Towards Agenda 2030

Digital Future Society and the Sustainable Development Goals

Digital Future Society

Digital Future Society

About Digital Future Society

Digital Future Society is a non-profit transnational initiative that engages policymakers, civic society organisations, academic experts and entrepreneurs from around the world to explore, experiment and explain how technologies can be designed, used and governed in ways that create the conditions for a more inclusive and equitable society.

Our aim is to help policymakers identify, understand and prioritise key challenges and opportunities now and in the next ten years in the areas of public innovation, digital trust and security, citizen empowerment and inclusion, and equitable growth.

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Aligning tech with Agenda 2030

The United Nations Agenda 2030 has defined **17 Sustainable Development Goals** (SDGs) and 169 targets aimed at resolving environmental, economic and social challenges worldwide. The global goals are increasingly shaping international, regional, and local policies, strategies and actions to eradicate poverty, reduce inequalities, reverse planetary destruction, enhance human capabilities, and strengthen global partnerships towards sustainable development.

Digital innovations are emerging as powerful agents of change that can both accelerate and hinder our trajectory towards achieving the SDGs.

This white paper is a testament to how the work of the Digital Future Society programme aligns with the SDGs. It is structured around the four key areas of focus of the programme: public innovation, digital trust and security, equitable growth, citizen empowerment and inclusion. Particular attention is devoted to the unintended risks that can emerge from the transition to a technology-driven society and how policymakers can anticipate and mitigate these risks by leveraging the guiding framework of the goals.

SUSTAINABLE DEVELOPMENT GOALS

Eradicate poverty for all people everywhere, currently measured as people living on less than $1.25 a day.

End hunger and ensure access by all people to safe, nutritious, and sufficient food all year round.

Ensure healthy lives and promote well-being for people at all ages.

Ensure inclusive and quality education for all and promote lifelong learning.

End all forms of discrimination and eliminate all forms of violence against all women and girls everywhere.

Achieve universal and equitable access to safe, affordable drinking water and adequate sanitation and hygiene for all.

Ensure universal access to affordable, reliable, sustainable, and modern energy for all.

Promote inclusive and sustainable economic growth, employment, and decent work for all.

Build resilient infrastructure, promote sustainable industrialisation, and foster innovation.

Empower and promote social, economic, and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, or other status.

Make cities inclusive, safe, resilient, and sustainable.

Ensure sustainable consumption and production patterns.

Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

Conserve and sustainably use the oceans, seas, and marine resources.

Manage forests, combat desertification, halt and reverse land degradation, and halt biodiveristy loss.

Significantly reduce all forms of violence and related death rates everywhere.

Revitalise the global partnership for sustainable development.

Image source: https://www.adb.org/news/infographics/asias-post-2015-development-agenda

Introduction

Digital Future Society

Tech governance and the Goals

Digitalisation is changing societies around the world profoundly and at an accelerating pace. While the positive effects are evident, digital transformation also has its drawbacks leading to risks and unintended consequences for societies worldwide.

Digital Future Society is focused on building a more inclusive, equitable and sustainable future in an increasingly digital world. Through knowledge exchange, ideation and engagement with experts, policymakers, civic organisations, and entrepreneurs on a global scale, Digital Future Society fosters experimentation and action in the areas of public innovation, digital trust and security, inclusion and citizen empowerment and equitable growth.

The aim of Digital Future Society is to synthesise existing expert knowledge and build consensus to support evidence-based policymaking by:

- synthesising experiences and best practices from around the world to enable the transfer of effective solutions from different regions and contexts,
- collecting and curating expert knowledge that can help policymakers better understand the interplay between the design, use and governance of digital technologies and
- proposing actionable recommendations and testable solutions designed to help policymakers distribute the benefits of digital technologies while mitigating their risks and unintended consequences.

An ambitious transnational programme, there is a significant overlap between Digital Future Society's ambitions, focal areas and the SDGs as formulated by the United Nations in 2015. This white paper explicitly details the relationships between the work of Digital Future Society and the SDGs. Various core aspects of Digital Future Society's ongoing work are shown to contribute to the achievement of the Sustainable Development Goals, illustrated by real-life examples analysed by the programme's various working groups and enriched by recommendations for policymakers together with testable solutions, pilots and prototypes.

1

Public innovation

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1.1 Where emerging tech meets government

Government agencies around the world are looking to emerging technologies like AI-powered automated decision-making systems (ADMS) or distributed ledger technologies (DLT) to make public services more efficient, cost-effective, secure and transparent. As the conclusions drawn by our working group have shown, these same technologies could also contribute to the achievement of the SDGs by improving the quality and accessibility of public services (Health SDG 3, Education SDG 4), increasing inclusivity and access (Inequalities SDG 10) and optimising processes in cities and accountability of governments (Sustainability SDG 11, Institutions SDG 16).

The topic of emerging tech in public innovation is predominantly related to **SDG 16: Peace, Justice and Strong Institutions**. In a digitised world, data integrity is crucial to ensuring effective and accountable governments. As explained by Digital Future Society's experts, blockchain is a type of DLT that enables robust, decentralised data storage and can be used as a means to strengthen data integrity in public services. The use of DLT for public service delivery can strengthen institutions and increase trust as the transparency and decentralisation of this technology facilitates agreement and aligns incentives using consensus algorithms.

