

CHAPTER 1

Introduction

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Overview

J.C.R. Licklider drafted the memo, Intergalactic Computer Network, in 1963, and the ARPANET with four nodes was born in 1969 [Licklider 1963; Press 1996; ARPANET 1969; AWA 2023; Reed 1990; Quarterman 1986]. David Clark presented “Design of Internet” to give an architectural overview of the Internet recently [Clark 2024]. The Internet in Asia began in the early 1980s [Asia 2013]. Several significant moves have occurred in the last decades, including smartphones and the Internet of Things (IoT), which have become the primary means of accessing the Internet [ColdFusion 2020; Evans 2011]. Smartphones are the primary access devices for people, and machines use the Internet of Things (IoT). The IoT surpassed the people in terms of the number of “users” in the second decade of the 21st century [Evans 2011].

Milestones in the 2020s

	Asia	World
2020	Central Bank Digital Currency	EU: Digital Market Acts/Digital Service Acts
2021	Singles' Day (\$139B sale), China	Starlink Bitcoin with a Trillion Dollar Market Value
2022	Starlink Service in Asia Autonomous Taxi, China	Generative AI (OpenAI)
2023	Generative AI	Use of AI in Wars First AI Safety Summit
2024	TikTok	AI Act (EU)
2025	Deep Seek	NVIDIA, 5 Trillion-Dollar Company

Please refer to Appendix A Year Table for further information.

Pandemic; Coronavirus

COVID-19, a coronavirus pandemic, struck the world in the late 2010s through the early 2020s with more than 600 million coronavirus cases, and more than six million deaths by 2022 [Worldometer 2022]. The pandemic forced the world to handle many activities remotely without meeting face-to-face. With the appropriate software, such as Zoom, the Internet accommodated the remote activities: work, education, meetings, and so on. Some were successful, such as remote meetings [Yuan 2022]. However, others were not quite successful including remote education which was not

ready to replace on-site education.

Trillion-Dollar Companies

We have six trillion-dollar companies now. All of them are information technology companies: Apple, Alphabet, Amazon, Meta, Microsoft, and NVIDIA [Google 2024]. We can consider that the digital technology industry is now the leading industry sector. NVIDIA became the first company with a market capitalization of \$5 trillion in 2025. This may be good news for the Internet community, but we must also consider their worldwide dominance. This is especially true since all of the trillion-dollar companies are US companies.

Artificial Intelligence

Artificial Intelligence (AI) is a general-purpose technology that is becoming pervasive in many areas [Asia 2013]. Stanford HAI publishes the annual AI index report every year [Stanford 2025]. Most AI applications come with the Internet, and the AI application and the Internet complement each other [Lee 2018]. There are also extensive developments in generative AI, such as ChatGPT, in addition to the traditional discriminatory AI [Economist 2023; Mitchell 2024; OpenAI 2022]. These developments would be the beginning of the AI era in the coming years and decades, which will impact every aspect of our society [Harari 2025]. Sequoia Capital organized a series of presentations on “AI’s trillion-dollar opportunity at Sequoia’s AI Ascent 2025.”

Artificial general intelligence (AGI) may be available later in this century [Asia 2026; Spectrum 2023b; Tegmark 2023b; TAU Vod 2023; Imagining 2025]. The competition to develop the AGI is heating up now. OpenAI, with Microsoft, announced a \$100 billion investment in the AGI data center this decade. xAI is also delivering a similar AI data center called Colossal with 100,000 GPUs. Each processor would cost tens of thousands of dollars, and they would use thousands of processors. Similar frenzy efforts on the data centers appeared in Bitcoin mining data centers in

the early 2000s.

Global technology experts recently developed the report “Being Human in 2035” as part of “Imagining the Digital Future” [Elon 2025]. Yuval Harari commented on AI in his interview, “Future of Humanity, AI and Information” [Harari 2025].

Cybersecurity

Cybersecurity is one of the most challenging issues on the Internet today and for the foreseeable future, as discussed in Section 3.3 Cybersecurity Governance, Asia Internet History, Fourth Decade (2010s) [Asia 2021; National Academies 2025]. Lately, ransomware and supply-chain attacks are the two major cybersecurity issues [IPA 2025]. AI could help solve the cybersecurity problems or make them worse than they are now [WEF 2023; Google Cloud 2024; Kaspersky 2024]. Another challenging issue in the future is “Q-Day” [Wired 2025]. The quantum computers could crack encryption and break into the world’s best-kept secrets, and this is called Q-Day.

Social Media

Social media is very popular now, with social networking services. This is especially true with the proliferation of smartphones, as Internet access is always more readily available. Some social media companies, such as Twitter, which is now called X, are controlled by a single person, which may raise problems for Internet governance. Artificial intelligence (AI) is playing an increasingly important role in social media, as AI could easily generate messages, including misinformation.

Social media may be causing problems for youth lately. Many countries and states, including Australia and Florida, are enacting legal measures. Australia prohibits youth under 16 from using social media, and Florida prohibits youth under 14 from using social media. The problems include addiction, crime, harmful content, and harmful human relations.

Smartphone

The first smartphone, the iPhone, appeared in 2007 [Coldfusion 2010; iPhone 2023]. YouTube by Cold Fusion explains in detail the struggle to build the iPhone at Apple. We are finally moving away from laptops as the primary means to access messaging and other online services. Asia is leading the way [Chon 2022]. The proliferation of smartphones and the 10-key is helping this transition, particularly in Asia. Many users around the world, especially in Asia, could avoid using the QWERTY keyboard [Chon 2023b]. See Section 2.1 Internet Access for further description.

Internet of Things

The thirty billion Internet of Things (IoT) devices with a 7 trillion-dollar market value make IoT one of the most important activities of Internet applications [McKenzie 2022; DW 2022; Wired 2023]. The number of IoT devices exceeded the number of human users in the first decade of the twenty-first century, and this trend will continue for some time into the twenty-first century.

Low-Earth Orbital Satellite Constellation

The Low-Earth Orbit (LEO) satellite constellation for Internet services was finally deployed in this decade [Wikipedia 2022b]. Starlink took the substantial lead with several thousand satellites. When the service is fully deployed in this decade, 40,000 satellites are expected. Military applications are also taking place now. Other LEO orbital satellite constellations in the North America, Europe, and China are now following the Starlink development.

Digital Transformation

Digital technologies have been deployed since the advent of computers and

the Internet in the last century. Digital transformation is taking place in this century with the addition of new technologies such as artificial intelligence, blockchain, the Internet of Things, smartphones, and cloud computing in all areas: digital economy, digital society, digital government, and digital culture. Please refer to Section 3.3 Digital Transformation for further description. Green transformation is also attracting attention, particularly in the energy sector.

Book Structure

Asia Internet History, Fourth Decade (2020s) will have the following chapters and appendices;

Chapter 1 Introduction

Chapter 2 Internet Access

Chapter 3 Digital Services

Chapter 4 Digital Ecosystem

Chapter 5 Global Issues and the Internet

Chapter 6 Snapshots of the Internet in the 2020s

Chapter 7 Half Century of Internet

Chapter 8 Internet Museum

Chapter 9 Retrospective

Appendix A Year Table

Appendix B InternetHistory.asia/Home Page

Appendix C Regional Internet Organizations

Appendix D Authors' Brief Biographies

Appendix E Computer History – East Asian Perspective

Appendix F Artificial General Intelligence

Appendix G Virtual Reality

Appendix H Recalling the first 30 years of the Internet in China (in Chinese)

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