Web3.0

Course Introduction

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Lesson Overview

What we'll discuss during this lesson.

- What is this course about?
- An introduction to Web3.0
  - A brief history of the internet
  - The road to a decentralized internet
- How will you be examined?

Course introduction

What is this course about?

What you'll learn.

- What it's **not** about (although they will be discussed):
  - Blockchain
  - Cryptocurrencies
  - NFTs
- What it **is** about:
  - Why and how our current internet is broken
  - How Web 3.0 can help us fix a lot of the current problems
  - What the future of the internet might looks like
  - How the future internet might impact human life

After completing this course, I hope you…

- Will have an understanding of the problems we face with the current state of the internet, and where they come from.
- Will know how and why various Web 3.0 related technologies may help overcome those problems.
- Are able to identify and explain how and why Web 3.0 could bring benefit to your area of expertise.
- Are convinced about why we need decentralization.
- Are aware of the potential treats of the future internet.

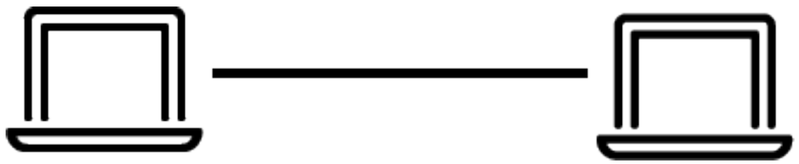
Weekly topics

- Lesson 1: Course introduction & The history of the internet
- Lesson 2: The decentralized web and the semantic web
- Lesson 3: The trusted web
- Lesson 4: The importance of open source
- Lesson 5: The spacial web and the ubiquitous web
- Lesson 6: A web of artificial intelligence
- Lesson 7: Course examination

A Brief History of the Internet

What is a network?

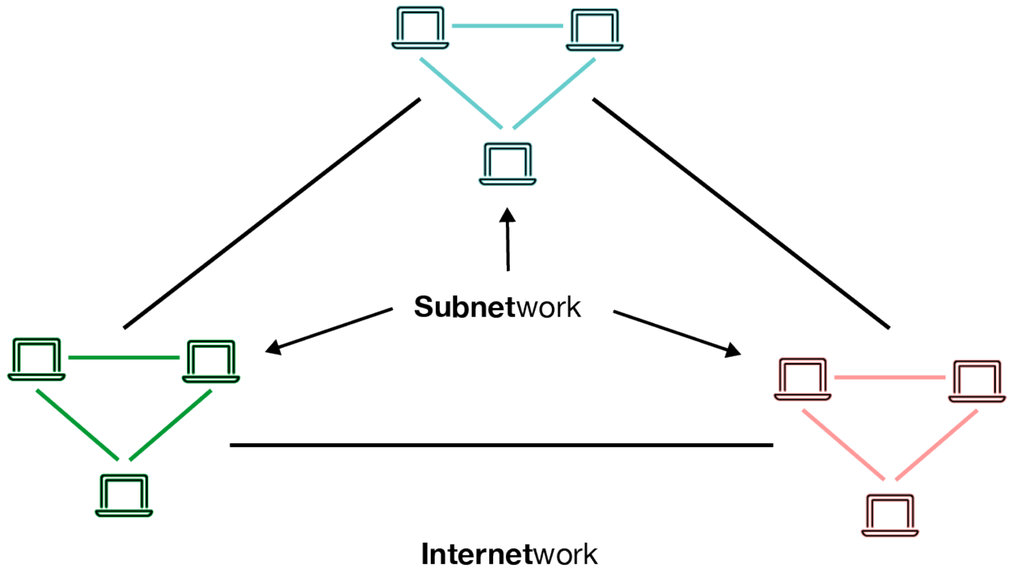
In its most basic form, a network is defined as two or more connected computers.



Network of networks

When connected, multiple stand-alone networks can be part of a larger network.

These smaller networks are commonly called ‘**subnet**work**s**’ and the overlaying network is often referred to as an ‘**internet**work’



Web 1.0

The ‘read’ internet

ARPANET

- Developed by the **A**dvanced **R**esearch **P**rojects **A**gency (funded by the US Department of Defence).

- Primary goals:

  - Enable ‘high-speed’ sharing of research information across universities

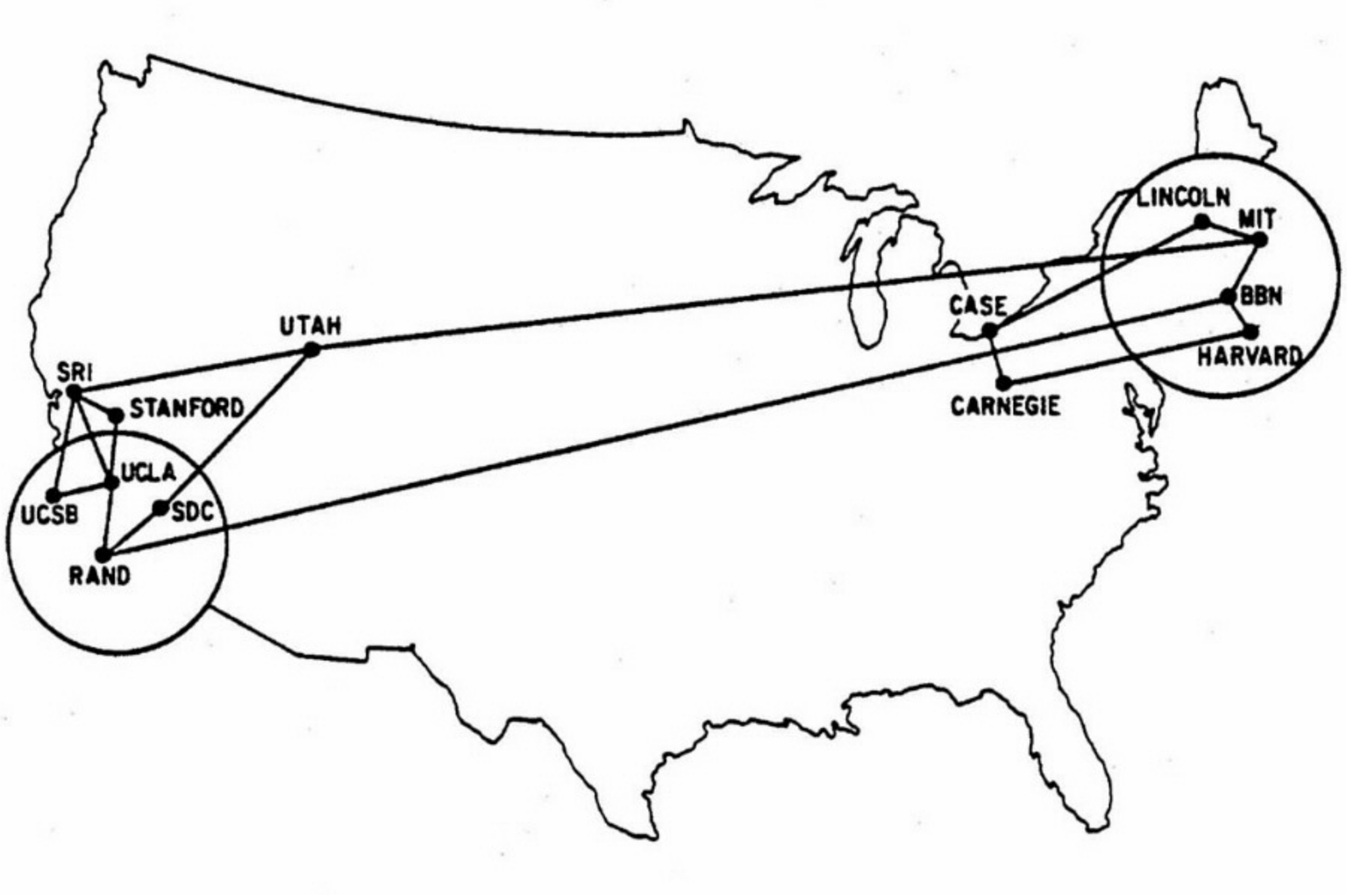
  - Increase the likelihood of information surviving a nuclear attack.