Digital Future Society's inaugural report[1] presents compelling case studies provided by our experts, where ADMS enable governments to process a great number of claims and requests, such as subsidies to foster governmental effectiveness. For example, the Singaporean government uses ADMS-driven chatbots with conversational computing on several citizen-facing social services platforms to improve customer experience and provide speedy, consistent 24-hour assistance to the public. Through ADMS, it is also possible to review large amounts of documentation rapidly and to detect incorrect or fraudulent claims, decisions or actions in the documentation, which contributes to building effective, accountable institutions at all levels.

[1] Learn more in the Digital Future Society report:
Where emerging tech meets government: automated decision-making systems and distributed ledger technologies in public innovation

Digital Future Society's work with experts focuses on recommendations for public organisations to harness the significant positive impact of ADMS on **SDG 3: Good Health and Well-being**, by making healthcare more accessible for entire populations. Globally, there is a severe shortage of affordable healthcare and qualified doctors. ADMS and robotisation combined make healthcare more accessible by growing the number of places where people can receive treatment while, at the same time, lowering the costs of treatments by relying on machines rather than doctors.

The working group meeting in Barcelona allowed us to identify ways in which ADMS can help deliver a higher quality education, thus contributing to the achievement of **SDG 4: Quality Education**. ADMS make it possible to personalise education, tailoring it to each student, as well as improving accessibility. Governments can decide to deploy ADM systems to support children and young adults in their choices for a school or a certain career path. This is happening in New York City, where ADMS technology is deployed to match eighth-graders with high schools, using indicators to make the best fit possible. Indicators include students' preferences and test scores. Besides improving the quality of education through matchmaking, the aim of the ADMS-based allocation system is also to foster diversity in schools in order to tackle racial and socioeconomic segregation.**[1]**

Our report also states that ADMS could contribute to the realisation of **SDG 11: Sustainable Cities and Communities**. Through ADMS, it is possible to leverage data to make cities more sustainable. Open data from cities can be used to discover hidden patterns, inefficiencies and unsustainable practices. These insights provide cities with the opportunity to optimise processes such as waste collection or to leverage data for the minimisation of emissions, water and food waste.

Finally, emerging technologies like ADMS could also play an important role in **SDG 10: Reduced Inequalities** as long as robust oversight mechanisms are in place to ensure results are inclusive, explainable and non-discriminatory. A key recommendation from the Digital Future Society experts to public organisations is to invest in transparency efforts that report and educate citizens in a way that the introduction of ADMS reduces inequalities, avoids possible discrimination and increases trust in public services.

Recommendations

Digital Future Society's working group on public innovation has identified a need for capacity-building tools that can help the public sector to separate hype from the challenges and opportunities of emerging tech such as DLT and ADMS. Policymakers should engage with private, public, and academic stakeholders to oversee and create standards for the use of DLT and ADMS to steer their applications in a direction that benefits society at large. A similar collaborative approach should be followed for the development of auditing tools as well as validation and verification frameworks for these technologies to ensure their application meets ethical, regulatory and technical standards.

Solutions

Digital Future Society is creating an interactive online toolkit to support the digital innovation departments of city councils in the decision-making process associated with the evaluation of solutions using ADMS, considering and anticipating its social, economic and ethical implications. The toolkit's main objective is to help public administrators to decide whether, when, and how to use algorithmic and automated decision-making systems in the public sector and to create awareness about its opportunities and challenges in a public innovation context.

1.2 GovTech and citizen participation

The second Digital Future Society public innovation working group explored how GovTech 'ecosystems'—communities of stakeholders committed to public sector digitalisation—can enable governments to move away from working predominantly with traditional large technology vendors, and bring in new participants such as citizens, startups, SMEs, entrepreneurs, academics and local communities. GovTech-driven citizen participation contributes to the SDGs by improving vital processes for healthcare and life on earth (Health SDG 3, Climate and Life SDG 13,14,15), operational efficiency and government accountability (Work SDG 8, Institutions SDG 16) and increases collective action towards sustainability (Sustainable Cities SDG 11).

GovTech and citizen participation are closely connected to **SDG 11: Sustainable Cities and Communities**. Experts from city governments, academia, civic organisations and citizen participation platforms met in Barcelona to share lessons from different parts of the world where the GovTech ecosystem is delivering solutions for more citizen participation. By combining GovTech with citizen participation, it is possible to connect governmental institutions, businesses and citizens around initiatives aimed at advancing local sustainability practices.

The forthcoming Digital Future Society report **Leveraging GovTech for citizen participation**[2] shows how GovTech and citizen participation can drive the development of more sustainable cities by analysing the I Change My City platform in India. This location-based online platform promotes active citizenship initiatives, from improving city roads and bus shelters to avoiding traffic jams and optimising waste-related services. The platform's bottom-up approach empowers citizens to contribute to local development and gives cities a clearer, real-time overview of local realities, enabling decision-makers to deliver longer term benefits for citizens.

