Committee: The United Nations Commission on Science and Technology for Development

Issue: Promoting inclusion and equitable access to digital technologies for all individuals and communities

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Introduction

In the new era, it is hardly an exaggeration to say that living without digital technology has become impossible. The once-fantastical computerised innovations depicted in movies of the late 1980s are now a widespread reality. However, while some thrive in the colourful cities built from countless monitors, many across the globe remain in films of black and white.

The digital divide has reached a point where it almost represents poverty itself. LEDC nations cannot afford the devices through which to use the internet and the equipment to implement it, thus surrounding their citizens with barriers of inaccessibility. Even in wealthy nations, various factors such as gender, ethnicity, etc., make it difficult for people of certain districts to use the provided gadgets.

Swiftly changing economies of current times require post-haste adaption, which cannot be achieved without technology. Lack of skills and digital literacy, educational disparities, employment implications, and social/civic participation caused by the technology gap will only worsen following the passing of time; this will affect not only future advances in science but also education, the workforce, health, and more.

At first glance, the gap may seem like a simple matter that can be solved by providing funds for development, but further inquiry will reveal a much more complicated issue. The current crisis of technological inequality calls upon delegates to find resolutions that consider not only the financials but also systematic, infrastructural, and political aspects.

Definition of Key Terms

Digital Inclusion

Digital Inclusion refers to equal access and use of digital technologies, services, and information. It is a bridged digital divide that ensures the participation of individuals and communities in the new age through providing affordable internet, digital skills training, and access to devices.

ICT (Information and Communications Technology)

ICT represents a concept of IT that expands to cover a broader area of components in the digital field. ICT is a term centred on communications and goes beyond traditional computing for collaboration and informational exchange. While IT focuses on the industry of digital devices and the online community, ICT leans more towards the field.

Internet Connectivity

Internet Connectivity indicates the ability of a device to connect to the internet and exchange data with online servers. It can be achieved through means such as wired/wireless connections and cellular networks.

Unified Communication (UC)

Unified communications, through equipment, services, or software, aim to enhance collaboration and improve productivity within organisations through the integration of communication tools into a single platform. Combining different methods of communication into a unified interface, UC allows users to access servers quickly regardless of location or device used. The term is used most frequently in a figurative sense, as it refers to not the equipment or services itself but what could be achieved through them. (Also a business concept as well) It is commonly used in workforces and education in the recent decade due to its convenience and efficiency. Interactions through platforms such as Zoom or Google Meet, messages left through Instagram, DM or Facebook, or simple transmission methods like emails and fax can all be considered unified communication.

Broadband

Including connection types such as Wi-Fi, DSLs, fibre, and satellites, broadband is a transmission technique established using a wide range of frequencies. It refers to a system that allows a large amount of data to be sent simultaneously between electronic devices.