The ARPANET in December 1969

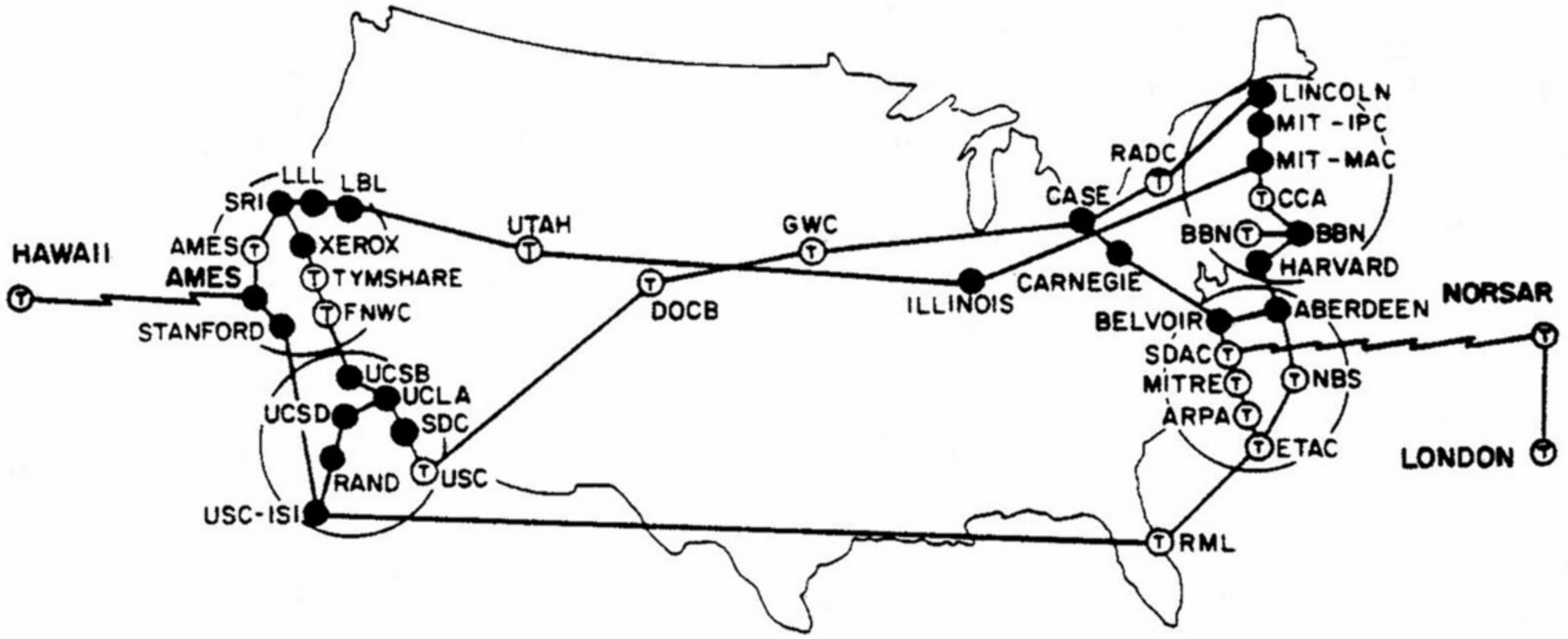
1969 — The beginning of ARPANET

The ARPANET in December 1969

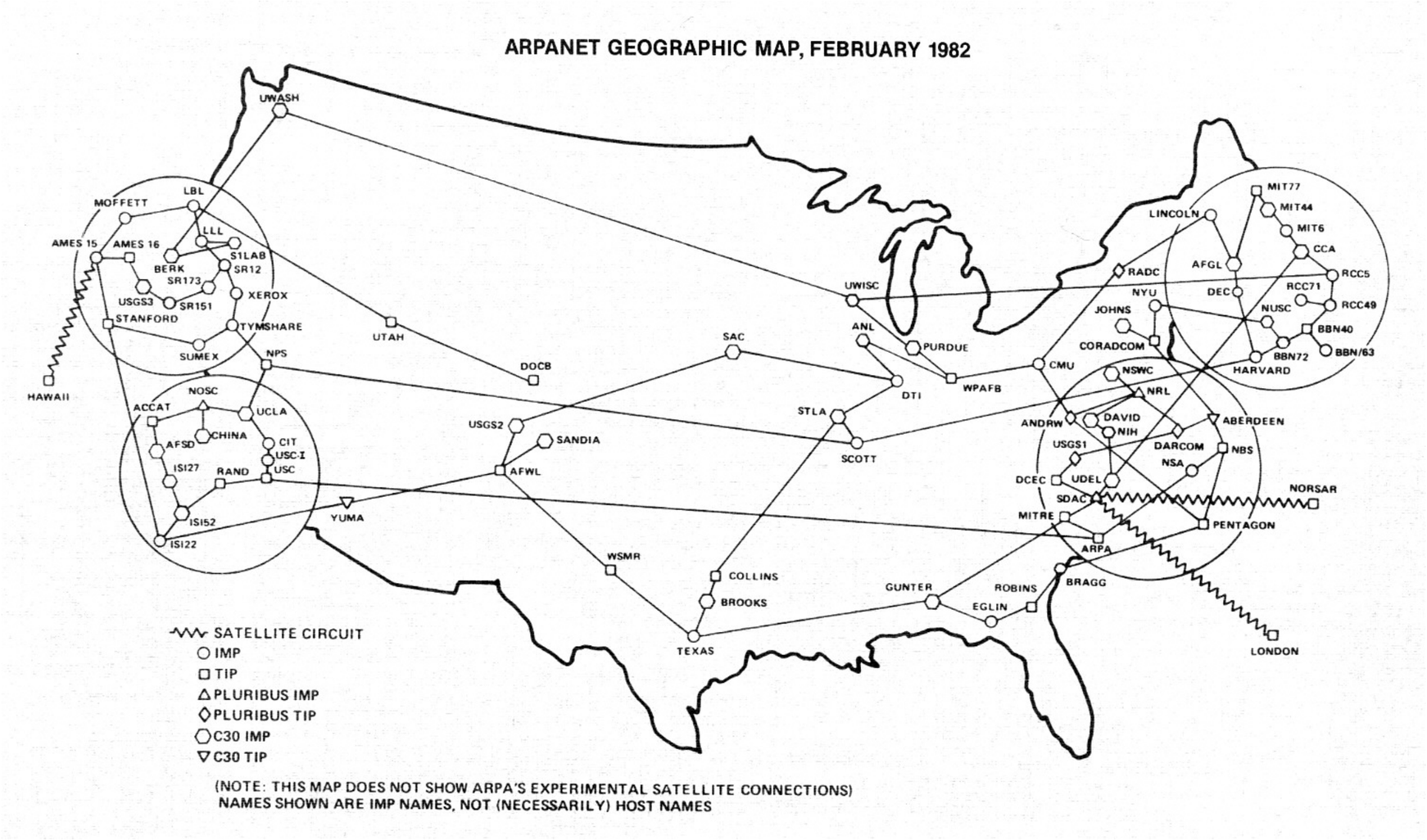