GovTech also contributes to **SDG 3: Good Health and Well-being** by making the process of medicine delivery both more efficient and reliable. Another way Govtech can be deployed is through large-scale monitoring of the health of citizens in an efficient and effective manner, for example by measuring opioid levels in sewage.

The public innovation Digital Future Society working group also identified the case of Bristol, where GovTech and citizen participation are leveraged to fight damp, which affects 30% of urban homes in the city and poses serious health risks. The 2016 Dampbusters project relied on the work of artists and technologists to create frog-shaped sensors, which were placed by citizens in their homes to collect temperature and humidity data. This case discussed by the Think Tank's working group is a good example of citizen-collected data used to inform the necessary countermeasures and housing policies to improve urban health.

GovTech can support governments in driving economic growth, related to **SDG 8: Decent Work and Economic Growth**. Some of the examples discussed by our experts include GovTech solutions for automating certain tasks, like robot-based scanning or validation of documents, can streamline a government's operations. The increased efficiency saves money which can be invested elsewhere in the economy, fostering national economic growth.

[2]Learn more in the forthcoming Digital Future Society report **Leveraging GovTech for citizen participation.**

GovTech also makes it possible to inform climate-dependent industries, like agriculture, on how the weather might affect their business. This contributes to the achievement of the **SDG 13: Climate action**, namely to strengthen natural resource management. The received information enables businesses to manage their natural resources effectively and reduce waste (e.g. water for irrigation, fertilizer), which can lessen their environmental impact. The experts who met in Barcelona highlighted cases from different corners of the world such as Poland, Thailand, Portugal and Singapore, where GovTech startups have been called to respond to SDG-related challenges including tackling the effects of climate change.

As explained in Digital Future Society's forthcoming report, GovTech can be an effective enabler of transparency, efficiency and participation across developed and developing economies, thereby contributing to **SDG 16: Peace, Justice and Strong Institutions**. Through the use of open data sourced from governmental institutions and the contribution of citizens to the development and deployment of GovTech applications, it is possible to strengthen efficiency and transparency in governmental operations.

Recommendations

The second Digital Future Society public innovation working group came to the conclusion that governments should take an active, leading role in fostering communities of practice in the emerging area of GovTech. Experts noted the opportunity for governments to be more transparent and accountable through the promotion of continuous knowledge exchange between public institutions, private companies and citizens. In practice, knowledge can be shared either face-to-face or in emerging shared physical "third spaces". Interactions with new actors, like startups, fosters innovation within the public sector are likely to boost both the efficiency and effectiveness of governmental operations and service provision. However, before such interactions can happen, governments need a "lay of the land" when it comes to GovTech ecosystems and their maturity level.

Solutions

Digital Future Society is creating a preliminary mapping of emerging GovTech ecosystems in Spain and Latin America that will include a state-of-the-art analysis, success stories, and recommendations for their promotion directed to both the public and private sectors. The mapping and guidelines are due for release in November 2019.

2

Digital trust and security

2.1 Data ethics and privacy in the digital era

Regulatory frameworks and data governance mechanisms that protect fundamental human rights in a world increasingly reliant on data-driven decision-making is critical for digital trust and security. The evolution of data ethics and the strengthening of privacy regulations contribute to the SDGs by improved inclusion through unbiased decision-making (Gender SDG 5, Inequalities SDG 10), fostering bottom-up initiatives (Communities SDG 11), protection of fundamental freedoms (Justice SDG 16) as well as ensuring the right to good health (Health SDG 3).

In an increasingly digital world, online privacy is essential as it empowers people to access information and to maintain fundamental freedoms. Without effective privacy protection, oppressive governments are able to abuse these freedoms, such as freedom of speech or access to information. That's why data ethics and privacy are inextricably linked to **SDG 16: Peace, Justice and Strong Institutions**, as well as the focus of Digital Future Society's first working group on digital trust and security.

The case of Kenya's voter register highlighted in Digital Future Society's second report[3] illustrates how privacy can be shielded through data protection frameworks and public action. Kenyan law requires that a register of eligible voters is published before the elections take place. In 2017, the register was published digitally to reduce costs. The digital version contained sensitive data like the voters' national identity card number, date of birth, gender, full name and voting area. This data was vulnerable to misuse, for instance by political actors who used it to send targeted messages to voters.

[3] Learn more in the Digital Future Society report:
Towards better data governance for all: data ethics and privacy in the digital era

Data ethics and privacy are integral to **SDG 3: Good Health and Well-being**. Without effective protection of privacy, the access of people with health issues to health insurance might be in danger, which puts them at risk. The experts working with Digital Future Society shared good practices from research as well as private organisations where data protection officers and ethical committees are put in place to ensure the protection of data subjects' privacy and a responsible use of their data. The health and medical sector has served as inspiration for other sectors to implement similar measures for an ethical treatment of data.

It is widely recognised that human decision-making is prone to bias, which can enforce gender inequalities such as male dominance in top management positions. However, as decisions are increasingly made by algorithms, it is possible to promote **SDG 5: Gender Equality** by ensuring a prerequisite to equitable decision-making: that the underlying algorithms are trained with unbiased data. If not, human bias is more likely to be replicated by algorithms. It is therefore of critical importance to operationalise data ethics and involve diverse groups in algorithmic design and testing.