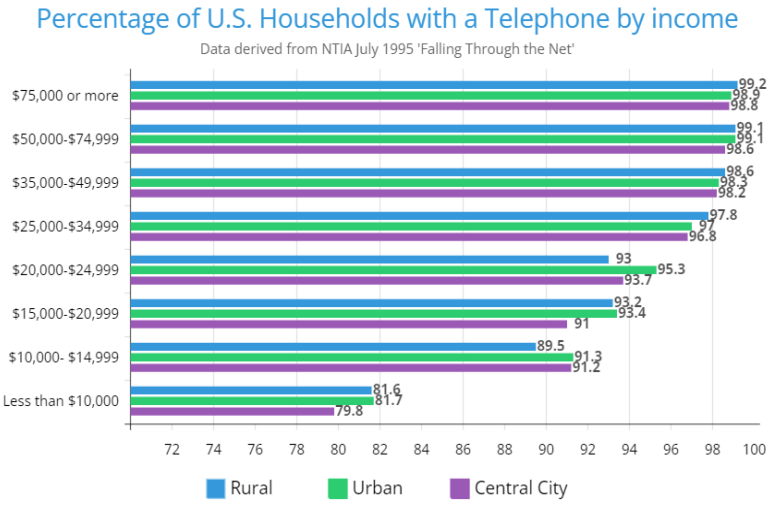
History

Understanding Digital History

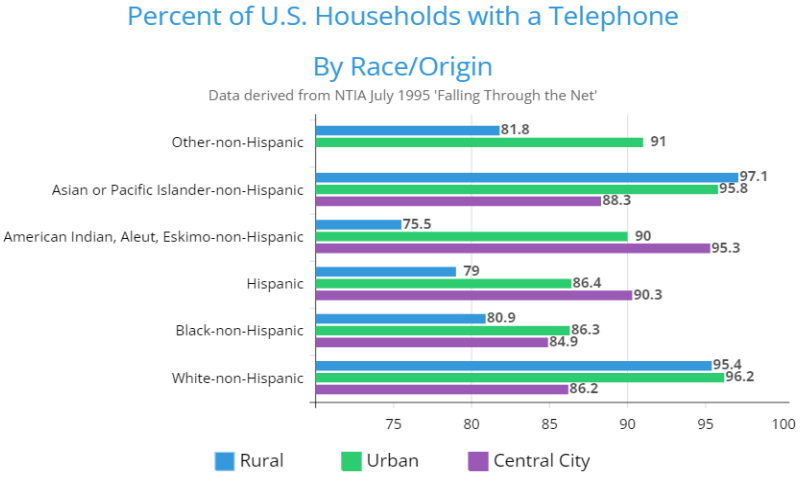
Understanding the digital divide requires a clear underlying comprehension of technological history:

Telephone communication

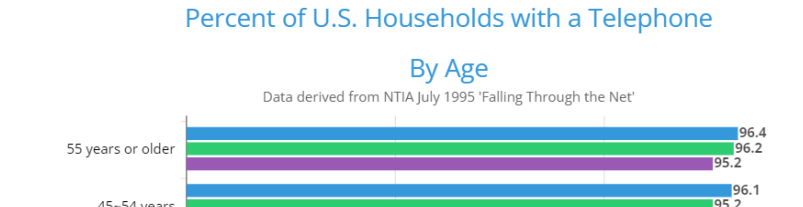
Until the late 20th century, the term ‘digital divide’ was used to refer to the rift between those who did and did not have access to the telephone. The concept began in the early 1970s and was popularised following a report by the US National Telecommunications and Information Administration (NTIA) 1995, which detailed the disparities between US households in telephone subscriptions. (There are several different explanations of how the term ‘digital divide’ was popularised, but the year of popularisation is usually stated as the 1970s.)



<Graph 1: Percentage of U.S Households with a Telephone by Income>



<Graph 2: Percentage of U.S. Households with a Telephone by Race/Origin>



<Graph 3: Percentage of U.S. Households with a Telephone by age>

NTIA's data shows a correlation between income, race, age, community and telephone possession:

A comparison of telephone access by income in urban cities alone (<Graph1>) shows that high-earning households tend to have easier access to the telephone- A difference of 99.2% of households with over $75,000 yearly having telephone access compared to 81.6% for households with income under $10,000.

The influence of race is also observable (<Graph 2>), showing an order of White, Asian or Pacific Islander, American Indian/Aleut/Eskimo, Hispanic, and Black for those with the most telephone access to those with the least.

The data for another factor inquired, age (<Graph 3>), demonstrates a declining percentage of telephone ownership with the decline of age, as a drastic fall in the rate of households with telephone access is demonstrated, especially between the ages under 25 and over 55: A 96.4% ownership is downturned to 77.2% between the 30 year age gap.

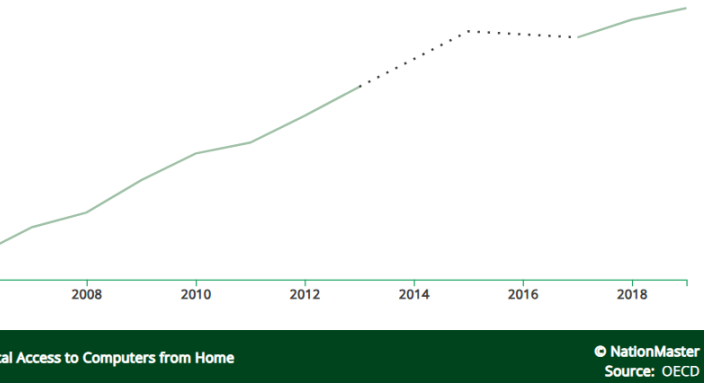
Computers

The drastic improvement in science brought up an age of affordable technology. Whereas earlier, computers were machines only at hand in corporate and government offices or scientific laboratories, they were now available for purchase by private individuals. The introduction of personal computers(PCs) in the 1970s and 1980s allowed wealthy households to access the revolutionary invention.

