from US government control

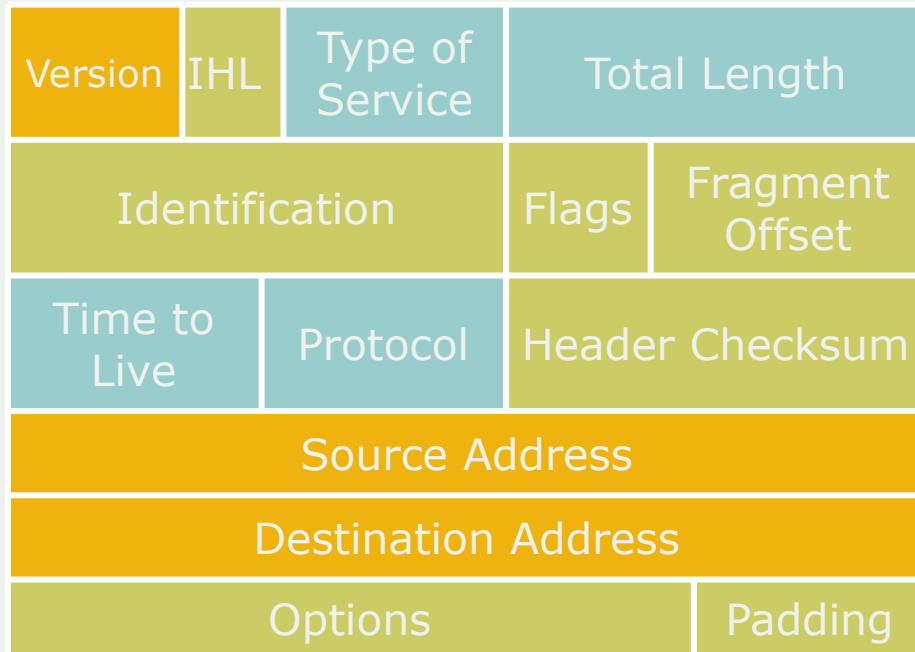


IPv4 and IPv6

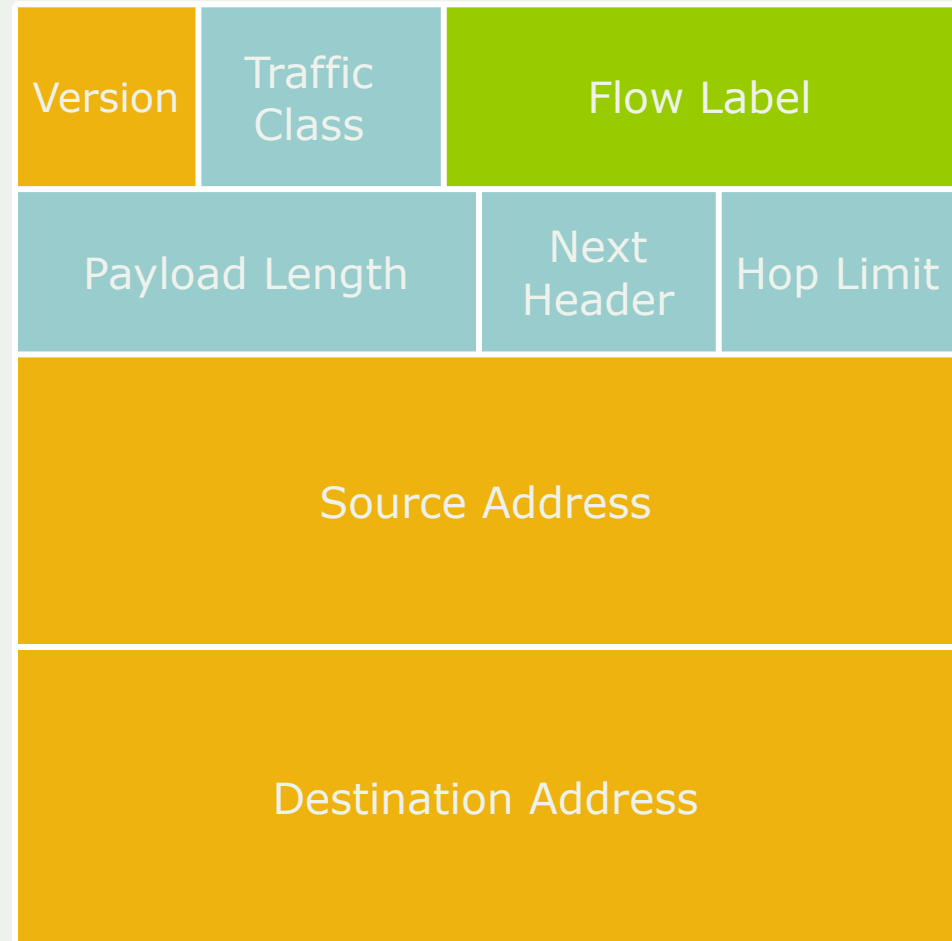


IPv4 and IPv6 Header Comparison

IPv4 Header



IPv6 Header



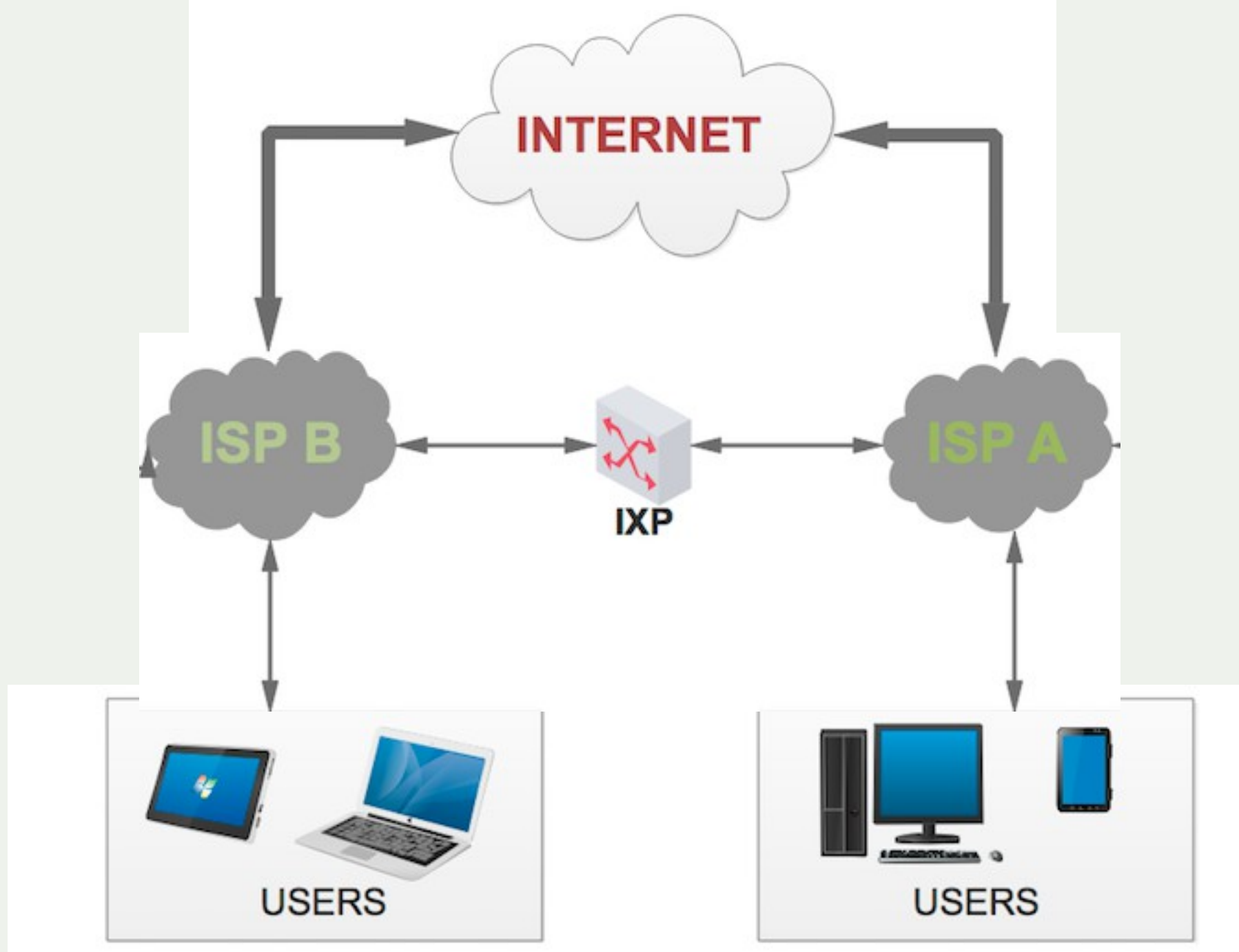
Legend

- Field's name kept from IPv4 to IPv6
- Fields not kept in IPv6
- Name and position changed in IPv6
- New field in IPv6

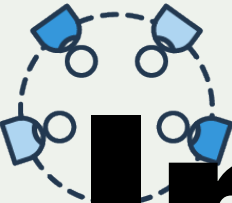





Internet Exchange Points (IXP)