The same logic applies when it comes to **SDG 10: Reduced Inequalities**. It is also possible to enforce equality through unbiased decision-making with algorithms trained with unbiased data in the areas of social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status. One of the key recommendations from the Digital Future Society working group to public and private organisations is establishing diverse and interdisciplinary workforces when designing, deploying and using digital technologies.

Data ethics and privacy play an important role in the realisation of **SDG 11: Sustainable Cities and Communities**. Data ethics is a central component of the global smart city transformation, ensuring the inclusion and engagement of citizens in decision-making. Data ethics are of vital importance to prevent privacy abuse and promote initiatives designed to deliver real value to citizens without infringing upon their fundamental right to privacy.

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Another case study highlighted in Digital Future Society's second report[4] is that of The Open Data Institute, who are currently piloting data trusts as data governance models in collaboration with the Office for Artificial Intelligence and Innovate UK. Data trusts are legal structures that can provide independent stewardship of, in the case of this initiative, urban space and sales data. The data can be used to improve urban life and to reduce global food waste, while safeguarding the interests of stakeholders and adhering to privacy regulations. The main benefit of data trusts is the ability to steward, maintain and manage data so that public and private entities benefit from it as a shared open resource. In practice, this means that it is possible to make more data available sooner for the purpose of creating smart, sustainable cities.

Recommendations

The Digital Future Society working group on digital trust and security recommends that policymakers introduce a public sector capacity building initiative, which aims to improve data literacy and raise awareness around data ethics within the public sector. When experimenting with new data governance models, policymakers should aim to operationalise data ethics when collecting and using personal data as they deploy data-driven technologies in public services.

Solutions

Digital Future Society is working on a set of guidelines to implement rules for the design of ethical algorithmic systems within in the public sector. The guidelines will include practical recommendations for public sector organisations on how to foster ethical practices in the use of citizens' data, with a focus on the definition of procedures that help operationalise ethics for the design of algorithmic systems.

[4] Learn more in the Digital Future Society report:
Towards better data governance for all: data ethics and privacy in the digital era

2.2 Business models that reinforce digital trust

Traditional business models that rely on data gathering and monetisation, behavioural tracking, "people as product" mentalities, and opaque data handling practices are being challenged by new, "privacy-first" business models. Digital business models that reinforce digital trust, transparency and privacy contribute to the SDGs by providing adequate information about data exchange (Education SDG 4, Consumption SDG 12) and by improving privacy and trust-based networks (Infrastructure SDG 9, Justice SDG 16, Partnerships SDG 17).

Business models based on privacy and transparency are the focus of Digital Future Society's second working group on digital trust and security and are primarily related to **SDG 9: Industries, Innovation and Infrastructure.** Policymakers have a vital role in supporting the development of business models that reinforce privacy and transparency. They can enforce regulations or provide incentives that create an environment in which SMEs can innovate competitively and promote bottom-up solutions to challenge traditional ways of doing business in the digital space. The role of government is to transform, create and shape markets through different support mechanisms, championing more privacy-focused business models.

The final Digital Future Society working group of 2019 analyses innovative business models that reinforce trust, transparency and privacy such as that of Protonmail, an open source email provider from Switzerland. It places the right to privacy at the centre of its core business model, providing email services to its users without storing any unnecessary data. All user data is protected by strict Swiss privacy laws and all emails are secured automatically with end-to-end encryption and user authentication protocols, resulting in an email service infrastructure where privacy is guaranteed. By collectively analysing and discussing the characteristics of emerging business models that create value while being transparent and respectful of people's data privacy, the Digital Future Society working group enables policy makers to identify and and support responsible innovation in the tech sector.

This topic is also connected to addressing and improving **SDG 4: Quality Education** as Digital Future Society explores new opportunities for supporting digital business models that reinforce transparency and privacy by creating awareness and stimulating critical thinking. It helps policymakers and businesses better understand the challenges they face in order to develop the right solutions. Taking an education approach addresses current and future possibilities for innovation, data transfer mechanisms and anticipates potential unintended consequences for individual and group privacy.

New business models are also closely related to **SDG 12: Responsible Consumption**. A stronger focus on responsible business models is needed along the entire data supply chain, involving everyone from producer to final consumer and with transparency underpinning all activities. Businesses need to provide customers and stakeholders with adequate information, whether that be through standards and labels or engaging in sustainable public procurement. The characterisation of business models for trust and transparency also allows consumers to be better informed and to choose for alternative products and solutions that are respectful of their privacy and transparent on their collection and use of data.

There is a downside to the rapid technological development of data-driven systems. Unethical data practices, data breaches and privacy violations are growing in frequency and sophistication, leading to a "global trust deficit disorder", which is linked to **SDG 16: Peace, Justice and Strong Institutions**. Digital Future Society is working towards a more equitable future, built on digital trust and security, by exploring business models that reinforce the transparent use of personal data, and prioritising the right to privacy. Another such example is DuckDuckGo, a search engine that protects users' privacy and avoids producing "filter bubbles" of personalised search results and targeted advertising. The company regularly donates to organisations that contribute to their vision of raising the standard of trust online.