1970 — ARPANET is expanding



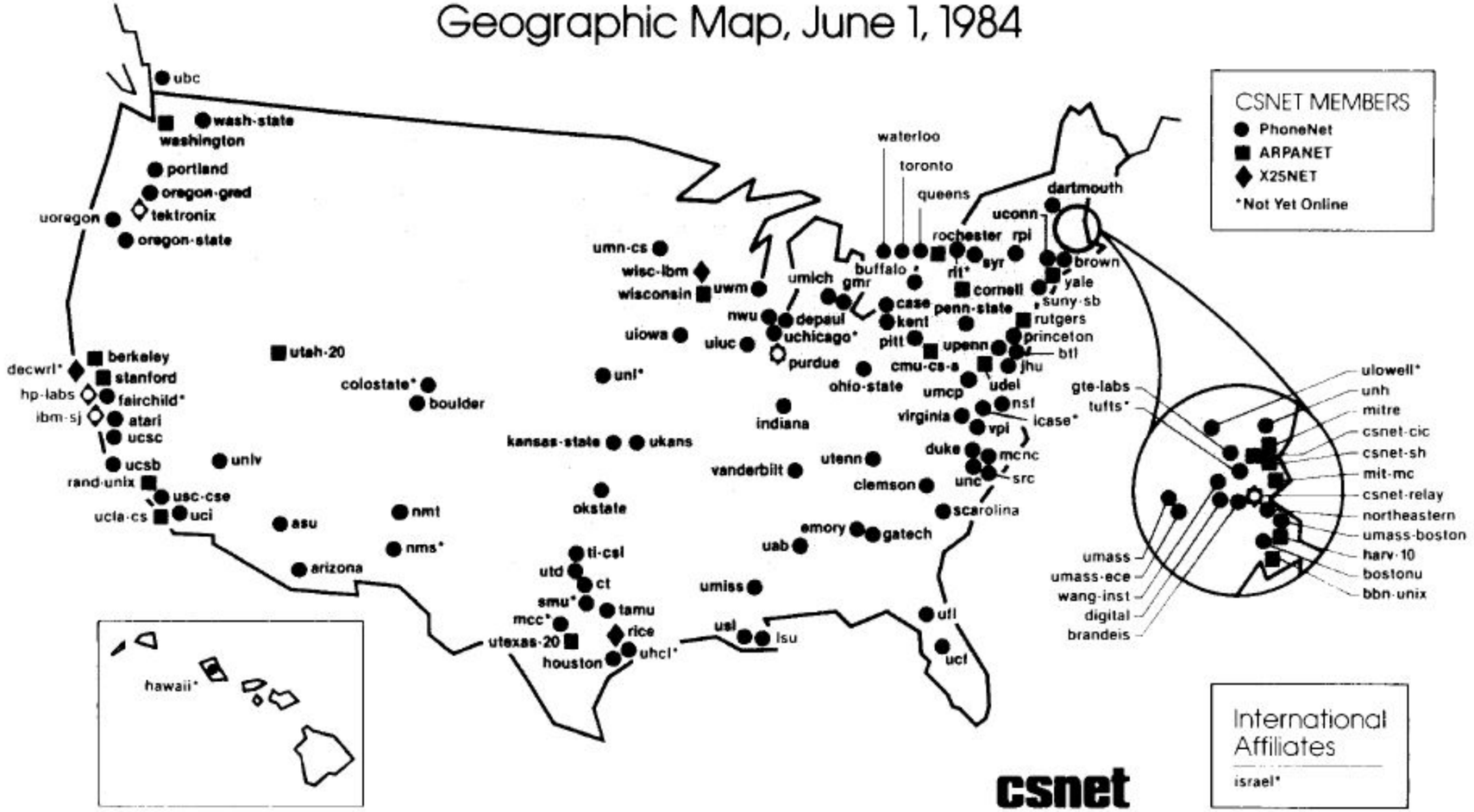
1973 — ARPANET goes international



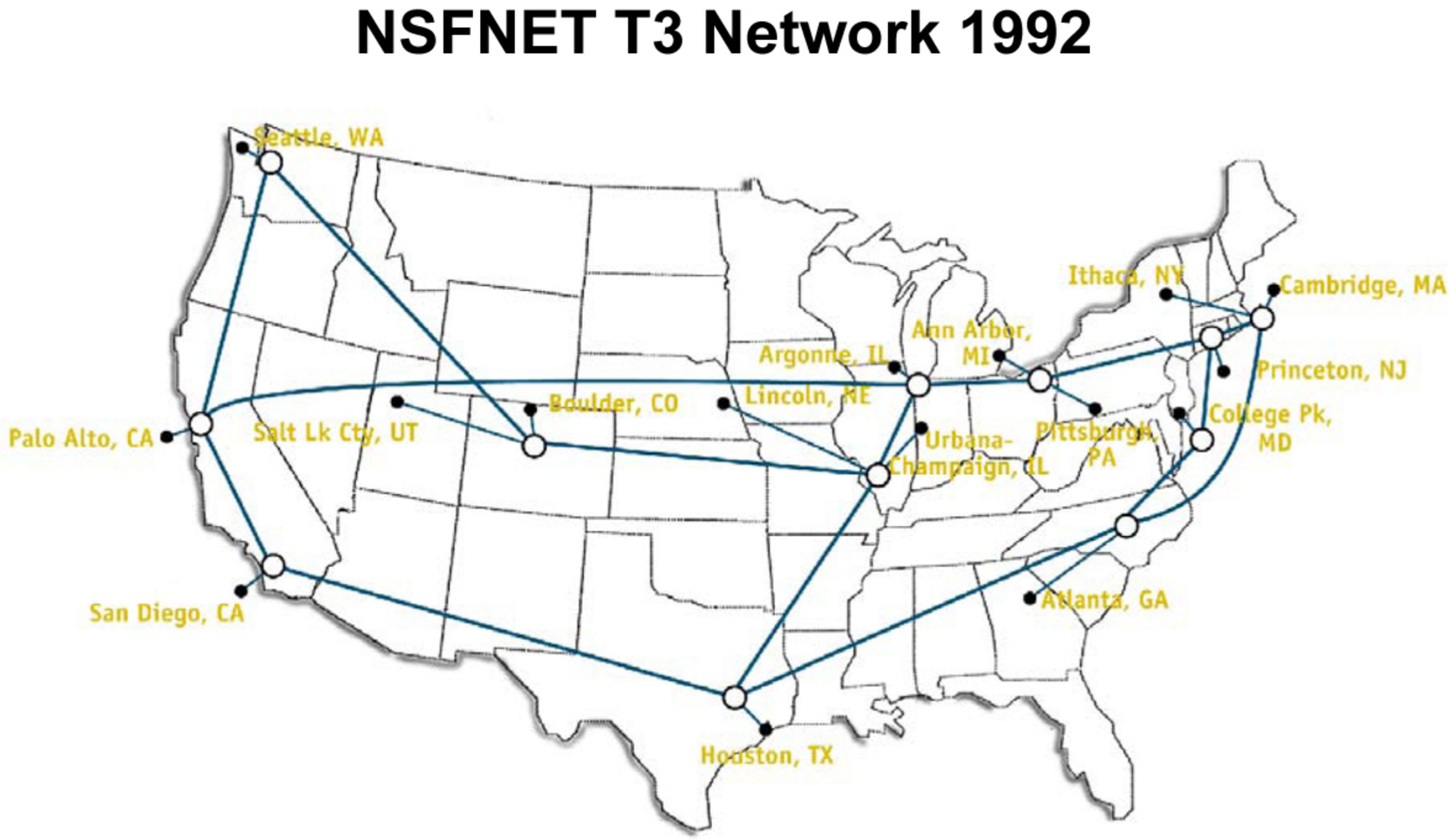
