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TECHNOLOGY

ASSIGNMENT ON:
THE HISTORY OF THE
INTERNET

THE HISTORY OF THE INTERNET: A TECHNICAL AND EVOLUTIONARY PERSPECTIVE

1. PRE-INTERNET FOUNDATIONS (1950S–1960S): THE CONCEPTUAL UNDERPINNINGS

The seeds of the internet were sown in an era dominated by Cold War tensions. In response to the Soviet Union's launch of Sputnik in 1957, the United States formed the Advanced Research Projects Agency (ARPA) in 1958. This strategic initiative underscored the urgency for a robust communication system that could withstand partial outages, leading to the concept of packet switching—a breakthrough proposed independently by Paul Baran (RAND Corp) and Donald Davies (NPL, UK).

Key Concepts Born:

- Packet-switching (vs. circuit-switching)
- Decentralized network design
- Time-sharing systems

2. ARPANET (1969–1983): THE BIRTH OF A DISTRIBUTED NETWORK

In 1969, the first nodes of the ARPANET went live, connecting UCLA, Stanford Research Institute, UCSB, and the University of Utah. The core idea was to allow geographically distributed researchers to access computing resources remotely.

Technological Milestones:

- First use of Interface Message Processors (IMPs)—early routers
- Shift from NCP (Network Control Protocol) to TCP/IP (Transmission Control Protocol / Internet Protocol) by 1983
- Email (1971) became the first 'killer app'

This transition to TCP/IP, developed by Vint Cerf and Bob Kahn, was crucial—it standardized communication across heterogeneous networks, forming the foundational architecture of what we now call the internet.

3. THE INTERNET EMERGES (1980S–EARLY 1990S): FROM MILITARY TO ACADEMIA

The 1980s saw ARPANET splinter into MILNET (for military use) and a growing set of academic and research-focused networks, including NSFNET created by the National Science Foundation in 1985. NSFNET provided broader access to non-military institutions, catalyzing the formation of a true 'network of networks.'

Impactful Developments:

- Domain Name System (DNS) introduced in 1984
- Emergence of protocols like FTP, Telnet, and Gopher
- Expansion to Europe (e.g., EUnet, JANET)

4. THE WORLD WIDE WEB REVOLUTION (1990–2000):

INTERFACE MEETS INFRASTRUCTURE

While the internet had matured structurally, it lacked a user-friendly interface. That changed in 1990, when Tim Berners-Lee (CERN) developed the World Wide Web, combining:

- HTTP (Hypertext Transfer Protocol)
- HTML (Hypertext Markup Language)
- URI (Uniform Resource Identifier)

In 1993, Mosaic, the first graphical web browser (developed at NCSA), made the web accessible to the public. This democratization triggered:

- The birth of e-commerce (Amazon, eBay)
- The dot-com boom
- Rapid growth in internet service providers (ISPs)

5. COMMERCIALIZATION, CONVERGENCE & MOBILE

INTERNET (2000S–2010S)

The early 2000s saw the internet evolve into a commercial and social platform.

Broadband replaced dial-up, and the emergence of Web 2.0 introduced user-generated content, social media, and dynamic web applications.

Technological Drivers:

- AJAX and JavaScript libraries enabling dynamic content

- Rise of cloud computing (e.g., AWS, Azure)
- Emergence of IPv6 to address IP exhaustion
- Mobile internet boom with smartphones (iPhone 2007)

Key platforms like Google, Facebook, and YouTube redefined interaction and monetization, and data-driven algorithms began to shape user experience.

6. THE MODERN INTERNET (2020S–PRESENT): INTELLIGENCE, DECENTRALIZATION & GLOBAL IMPACT

Today's internet is a hyper-connected, AI-powered, and increasingly decentralized infrastructure, with ongoing shifts in data sovereignty, edge computing, and cybersecurity.

Notable Trends:

- Internet of Things (IoT) enabling ambient computing
- 5G reducing latency and supporting massive device connectivity
- Blockchain-based decentralized web (Web3) initiatives
- Enhanced security protocols (TLS 1.3, Zero Trust models)
- Large-scale use of AI/ML in routing, caching, recommendation systems

CONCLUSION: THE INTERNET AS AN EVOLVING ECOSYSTEM

From ARPANET to AI-driven systems, the internet is a testament to collaborative research, scalable architectures, and layered abstractions—core principles in Computer Science. Understanding its history is not just about milestones but about appreciating the engineering decisions, trade-offs, and social implications that continue to define how the digital world functions today.