It is only by regarding digital platforms as collective creations or "digital commons", that industry can construct new business models that offer real value, driven by public purpose and not just for profit-driven, exploitative data mining. To reach this goal, effective business model innovation is needed, which requires the involvement and support of key stakeholder groups across industry, venture capital, entrepreneurs, research centres and academia. This type of digital cooperation is closely associated with **SDG 17: Partnerships for the Goals**. Adapting regulations and providing incentives to business models that build trust and transparency enables private and public organisations to work together towards transforming digital products and services in a way that people's data and privacy are well protected.

Recommendations

Through specific incentives, governments can help mitigate the adverse effects of digital technologies while enabling society to reap the derived benefits. Policies should provide ways for public organisations to have the organisational structure in place to support the promotion of rights-preserving digital innovation. Policymakers should identify business models that reinforce transparency and privacy in order to adapt regulations and support mechanisms to the challenges of the digital era, especially in terms of privacy, transparency, digital trust and security.

3

Equitable growth

3.1 Digital cooperation to bridge digital divides

Digital cooperation efforts can contribute to bridging the digital divide. The digital divide or digital gap refers to the unequal ability to access and use ICTs. Digital cooperation creates opportunities that contribute to the SDGs by forming close collaborations between public, private, academic and third sector actors to bridge the digital divide (Partnerships SDG 17), introduce value-adding jobs (Work SDG 8, Inequalities SDG 10) and develop relevant knowledge (Education SDG 4) and early warnings related to the well-being of entire populations (Health SDG 3).

The theme of Digital Future Society's working group on equitable growth is strongly related to **SDG 17: Partnerships for the Goals**. In order to develop a widely-acknowledged sustainable development agenda and achieve the related goals, collaborative partnerships between governments, the private sector, academia and civil society are a prerequisite. Through digital cooperation, it is possible to build a shared vision and foster collective action to achieve the SDGs.

An example of one such collaboration analysed in Digital Future Society's forthcoming report is the Digital Springboard programme co-developed by Infoxchange and Google. The aim of the programme is to help people learn the digital skills they need to thrive in work and life, to ensure no one is left behind in today's digital world. Local community organisations, libraries and trusted delivery partners fulfil an important role in the Digital Springboard initiative as the content of the programme is delivered by key representatives of these organisations.

Public-private cooperation initiatives that provide people with access to digital technologies actively support the fight against disease outbreaks and thereby contribute to **SDG 3: Good Health and Well-being**. These digital technologies are at the core of early warning systems and rely heavily on citizen engagement to successfully fight disease outbreaks. Lessons learnt from different parts of the world were shared by Digital Future Society experts which highlighted the importance of timely and transparent communication between public and private organisations working on the digitalisation of health related services.

Digital cooperation efforts directed towards teaching relevant skills in the field of information and communication technology (ICT) contribute to the level of education in a given region or country. This drives the development of relevant skills and knowledge and actively contributes to **SDG 4: Quality of Education.** Members of the working group discussed the case of Medellin in Colombia, where innovation strategies have been implemented to provide affordable connectivity as well as education and training programmes to enable young people to become contributors to the city's innovation ecosystem. Public and private actors have worked closely with citizens in the design and implementation of education programmes for the digital economy.

Digital cooperation to bridge the digital skills divide contributes to the opportunities of people to access quality, value-added jobs, and is closely related to **SDG 8: Decent Work and Economic Growth.** These value-added jobs typically make a stronger contribution to economic growth than traditional labour-intensive work, especially in developing countries.

Digital cooperation to bridge digital divides in developing countries contributes to **SDG 10: Reduced Inequalities**, especially in knowledge-based Western economies. Bridging the digital divide leads to a switch from labour-intensive jobs to quality jobs with higher wages. This leads to the mitigation of economic inequalities between developing and developed countries. The case of community networks in Africa is showcased in the forthcoming Digital Future Society report as an example of initiatives driven by civic organisations to mobilise efforts and resources of public and private actors that help close digital access and content creation divides in the region.

Another example highlighted in Digital Future Society's forthcoming report is that of Vision Empower (VE), an initiative incubated at the International Institute of Information Technology Bangalore (IIIT-B), which aims to reduce socioeconomic inequalities between sighted and visually impaired people through inclusive education. VE is a not-for-profit enterprise that provides accessible solutions in STEM (science, technology, engineering and mathematics) education for children with visual impairment to provide them with the same education opportunities as their sighted counterparts.

Recommendations

To reap the benefits of public and private cooperation, governments and organisations should work together on bridging the digital divide by making digital skills more relevant to late- and non-adopters of digital technologies. The focus should be on older, rural, and less educated users since these are the most affected by the digital gap. The initiative should include a combination of low and high-tech approaches to ensure that citizens are willing and able to access critical information via digital touchpoints and ultimately improve their quality of life. Cooperation throughout the broader ecosystem is needed to make the most of digital technologies and promote inclusivity among users. According to Digital Future Society's working group, this requires policy frameworks that open up and transform sectoral and technological landscapes and directly support economic and social inclusion and special efforts to reach traditionally marginalised communities.