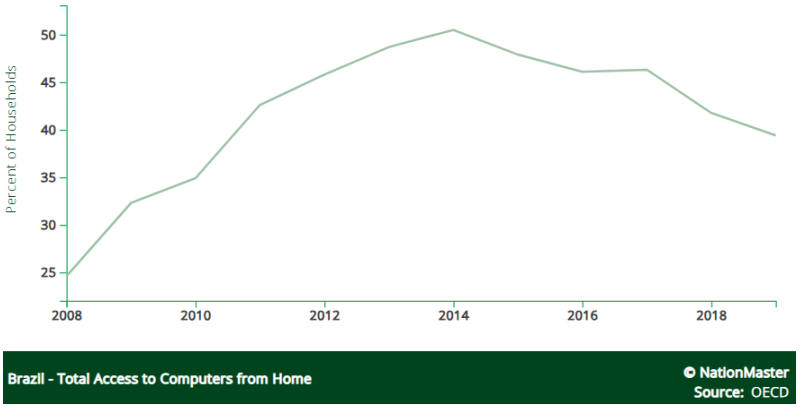
OECD(Organisation for Economic Co-operation and Development) statistics published between 2005 and 2019 display a spectrum of numbers, each referring to the percentage of households in each nation with access to computers from home, from 99.2% computer access in the Netherlands to 39.4% in Brazil.

While most nations, like Estonia (Graph 4), seem to have an upward trend of households with computer access, several countries, like Brazil (Graph 5), display a problematic downward curve.

<Graph 4: Percentage of Households in Estonia with Access to Computers from Home>



<Graph 5: Percentage of Households in Brazil with Access to Computers from Home>

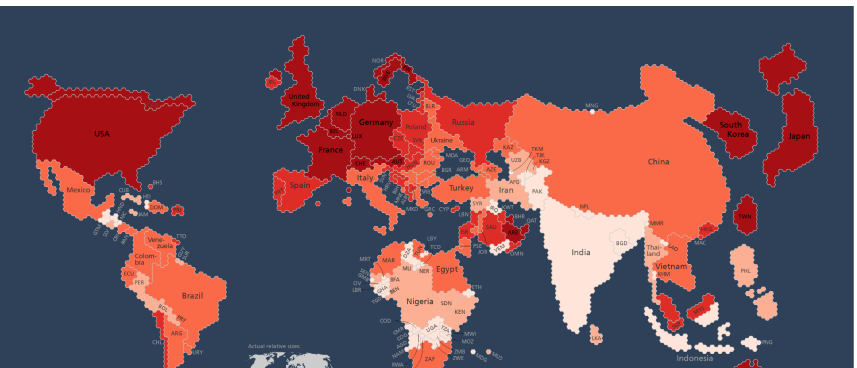


Mobile phones

Motorola DynaTAC 8000X, introduced in 1983, was the first commercially available mobile phone. Mobile phones in the 1980s were analogue, and the digital mobile phone network (2G) started to emerge in the 1990s, improving call quality and adding previously unavailable features. The price then was $3,995, equivalent to $11,500 as of 2023.

Internet

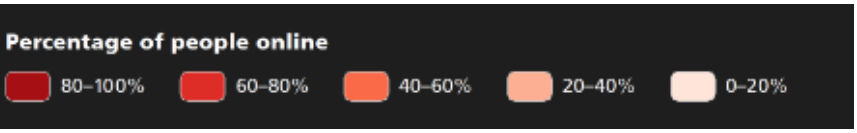
ARPANET, a predecessor to the modern Internet, was the first workable Internet prototype established in 1969. Before ARPANET, network connections were made through dedicated links, making the overall system faulty and centralised. The height of the Cold War motivated the U.S. military to create a network that continues functioning even when portions are removed. Thus, the U.S. Department of Defense's Advanced Research Projects Agency (ARPA) built its nexus. ARPANET's technology became the backbone of the Internet. Later, Commercial Internet Service Providers (ISPs) and the development of user-friendly web browsers further spread public internet access, leaving behind a period referred to as the 'dot-com boom'.



