



International Federation for Information Processing (IFIP)

<https://www.ifip.org/>

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IFIP was established in 1960 under the auspices of UNESCO and is incorporated in Austria. The Mission of IFIP is to achieve the worldwide professional and socially responsible development and application of information and communication technologies.

IFIP links over 4,000 scientists from academia and industry, with more than 100 Working Groups reporting to 13 Technical Committees covering subject areas including Artificial Intelligence, the Internet of Things (IoT), Information and Communication Technologies (ICT) Education, ICT Skills, ICT and Sustainable Development, Gender, Diversity and ICT, Entertainment Computing, Human-Computer Interaction, and Computers and the Environment.

IFIP is the leading multinational organization in ICT and sciences, recognized by United Nations and other world bodies, and has consultative status with the UN Economic and Social Council, UNESCO, and ITU.

IFIP is a supporting partner of the World Summit on the Information Society (WSIS) and the UN Commission on Science and Technology for Development (CSTD) and with UNIDO.

Chapter I. Sustainable development and financing for development

The IFIP Digital Equity Committee (DEC) is tasked to initiate, encourage and promote activities that contribute to achieving digital equity and sustainable development. As an example, IFIP has undertaken for many years a number of activities under the umbrella of the World Information Technology Forum (WITFOR). The overall goal of WITFOR-type events is to assist countries in developing and implementing sustainable strategies for the application of ICT and to share experiences that will help to bridge the digital divide and improve the quality of life. IFIP continues to seek cooperation with governments and NGO's to organize such events.

Technology plays a crucial role in addressing challenges related to sustainable development and climate change. As we innovate with technology, we also need to be mindful as technology also generates huge environmental impact mainly due to:

- a. Planned obsolescence
- b. Storing exponentially growing amount of data, weakly managed and cleaned.
- c. Following the trends instead of practicing the art of 'smart & green' problem solving using the most suited techniques.

Recognizing the significance of digital technology in managing environmental sustainability and addressing climate change, IFIP established a task force in November 2022 to identify the challenges and opportunities of using digital technologies to address climate change and its impacts.

The processing and analysis of large volumes of data on climate change are essential to support effective decision-making and strategies. Additionally, simulation models assist in understanding climate patterns and predicting future changes. Smart energy distribution networks and IoT devices can enhance the efficiency and reliability of renewable energy sources.

The Task Force presented its interim findings at the IFIP General Assembly held in Bratislava, Slovakia, in September 2023 and is currently engaged in recommending solutions that leverage technology to address climate change challenges and in developing global capacity-building strategies, with special attention to issues related to disaster management, product life cycle, energy management, curricular educational programs, and combating misinformation. The recommendations also aim to raise awareness about climate change and its connection to technology.

Chapter II. International peace and security

It can be easily argued that digital technologies have enabled globalization to an increasing extent. Digital technologies allow us to access—live—what is happening in many parts of the world. Our historic view of responsibility and involvement has shifted; our live awareness can stimulate immediate responsibility and involvement, removing time and distance that would once have affected our more removed responses. Digital technology users can, through immediate awareness and action, influence international peace and security in positive, neutral and negative ways. IFIP is concerned that development, uses of and education about digital technologies positively supports international peace and security.

The UN should establish guidelines with governments on the positive use of digital technologies to support international peace and security. IFIP looks forward to collaborate and to assist.

Chapter III. Science, technology and innovation and digital cooperation

Science and technology play crucial roles in addressing many of the challenges confronting humanity and can be utilized to promote greater innovation, awareness and global collaboration. While technological advances hold tremendous promise for mankind, they also pose and raise difficult questions in many areas including ethics and morality, bias and discrimination, human rights and dignity, privacy and data protection, intellectual property, safety, liability, consumer protection, accountability and transparency, employment and the future of work, to name a few.

Greater integrated global collaboration and cooperation are required if we are to be successful in addressing these challenges. No single nation or entity can tackle these complexities in isolation, and collective action is essential for creating a sustainable and resilient future for the planet.