Solutions

Digital Future Society is working on the creation of a digital skills platform comprised of two layers that will reach different target groups. The first will be addressed to citizens and digital skills they need to strengthen in order to improve their quality of life and the second is focused on the development of professional digital skills.

3.2 The future of work: gig economies and the rise of platforms

The rise of digital labour platforms generates a number of work-related and economic opportunities, but also poses underlying challenges connected to the wider issue of preserving labour rights in atypical forms of work and new employer-employee relationships. Labour platforms contribute to the SDGs by challenging the issue of inequalities (Inequalities SDG 10), making space for new types of flexible jobs (Health SDG 3, Work SDG 8, Industries SDG 9) and by ensuring greater trust among trade relationships (Justice SDG 16).

This topic is the focus of Digital Future Society's second working group on equitable growth and is strongly connected to SDG 8: **Decent Work and Economic Growth**. Digital labour platforms connect sellers with buyers and transform how goods and services are produced, shared, and delivered. This enables new trade relationships, resulting in economic growth. However, if a platform values consumers over workers, it tends to subsidise user participation while increasing risks and costs incurred by workers. Furthermore, the growing commodification of work has a negative impact on workers' bargaining power, leaving them vulnerable in the marketplace.

Couriers for Deliveroo, the online food delivery platform, were just declared by the Spanish Supreme Court as full company employees, instead of freelancers.**[2]** This clears the way for workers to demand a formal contract with corresponding benefits and security in the workplace. In April 2019, the European Parliament approved a set of minimum rights for workers on digital platforms, including compensations for cancelled assignments and the right to work for multiple companies. EU countries will have three years to implement this, and will also need the help of local governments.**[3]**

The positive aspects of labour platforms are linked to **SDG 3: Good health and well-being**. Working flexible working hours is good for employees and has been shown to have a positive impact on productivity, worker retention and quality of work. Moreover, allowing workers more autonomy over the content and pace of their work can lead to improved mental and physical wellbeing and increased productivity. The Digital Future Society working group proposes initiatives for policymakers to address security and flexibility challenges created by digital labour platforms, such as opening data to better inform platform workers or creating a worker status index.

Platforms are likely to transform business infrastructure, related to **SDG 9: Industries, innovation and infrastructure**. The advanced innovation and flexibility of the multi-billion dollar gig economy is making its way into a growing number of industries including the hospitality and transport sectors, creating new opportunities for enhanced efficiency and drastically improved operations. However, power imbalances within platforms exist due to algorithm design, which ought to compensate workers in some way through additional incentives. The Digital Future Society working group meeting served to create consensus around the key challenges of the rise of digital labour platforms which include the imbalance of power, constrained access to benefits and a lack of collective voice and bargaining power by workers.

More flexible and inclusive job opportunities are emerging for different individuals and groups of people. This is connected to **SDG 10: Reducing Inequalities.** Labour platforms open new possibilities for people with different needs and priorities and at different stages of life. However, gig economies create dependency on access to digital interfaces such as smartphones. In developing and less developed countries, this can create severe inequalities and deepen existing digital divides through unbalanced competition. Potential digital platform workers can be disadvantaged or cut off from the platform due to their lower purchasing power or lack of access to a digital touchpoint.

It is important to address the equitable side of digital labour platforms, relating to **SDG 16: Peace, Justice and strong institutions**. Labour platforms can contribute to the creation of trust within and between communities. Many platforms use recommendation systems that are built on different types of captured data and are perceived as being neutral and highly personalised. This tackles the problem of information asymmetry on peer-to-peer platforms where participants rely on mutual trust.

Most importantly, to tackle the erosion of workers' rights, a number of institutions and governments are pushing to establish minimum standards for the fair treatment of workers. For example, the Royal Society of Arts, Manufacturers and Commerce (RSA) in the UK is calling on the British government to clarify how platforms in the gig economy can raise the quality and security of work over the long-term by adopting an approach based on 'shared regulation'. The government needs platforms, civil society, investors, legislators, and workers themselves to ensure that gig work is actually aligned with a vision of decent work.

Recommendations

Digital Future Society's working group on equitable growth recommends that governments invest in a dedicated service for platform workers that offers advice, information, and guidance about their status and employment rights. Furthermore, the public sector can lead the way in a review and adaptation of existing arrangements for collective bargaining, with the aim to include platform workers in the discussion, ensuring decent working conditions and a better work-life balance. Universal guidelines along with practical measures should be proposed and developed, which can be implemented by governments in collaboration with the private sector to further support and protect platform workers.

Solutions

Digital Future Society is working to prioritise and elaborate concrete initiatives in which governments take the lead to support digital labour platform workers. Examples include establishing a government-run cooperative platform accelerator, making it mandatory for platforms to publish data relevant for workers and designing a questionnaire to help both platforms and workers gain clarity on their rights and responsibilities.