The Internet is now the system used to connect its users from all over the globe, making it an indispensable connectivity factor. 64.5% of the

world's population were using the Internet by June 2023. Most of the 2.85 billion unconnected has been found to live in Southern and Eastern Asia and Africa.

<" The World Online", Oxford Internet Institute aka. Geonet, *published 8 July 2015*>



Key Issues

The Roots of the Digital Divide:

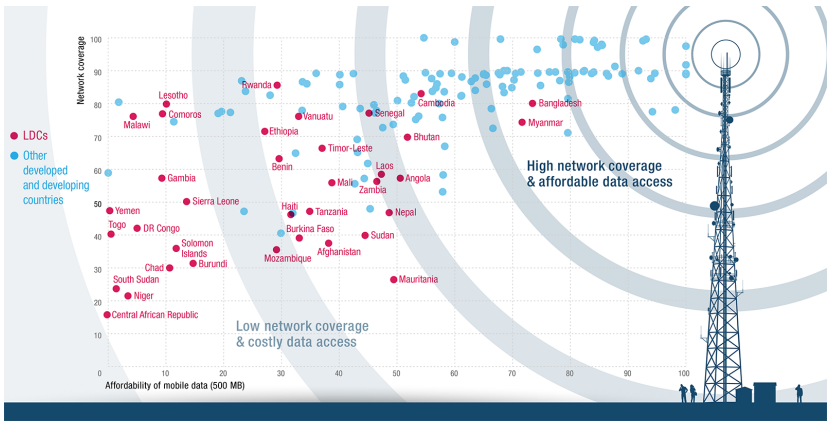
Infrastructure

One of the most significant factors is the unequal distribution of technology infrastructure. It is typical for rural and remote areas, LEDCs, and geographically and economically disadvantaged regions to have little to no technological infrastructure and no reliable internet connectivity. In LCDs, more than one in six people live in broadband-less areas.

Internet shutdowns are common in LDCs due to unreliable connectivity from high exposure to climate hazards or infrastructural systemic issues. Considering infrastructural remedies also means considering the physical geographical characteristics of individual nations to ensure a method of internet security that won't be interfered with by natural phenomena.

Affordability

The cost of technology devices, the internet, and subscriptions to connection servers is a burden that many households and communities cannot bear. While the price of ITCs now is modest compared to that of machinery several decades prior, it is still a heavy sum. It is reported that even with a growing number of people with theoretically accessible internet, it is not being used due to its unaffordability.



<Image 1: Network coverage & Affordability, *source: "Least developed countries suffer digital divide in mobile connectivity", 1 April 2021 UNCTAD*

As in the chart above, network coverage is visibly lower in LDC, scoring an average of 54 compared to 83 worldwide. Mobile data affordability for LDCs in terms of the mobile data affordability indicator average was 30, 33 lower than the rest of the world.

Repercussion of Digital Disparity

Limited Educational Opportunities

In an age where digital devices and the Internet are used even in schools, students without access are disadvantaged in accessing online learning resources, educational platforms, and digital tools that enhance learning. This limits their educational opportunities and hampers their ability to acquire necessary digital skills for future employment.

A study by Economic Inquiry in 2010 showed a 6~8% greater possibility of teenagers with access to home computers graduating than those who do not. Considering the active implementation of technology into classrooms that has taken place in the past decade, the numbers have multiplied since then.

Educational impacts of the digital divide were put into the spotlight during the COVID-19 pandemic, where classes were transitioned to remote lessons. The lost average of 8 months of learning globally and the 30% and 50% fall in educational gains in English and math were a side effect of students' lack of digital access and literacy.

Economic Disadvantage

The digital divide can contribute to economic disparities. Access to digital technologies is essential for job opportunities, entrepreneurial endeavours, and participation in the digital economy. 92% of jobs, as of February 2023, presumably require digital skills, yet a third of workers do not possess the abilities demanded by the market. Global research based on 23,000 workers in 19 nations showed that nearly 73% of respondents do not feel equipped to grow digital literacy. These individuals and communities without digital access may face barriers to employment, be excluded from online job platforms, and miss out on economic opportunities driven by technology.