1982 — ARPANET reaches 100 nodes



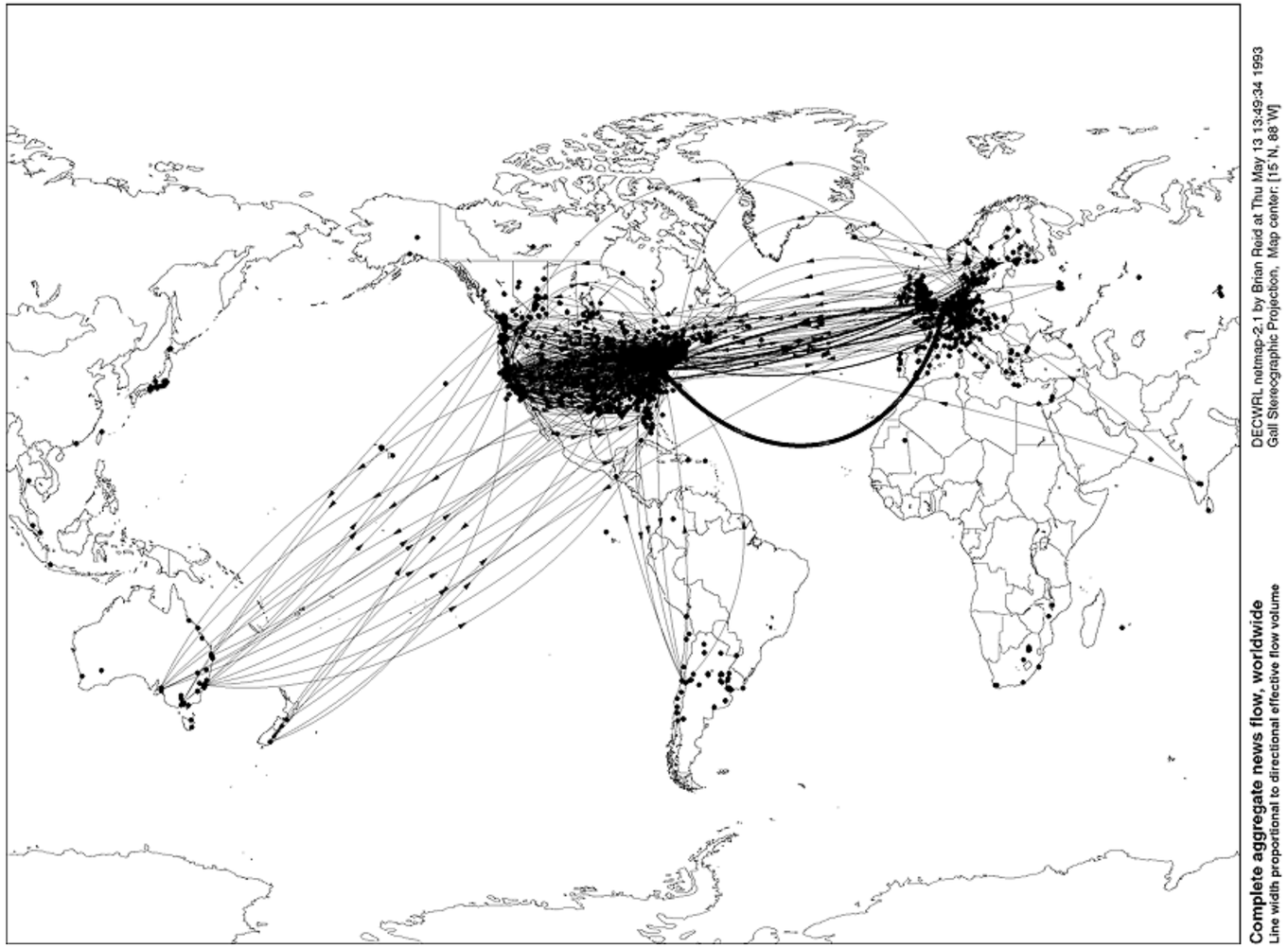
1984 — ARPANET becomes the internet



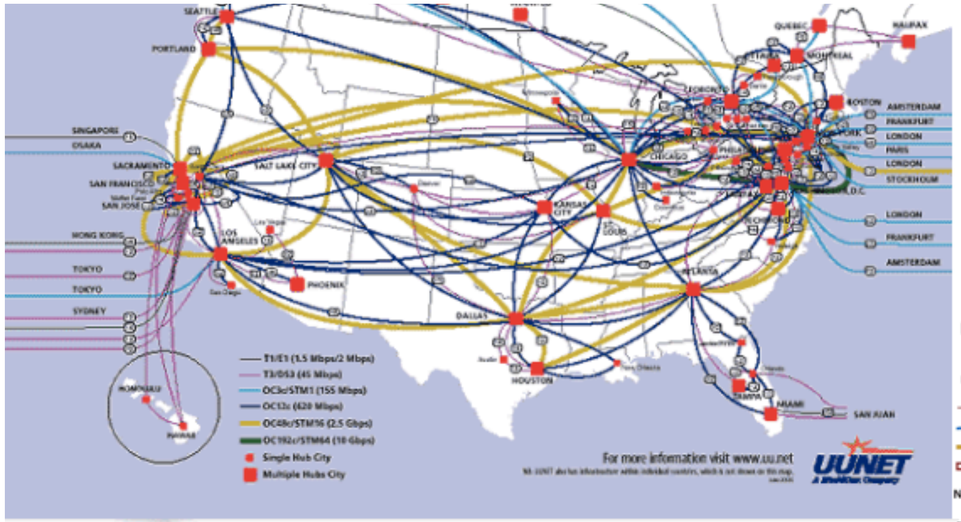
1992 — The first ‘backbone’