4

Citizen empowerment and inclusion

4.1 Digital literacy for citizen empowerment

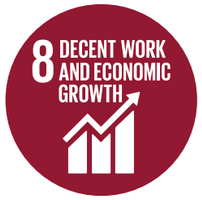
Policy instruments, tools, and solutions can promote citizen empowerment through digital literacy, which entails the awareness of digital rights, a critical understanding of how technologies and platforms operate, and how digital media represent the world. Digital literacy contributes to the SDGs by improving public services (Health SDG 3, Education SDG 4), employment (Work SDG 8) and improving governance approaches in the context of disinformation (Institutions SDG 16, Partnerships SDG 17).

Digital literacy is primarily related to **SDG 4: Quality Education** is the primary focus of a forthcoming Digital Future Society report on citizen empowerment. As the conclusions from the programme's work with experts emphasise, new policies on digital technologies should focus on providing support to empower citizens when engaging with digital media by educating them about the risks associated with media and digital technology, especially with a view to improving capacities to assess message credibility and quality. When citizens are digitally literate, they can harness the power of virtual collaboration. This enhances problem-solving and communication skills and fosters creativity, complementing the goals of higher education on the whole.

A leading example can be found in the Finnish fact-checking organisation Faktabaari (FactBar), which brings professional fact-checking methods to Finnish schools to engage in good research skills and critical thinking. It aims to strengthen citizens' abilities to distinguish facts from falsehoods and to assess the quality of information in the era of misinformation, disinformation (hoaxes) and malinformation: stories that intend to damage.**[4]**

Through the programme's work, it has become clear that digital literacy can also contribute to **SDG 3: Good Health and Well-being**. Increasingly, citizens all over the world are digitally enabled and empowered; raising expectations of capability and innovation, relating to their health and well-being aspirations. Moreover, digital literacy is progressively becoming a key requirement in contemporary health care and health education with the development of digital health tools and e-health applications. Both the care provider and recipient ought to be digitally literate to take full advantage of these revolutionary care resources.

In the digital era, citizens must be empowered to access new information and to express themselves. This particularly helps women to fight against societal discrimination, related to **SDG 5: Gender Equality**. Digital literacy facilitates women with access to education, employment and equitable resources, and empowers them with increased decision-making power.



Tackling digital literacy further contributes to **SDG 8: Decent work and economic growth**. High-level technical skills like accessing information, solving problems and working collaboratively, along with communicating effectively and analysing data and evidence are highly relevant in the workplace, especially in terms of decent work.

Digital literacy also helps to address risks and unintended consequences of the digital spread of information. The role of digital platforms, like social media, facilitates the distribution of both information and misinformation at unprecedented speed. Disinformation directly affects citizens' abilities to make informed decisions about issues that influence their lives. Much remains unknown with respect to the scale and the long-term consequences. That's why it's a topic also connected to **SDG 16: Peace, Justice and Strong Institutions** and **SDG 17: Partnerships.** The forthcoming Digital Future Society report examines how collaborative partnerships and new technologies can help counteract disinformation to prevent the loss of trust in government and institutions while empowering citizens.

The Digital Lit is a great example of a partnership working to improve citizen empowerment in the context of digital literacy. The programme, launched in Ontario, Canada, aims to develop the country's future talent pool by targeting communities that are generally underrepresented in science, technology, engineering, and mathematics. It connects community, programme delivery, industry, education and academic partners. Together, they are producing a scalable model that will help open the door to digital skills for youth across Ontario.**[5]**

Recommendations

Policymakers should focus on systematic approaches to digital literacy that can be readily adapted to the needs of citizens in the digital era. One way of doing this is to engage in relevant partnerships with the public and private sector, specifically tech platforms, civil society, academia and media to stimulate digital literacy among various populations. Partnerships with media and technology companies are useful because they bring local and national news media into education programmes in ways that promote citizen empowerment.

4.2 Digital inclusion metrics: best practices and use cases

Although digital inclusion is increasing overall, the inclusion gap has widened. Inequalities in access and use of digital technologies result in the fact that some people are better equipped than others to harness digital technologies and achieve better well-being outcomes in their jobs, income, health, and relationships. This white paper aims to explore and improve metrics tracking digital inclusion and digital equality for traditionally marginalised groups. Digital inclusion contributes to the SDGs by reducing societal differences (Poverty SDG 1, Gender SDG 5, Inequalities SDG 10), boosting economic growth (Work SDG 8) and integrating of innovative solutions (Infrastructure SDG 9).

Digital inclusion is primarily related to **SDG 10: Reduced Inequalities** and is the topic of a forthcoming Digital Future Society report. To be fully inclusive of marginalised communities, it is also important to recruit and include non-digital users in the research and design process, who may be otherwise excluded, as most of the research is conducted online.

An example featured in a forthcoming Digital Future Society report is the Australian Digital Inclusion Index (ADII), which aims to provide a comprehensive picture of digital inclusion in Australia by measuring three dimensions: access, affordability and digital ability. Research shows how these dimensions evolve over time according to each individual's social and economic circumstances and where they live. For example, the deaf and hard of hearing community is significantly more likely to use the internet for a range of tasks, including making video calls, social media, buying and selling products and using government services.