Democratic Participation

Digital access plays a significant role in democratic participation and civic engagement. Citizens need access to digital tools and platforms to access information, express opinions, and participate in political

processes. The digital divide restricts the ability of marginalised communities to engage in the democratic process, potentially leading to a lack of representation and inclusion.

Significant Parties Involved and Their Views

Nations:

United States of America

According to the FCC's 2021 Broadband Deployment Report, 14.5 million Americans lacked access to broadband internet (standard set at a minimum speed of 25Mbps for downloads). The National Digital Inclusion Alliance(NDIA) indicated that 30% of national households had no internet subscriptions. Studies showed signs of imbalance-caused issues, such as the aggravation of educational incongruence for over 16 million K-12 students during the COVID-19 pandemic.

The United States has continuously supported the ITU and, on June 3rd, 2022, announced pledges for the ITU's P2C (Partner2Connect) initiative. The assurances stated the support of digital public goods, expansion of connectivity in Kenya's rural states, capacity building and technical assistance implementation, investment in fintech companies, gender equality with collaboration with the Microsoft Airband Initiative, and more.

Other related organisations/government agencies: Connect America Fund (CAF), Lifeline Program, Rural Digital Opportunity Fund (RDOF), E-Rate program, Broadband Infrastructure Program, and Digital Equity Act, with the FCC, NTIA, USDA (US Department of Agriculture)'s RUS (Rural Utilities Service), HUD (Department of Housing and Urban Development), IMLS (Institute of Museum and Library Services), NDIA (National Digital Inclusion Alliance), and SHLB (Schools, Health & Libraries Broadband Coalition) continuously working for digital inclusion, both nationally, and globally.

China

The digital divide in China is influenced by factors such as income inequality, regional disparities, gender, and limited access to high-speed internet. Although China's internet penetration was relatively high, reaching 73% by 2021, rural households' internet penetration was 57.6%. People over 60 had 43.2% internet penetration, and more than 40% of Chinese farmers had no digital access.

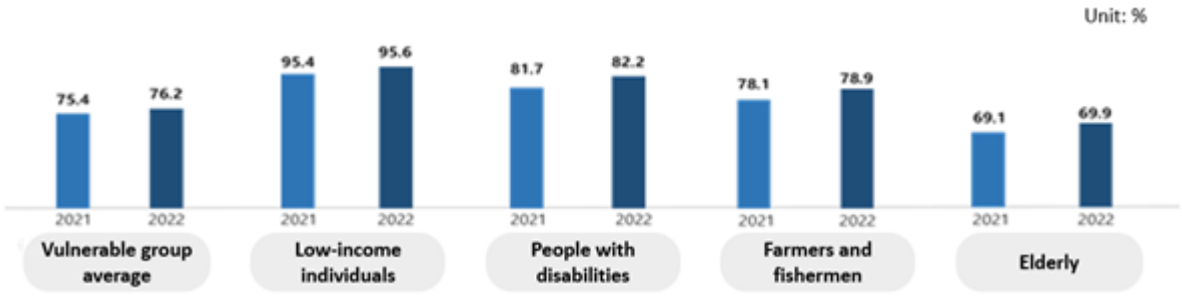
Efforts are underway to bridge the divide, including initiatives to extend broadband networks to rural areas and promote digital skills training. In 2022, a sustainability forum, “Connectivity+: Innovate for Impact”, was organised by Huawei Technologies in Shenzhen, where the importance of a digital skillset was acknowledged.

Related organisations/government agencies include MITT (Ministry of Industry and Information Technology), China Mobile/China Telecom/China Unicom, CIAA (China Information Accessibility Alliance), MOE(Ministry of Education), ACWF(All-China Women's Federation), CAST(China Association for Science and Technology)

South Korea

South Korea is one of the most connected countries in the world. A study in 2018 showed that internet penetration among the Korean population was 95.1%. There are still pockets of people, particularly elderly individuals and lower-income households, who face challenges in accessing and utilising digital technologies.

However, a 2022 survey result by Korea’s Ministry of Science and ICT showed improvement in bridging the digital divide, with the digitalisation level at 76.2%, a 0.8% increase compared to the digitalisation level in 2021.