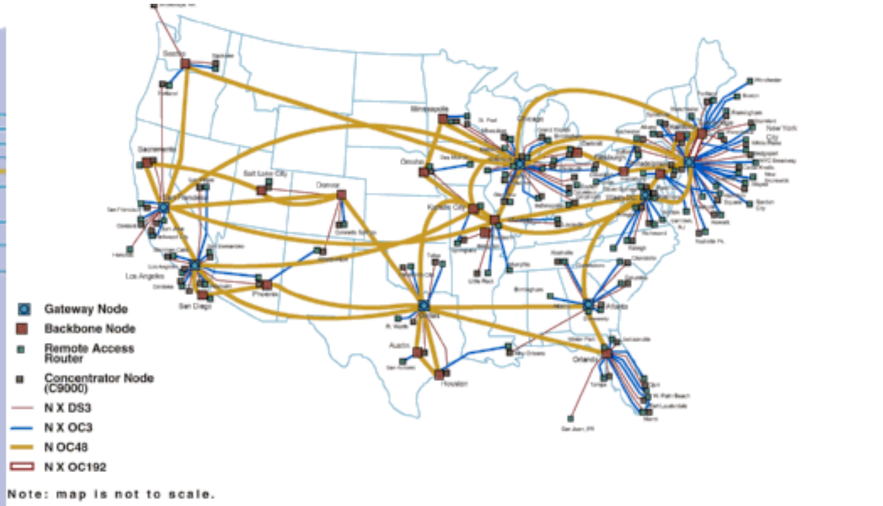


1993 — The internet is a global network



Privatization of the internet backbone

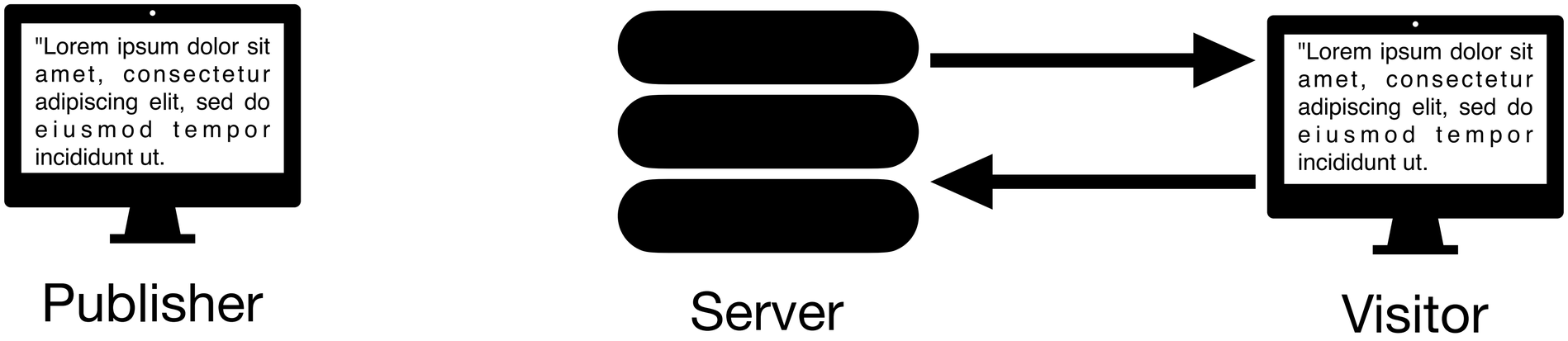




Characteristics of Web 1.0

- The majority of participants were consumers of content.
- Personal ‘hobby websites’ were common, consisting mainly of static webpages.
- It’s often referred to as the ‘read internet’, meaning website visitors could consume information the website builder uploaded, but couldn’t interact with the site (e.g. post content).
- The most prominent design features of Web 1.0 were:
  - Static pages
  - Content was served from the filesystem (nowadays we use databases)
  - Website layouts were created using HTML frames and tables
- Web 1.0 also introduced email (SMTP)