The Internet Ecosystem

 **Internet** 
 **Ecosystem** 

The Internet Ecosystem

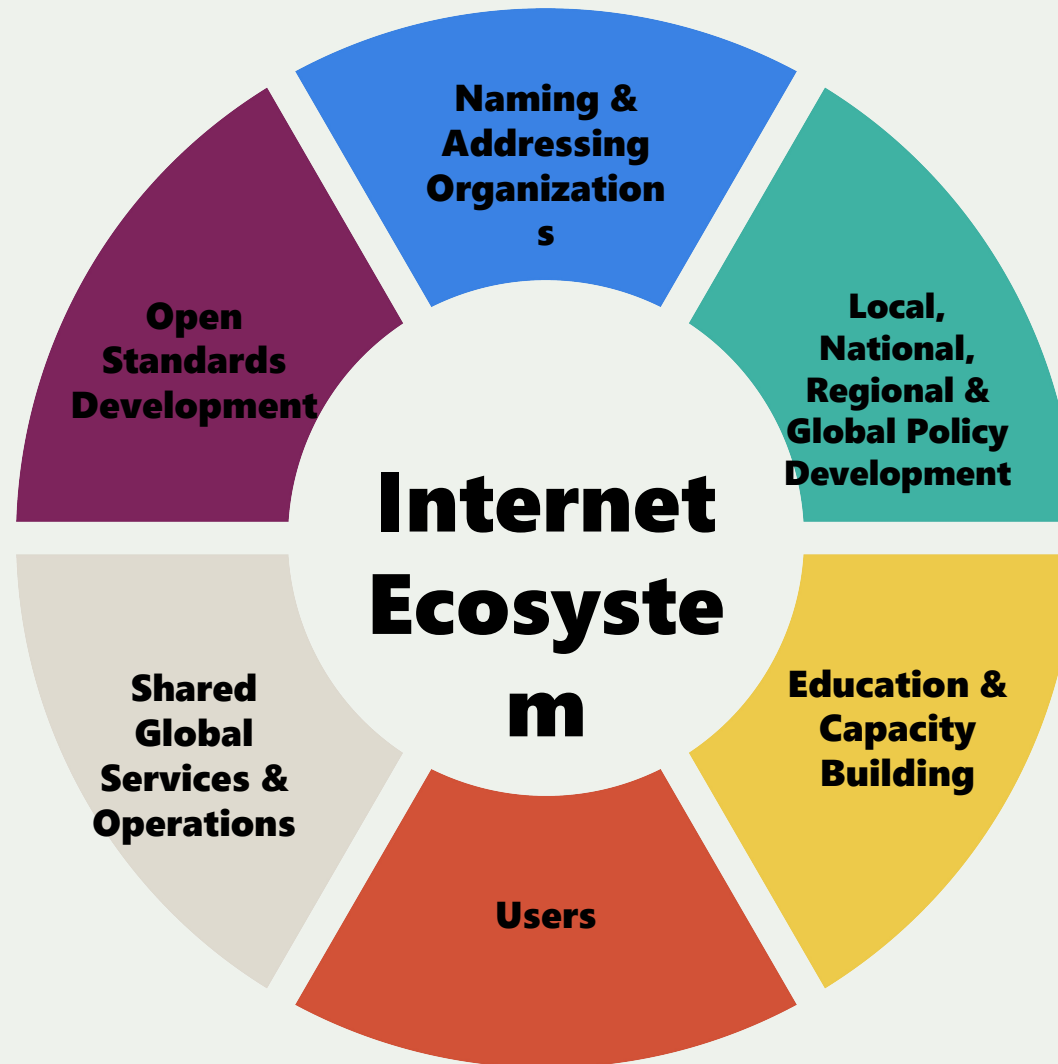


The Internet Ecosystem



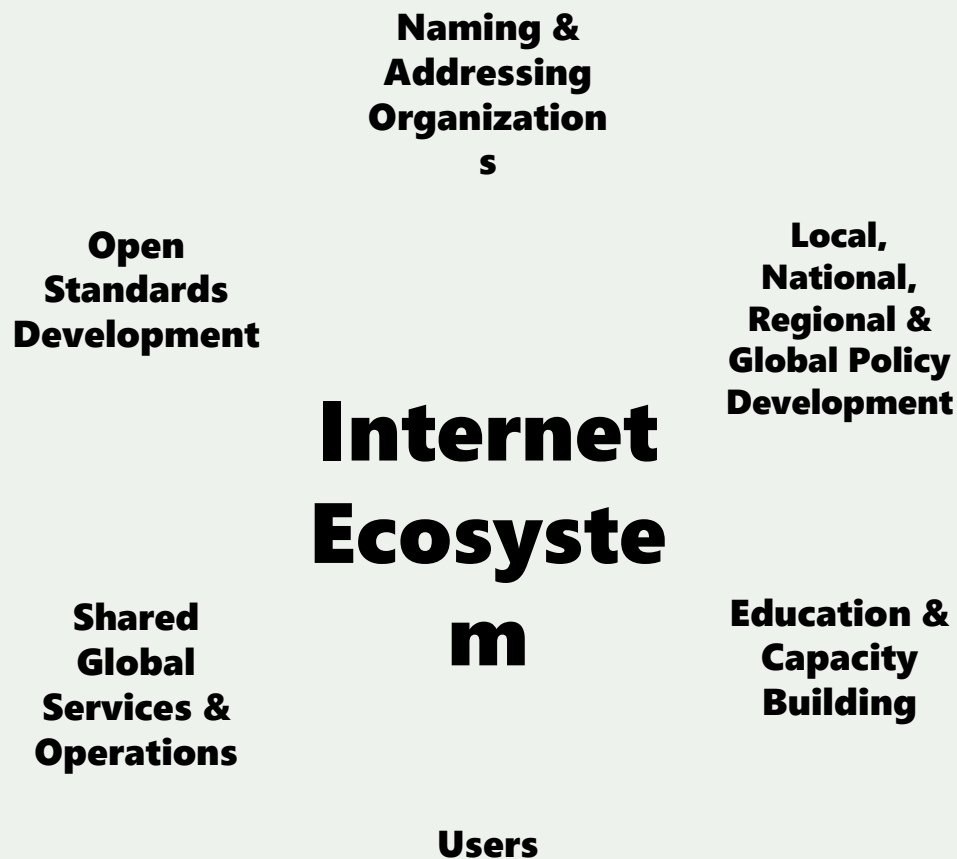
- ICANN
 - PTI
- RIRs
- gTLD registries
- ccTLD registries

The Internet Ecosystem



- National governments, provincial/state/regional governments
- Regional intergovernmental organizations
- Global intergovernmental organizations

The Internet Ecosystem



- Governments
- Intergovernmental organizations & development agencies
- Internet Society
 - Chapters & special interest groups
 - Individual members
 - Organization members
- Internet community organizations/businesses
- Universities & academic institutions
- Civil society groups