<Graph 6: Digitalization Level Growth in Different Groups, *Source: MSIT 2022 Survey Result on Digital Divide*>

A forward step to digitalisation for disadvantageous groups has been made as well. (<Graph 6>) The percentage unit for low-income individuals rose 0.2% from 95.4% to 95.6%, people with disabilities, 0.5% from 81.7% to 82.2%, and farmers & fishermen and the elderly both rose 0.8%, from 78.1% to 78.9% and 69.1% to 69.9% respectively.

Related organisations/government agencies include KCC (Korea Communications Commission), KISDI(Korea Information Society Development Institute), NIA(National Information Society Agency, and KERIS(Korea, Education and Research Information).

Japan

Similar to Korea, despite being one of the most technologically wired countries in the world, Japan's digital divide is influenced by regional disparities and lack of digital skills among specific population segments. Division among different ages plays a big part as about 20 million senior citizens are estimated to be unfamiliar with smartphone mechanisms: in percentage, about 57.9% for generations above age 70.

Initiatives are in place to bridge the divide, including programs to improve digital literacy, provide technology support for seniors, and enhance broadband connectivity in rural areas. An example of a corporation working for inclusion would be NTT Docomo Inc., which initiated educational programs for elderly citizens to develop their digital skills in Tokyo. Since 2018, the classes have had more than 15 million attendances, with the International Affairs and Communications Ministry outsourcing the training sessions since 2021. The Japanese Prime Minister has also established a strategy for national digitalisation- to secure more than 20,000 people to teach residents in their local area how to operate digital devices- and is aiming for 50,000 supporters by 2027.

Related organisations/government agencies include MIC(Ministry of Internal Affairs and Communications), MEXT (Ministry of Education, Culture, Sports, Science and Technology), MLIT (Ministry of Land, Infrastructure, Transport and Tourism), JISA (Japan Information Technology Services Industry Association), NTT (Nippon Telegraph and Telephone Corporation)

European Union countries

Several countries within the EU, including Germany, France, the United Kingdom, and Sweden, have been at the forefront of technological innovation, with notable contributions to areas such as telecommunications, software development, and scientific research.

Generally, most European countries have relatively high internet penetration rates. However, disparities exist within and between countries, particularly in rural-urban divides, income inequality, and differences in digital skills and literacy. Eastern Europe and rural areas especially face challenges regarding broadband infrastructure and connectivity. Efforts to bridge the digital divide in Europe include initiatives to

extend broadband access, promote digital skills training, and address socio-economic disparities that affect digital inclusion.

Related organizations/government agencies include EC(European Commission), DAET(European Agency for Digital Transformation), ERDF(European Regional Development Fund), DigitalEurope

International Organizations

International Telecommunication Union (ITU)

The ITU is a UN agency that specialises in matters relevant to information and communication technologies. The ITU's main goal was to connect telegraphic networks between countries in 1865.

The ITU's primary activities include developing and publicising technical standards ranging from equipment specification to network infrastructure for ICTs to ensure global interoperability and compatibility, managing the allocation and efficient use of radio frequency and satellite orbits, facilitation of international agreements and coordination for equitable distribution, and fostering international collaboration among governments, industries, and stakeholders in the process. The ITU has also aided with promoting access to ICTs for underserved regions and minorities, bridging the digital divide, and assisting member states in developing ICT policies and regulations.

World Economic Forum (WEF)

The WEF is an international organisation focusing on global issues, especially politics, business, and society.

The WEF's Center for the Fourth Industrial Revolution(C4IR) actively works to benefit technology and society through policy development, pilot projects, and capacity-building/skill-developing activities.

The WEF creates collaborations with governments addressing access, affordability, and digital literacy concerns to bridge the digital divide and facilitates pilot projects that showcase innovative approaches to digital inclusion (ex, initiatives that leverage advanced technologies to provide connectivity and digital services in underserved areas). Standards, frameworks, and ethical guidelines for emerging technologies are addressed, focusing on privacy, security, and fairness issues. The WEF also actively launches initiatives that promote digital literacy, skill development programs, and educational opportunities.