Web 1.0 — In Action

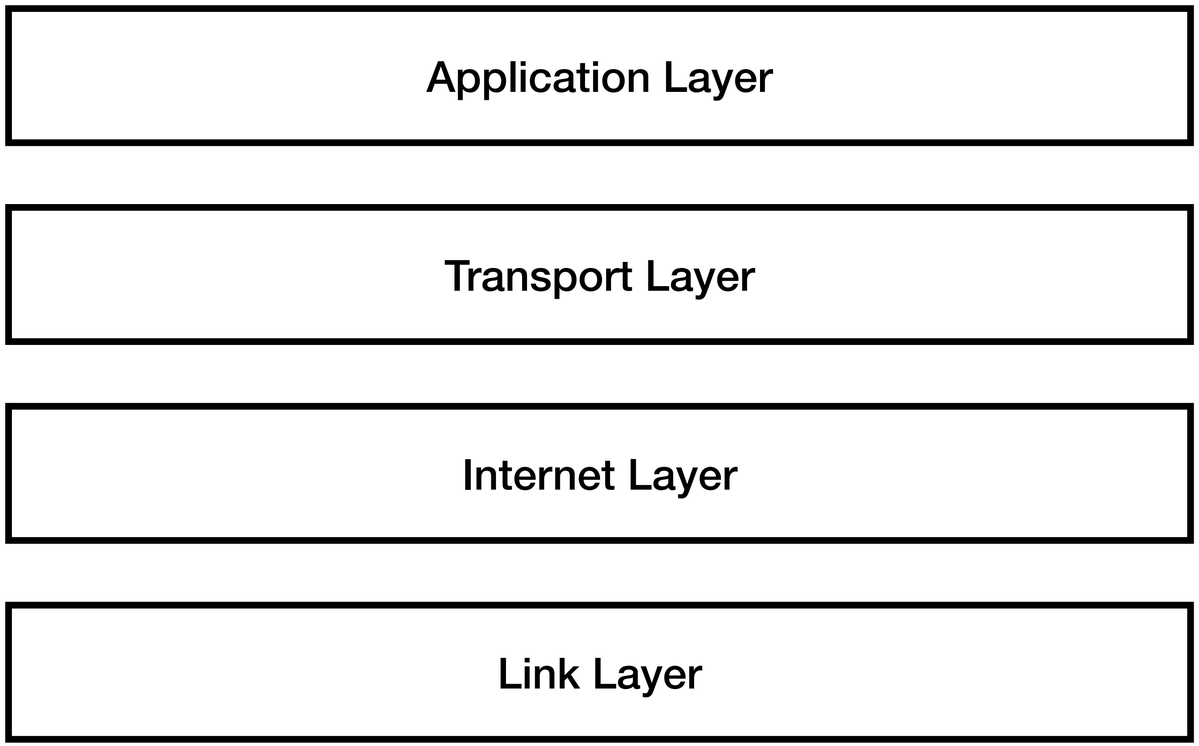


Web 2.0

The ‘read/write’ internet

Before we move on…

Layers of the internet



The ‘application layer’ (duh)

The ‘application routing layer’

The Internet Protocol (IP) Layer

The ‘physical layer’

Characteristics of Web 2.0

- Often referred to as the read & write internet
- Where in Web 1.0 visitors were mainly capable of **reading** information published on servers, in Web 2.0 visitors are able to **contribute** to the internet.
  - E.g. visitors are able to publish information to servers (e.g. post messages on FaceBook or Hyves (💥)).
- Webpages are interactive due to the introduction of JavaScript.
- Webpages can be updated without the need to refresh the entire page (AJAX).
- Everyone is able to contribute / publish information to the internet, without the having to run a server.

Typical Web 2.0 technologies

- Blogging
- Podcasting
- Social media
- Social networking
- RSS feeds
- Tagging
- Chat

Centralization 🎉

Centralization of Web 2.0

On an infrastructure level

- Submarine cables
- Internet Service Providers (ISPs)
- Networking hardware (routers, modems, etc.)
- Consumer products
  - Processors (Intel, AMD)
  - PC operating systems (Windows, MacOS, ~~Linux~~)
  - Smartphones (Android, iOS)
- Etc.