The Internet Ecosystem



- Individuals
- Organizations
- Businesses
- Governments
- Service & apps creators/equipment builders

The Internet Ecosystem

**Naming &
Addressing
Organizations**

**Open
Standards
Development**

**Local,
National,
Regional &
Global Policy
Development**

**Internet
Ecosystem**

**Shared
Global
Services &
Operations**

**Education &
Capacity
Building**

Users

- Root servers
- Network operators
- Service providers
- IXPs
- gTLDs
- ccTLDs

The Internet Ecosystem

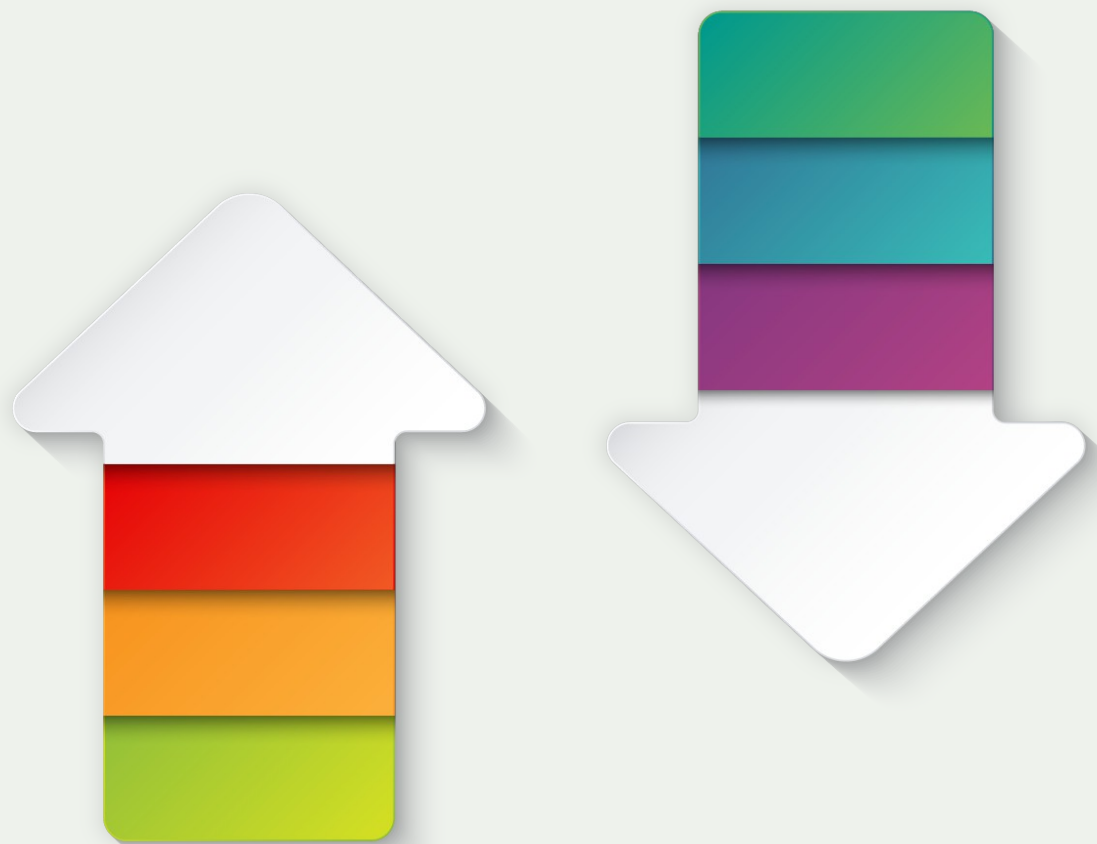
- Technical bodies
- IETF
- W3C
- IEEE
- Other specialized bodies



The Internet Ecosystem

Open technical standards
Freely accessible processes for
technology and policy development
Transparent and collaborative
governance
Distributed responsibility for technical
management, and administrative
functions

Internet Ecosystem Decision Making



Questions?





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merica Drive

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Nep
Canada