The Internet Society (ISOC)

The Internet Society is a non-profit organisation that advocates for policies that foster digital inclusion and bridge the digital divide. The organisation supports mainly the development of local Internet infrastructure in underserved areas as well as community-driven initiatives and capacity building.

Digital Impact Alliance (DIAL)

DIAL is a global alliance that accelerates digital inclusion in underserved communities. It focuses on promoting collaboration and providing technical expertise to address digital access and adoption barriers. DIAL supports projects related to digital infrastructure, data interoperability, and digital skills development.

Timeline of Relevant Resolutions, Treaties and Events

Date	**Description of event**
April 30, 1993	The World Wide Web becomes publicly available.
January 3, 1996	The United States started the Telecommunications Act of 1996 with the aim of promoting competition and improving access to telecommunication services.
January 4, 2001	UNGA's 'Report on the United Nations/Malaysia Workshop on Bridging the Digital Divide: Space Technology Solutions' was published
December 11, 2003	The WSIS (World Summit on the Information Society) is held, emphasising the importance of promoting global digital inclusion.
December 2007	OLPC(One Laptop per Child) project provides affordable laptops to children in LEDCs.
March 17, 2010	The FCC (Federal Communications Commission) introduced the National Broadband Plan to provide broadband access to all Americans

May 1, 2020	The ITU (International Telecommunication Union) and UNESCO (United Nations Educational Scientific and Cultural Organization) established the Broadband Commission for Sustainable Development
June 20, 2011	UN declares internet access as a basic human right.
August 20, 2013	Facebook launched the Internet.org initiative designed to provide free internet access to needy communities of LEDCs.
September 25, 2015	UN adopted Sustainable Development Goals (SDGs), including the goal to achieve universal and affordable internet access by 2020.
October 8, 2017	Project Loon, which aims to provide internet access to remote areas through high-altitude balloons, was launched by Google.
January 30, 2020	The FCC established the Rural Digital Opportunity Fund to expand rural access to broadband.
February 19, 2020	UN Conference on Trade and Development's resolution on 'Digital platforms and value creation in developing countries: Implications for national and international policies'.
2020~2023	The COVID-19 pandemic caused a shift in education, health, workforce, and other areas to remote affairs and traced the need to bridge the technological gap in bold.

Evaluation of Previous Attempts to Resolve the Issue

Since the recognition of the issue and its potential harms to the global economies, nations have collectively unified to support LEDCs or other ICT-lacking nations in catching up to the fleeting tech trends while striving for pervasive online engagement within its borders as well.

The E-Rate program (Schools and Libraries Program of the Universal Service Fund) is one of the most symbolic attempts at resolving the digital divide. A program established as part of the Telecommunications Act of 1996 and administered by the USAC (Universal Service Administrative Company) and the FCC, it operated as part of the USF (Universal Service Fund), providing schools and libraries discounts to obtain access to telecommunications services. While its positive impacts have been

crucial in improving connectivity, funding limitations, administrative burdens, inequitable distribution, and technological obsolescence are some difficulties to be discussed in future attempts.

As for global players, the OLPC initiative aimed to provide low-cost laptops to children in developing countries to enhance their access to digital resources. It distributed laptops to students from Uruguay, Rwanda, and Peru. However, the project was considered a failure, getting criticism that the initiative focused on hardware distribution over other equally important needs. This, along with the lack of proper planning, underestimated costs, and differing needs of differing regions, brought an end to the experiment.

Possible Solutions

Solutions to resolve the issue of digital exclusion should address both the causes and effects of the digital divide. Undertaking the geographical, scientific, economic, and political aspects of the crisis, creative ideas that promote equal access to digital technologies should be drafted. In terms of science, a clear understanding of the types of existing networks and their functions is necessary to determine the appropriate method for connectivity. Broadband connections are most recommended for both known and unknown situations, but in specific conditions, the disposition of a region's services may be more well suited for narrowband connections.

The disparities caused by access discrepancies should also be tackled. Educational programs specialised for the elderly population in countries like South Korea or Japan, collaborations with educational institutions, or cross-national government policies designed for emerging generations are all viable solutions.

It is also important to note the limitations of prior attempts and overcome them. Affordability could be achieved through subsidies or cooperation, and obsolescence could be overcome with high-speed internet and capable educators. The possible difficulties should also be predicted and deeply considered for prevention.

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