Centralization of Web 2.0

On an application level

Centralization of Web 2.0

On an application level

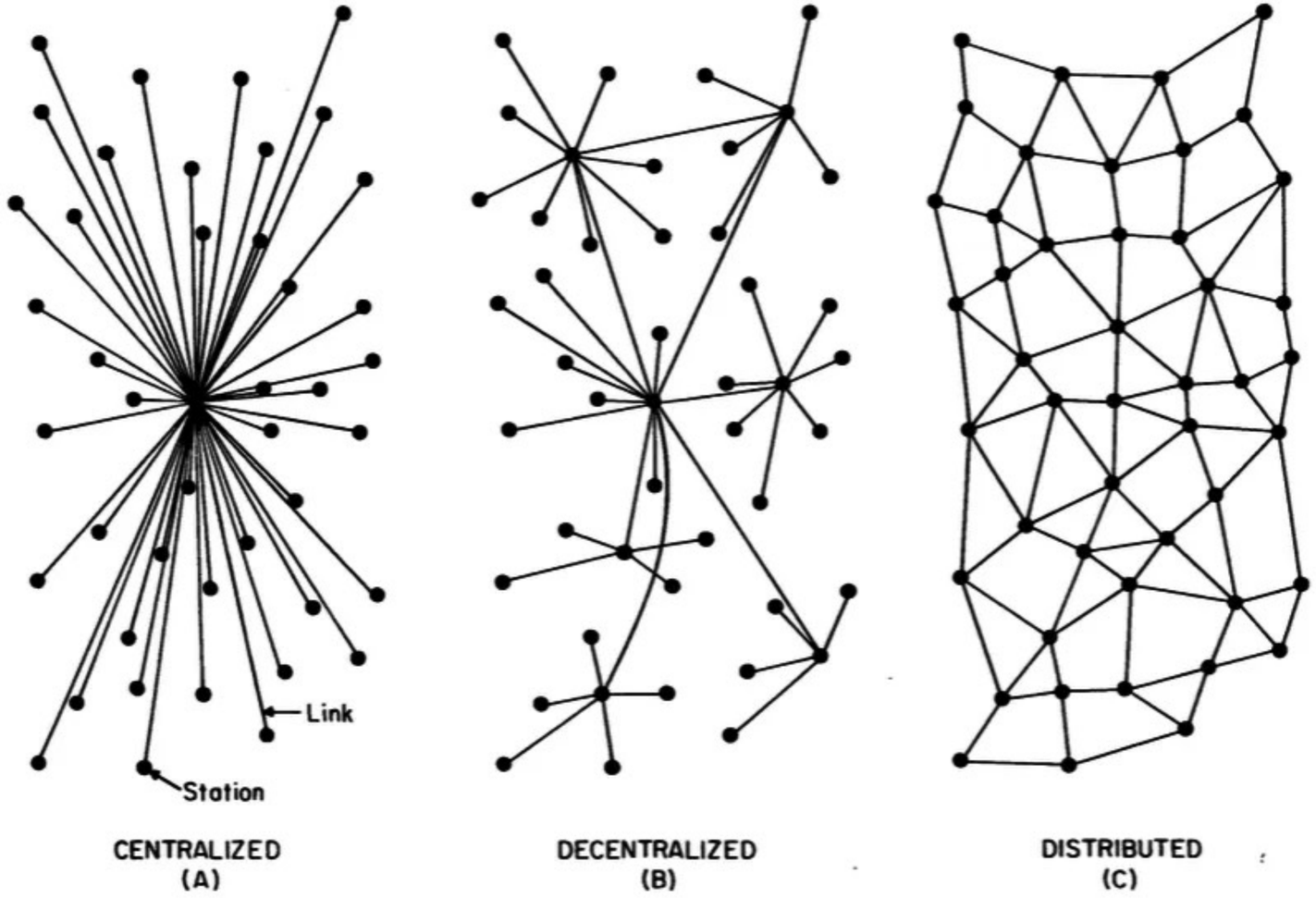
Centralization of Web 2.0

On an application level, other examples

- Google
- Netflix
- Spotify
- AirBnb
- iCloud
- Teams
- Twitch

What do we mean with *centralization* anyway*?*

Centralized V.S. Decentralized V.S. Distributed

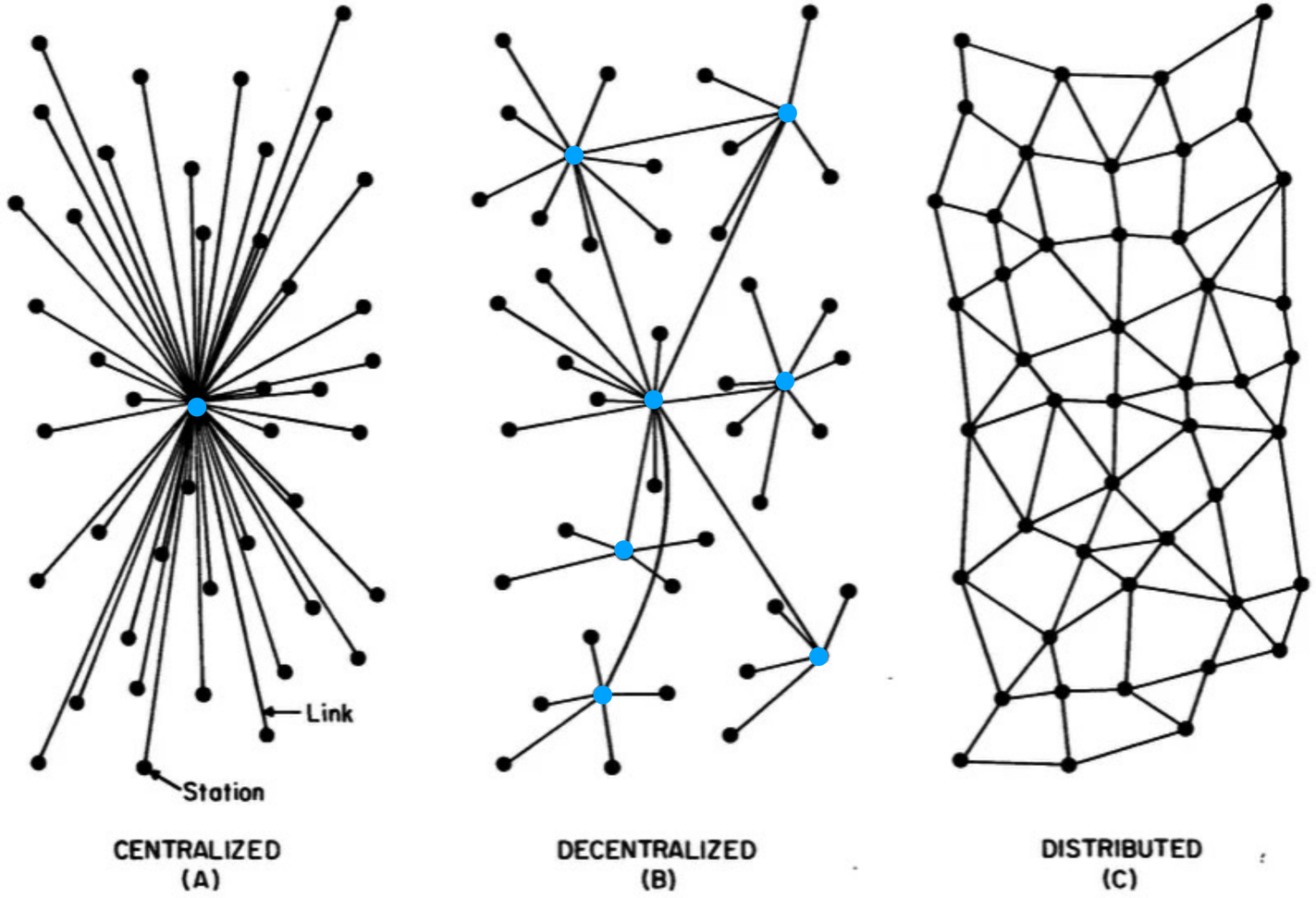


Centralization

Examples

- Geographical centralization
  - Stuff is located in the same geographical area
- Network centralization
  - All interactions flow through a central node.
- Governmental centralization
  - A single entity (organization, person, whatever) has full governance control.

A decentralized network can be centralized on a governmental level



Examples of centralization gone wrong

- Banking
- Cambridge Analytica
- AlleKabels
- Facebook
- The list goes on……

Examination