The most important challenge in addressing digital inclusion in the context of poverty is to move beyond a tool-oriented focus that integrates having access to media and technology with the skilful use of it, relating to **SDG 1: No Poverty**. Thanks to digital inclusion, a substantial part of the poor and vulnerable can have access to new technologies and financial services, such as microfinance. This enables them to have equal rights to economic resources and access to basic services.

The GSMA Mobile Connectivity Index measures the performance of 150 countries, looking at mobile internet infrastructure, affordability, consumer readiness and online content relevance. **[6]** The index monitors each country's progress in regards to digital inclusion and outlines what it will take for them to overcome offline population challenges. As mobile-first countries emerge, millions of people in the developing world are connecting to the internet without owning a PC. For people in countries like Tanzania, using a mobile device may be the most reliable way for them to access the internet, as fixed line internet access is inconsistent. Likewise, mobile phone ownership by students in Kenya surpasses the US, as they increasingly use mobile phones to download research publications and to access university library resources.

The actual number of women currently working in the ICT industry is substantially smaller than that of men. It is important to address the issue of effective and efficient ICTs use by women, rather than focusing only on the issues of general access to and availability of ICTs. This is associated with **SDG 5: Gender Equality**. Increasing female labour force participation in the IT industry will help local communities to flourish.

There are still many locations around the world without broadband coverage or online government services. These are often rural and remote areas of both developed and developing countries, where the business case for telecommunication infrastructure and related services is weak. This is related to **SDG 9: Industries, innovation and infrastructure.** Innovation is often overlooked when discussing requirements like digital skills, access and use. As the digital innovation of today becomes the digital divide of tomorrow, Digital Future Society experts see this as an opportunity to highlight and integrate innovation in the digital inclusion conversation

Recommendations

Digital inclusion is a complex, multi-layered topic. Policymakers need to look at different aspects of citizens' lives, such as health, food, security, occupation, social life and relationships, and consider the different levels of digital inclusion in specific areas to develop accurate metrics. At the moment, different metrics and indicators are used to measure and monitor digital inclusion globally, resulting in a fragmented picture. An evidence-based, prioritised set of metrics and indicators to monitor digital inclusion is needed for more effective policies, and forms the basis of Digital Future Society's work in this area.

Solutions

Digital Future Society is working on an evidence-based framework to measure and monitor digital inclusion at the global level that answers the call from UN Secretary General's High-Level Panel on Digital Cooperation for "a clear and agreed set of metrics to monitor" digital inclusion.

Conclusion

Digital Future Society

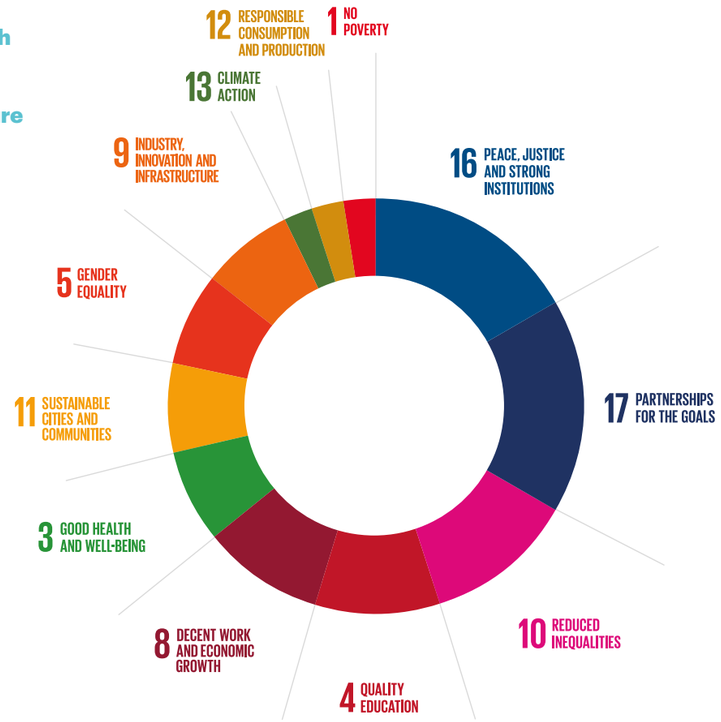
A more sustainable digital future for all

Digital Future Society is a global programme of Mobile World Capital Barcelona and Red.es that seeks to build an inclusive, equitable and sustainable future in the digital era.

By bringing together global experts from the public, private, academic and third sectors, Digital Future Society seeks to understand how the digital revolution can generate concrete and scalable solutions to challenges related to the SDGs, many of which are technology-related. Much of the focus is devoted to anticipating and mitigating any unintended risks the transition to a more digital society may pose, which could ultimately delay the achievement of SDG targets.

As we have seen in this white paper, not only does the work of Digital Future Society aim to inform and engage policymakers about the impact of digital technologies on society, but also contributes to achieving the United Nations' Sustainable Development Goals.

The infographic shows which SDGs are more strongly impacted by the efforts and ambitions of the Digital Future Society programme:



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