The proliferation of systems imbued with increasingly complex mathematical and data modelling, and machine learning algorithms, are being integrated in virtually every sector of the economy and society, to support and in many cases undertake more autonomous decisions and actions. Previously, technologies have been deployed more like tools, but as autonomy and self-learning capabilities increase, intelligent systems will feel less and less like machines and tools.

Historically, new technologies have always affected the structure of the labour market, leading to a significant impact on employment, especially lower skilled and manual jobs. The pace and spread of autonomous and intelligent technologies are increasingly out-performing humans in many tasks and radically challenging the base tenets of our labour markets. These developments have raised many questions.

Governments, the UN, policy makers, civil societies and employers all have important roles to play in the development of digital skills, in the monitoring of long-term job trends, and in the creation of policies to assist workers and organisations transition to a more automated future. If these issues are not addressed early and proactively, they may worsen the digital divide and increase inequalities between countries and people.

The UN should develop policies and strategies to transition workers in relation to the roles that will be the most transformed, or those that will disappear altogether due to automation.

IFIP has working groups working and researching on the subject of technology innovation and have published many publications including [‘Innovation Practices for Digital Transformation in the Global South’](#) and [‘World Class Cooking for Solving Global Challenges: Repairadigming Societal Innovation’](#), to name a few.

Chapter IV. Youth and future generations

We need to Innovate our educational system for future generations.

The increasingly wider applications of digital technologies across societies and our lives requires young people to develop critical digital consumer and producer skills and competences. The IFIP Task Force ‘Sustaining relevant digital inclusive education for young people (5-18 years of age)’ is gaining international perspectives to support international affiliated organizations, national societies, regional and local organizations. Having reported its interim findings at the WSIS 2023 Forum held in Geneva, Switzerland in March 2023, and further consultative findings at the IFIP GA 2023 held in Bratislava five key areas of concern warrant specific and particular attention if nations, regions, localities and schools are to sustain relevant digital inclusive education for young people. There are needs for ongoing focus on:

- aspiration;
- diversity, inclusion, the digital divide and the under-represented;
- computational thinking and its links to problem-solving;
- developing teacher practices;
- and short- and long-term plans and actions.

Aspiration is a key factor if young people are to positively consider sustaining their involvement in digital education and employment; young people need to be more aware of the roles of those involved in IT and digital professions, with ways that young people can understand the potential that digital technologies can offer, in terms of future education and employment, enabling them to aspire to engagement and involvement in this developing field. Organizations such as UNESCO, IFIP and ITU need to develop online websites that show young people a range of future roles and areas of interest to which they can aspire;

and national, local and school websites should provide for these at a similar but more locally contextual level.

Digital education must be accessible to and inspiring for all young people, positively accommodating diversity, inclusion, the digital divide and the under-represented, with ways that ‘inclusive digital education’ can be considered, if current limitations that are seen across the world are to be addressed. Teachers involved need to be supported with ongoing updated details about how all young people can be inclusively engaged with ICT, irrespective of, for example, gender, race, physical disability, or language.

Computational thinking and computing should be included within the curricula for young people, ensuring that activities support longer-term engagement and inspiration, as a bedrock for developing practices in uses of digital technologies across the wider school curriculum, which can include computer science, all providing access to and understanding of the language of computing. In-service teacher education and training needs to be supported in engaging more prospective computer science teachers and teachers who can use ICT for the immediate and longer-term future.

If young people are to sustain their engagement with digital education, then teachers must be supported effectively in maintaining appropriate and up-to-date ways to implement activities and understanding, within and across the curriculum, whether this support focus be all teachers, or information and communication technology (ICT) teachers (“teachers of technology”, “teachers of ICT”), to develop their involvement with young people through appropriate and varied actions and activities. In-service support and ongoing education need to be integrated into teacher professional development and learning to greater extents.

The IFIP Task Force digital inclusive education is currently exploring long-term planning, detailing a funding model in a specific context that has led to successful outcomes, so that it might be applied in other national, regional and local contexts.

The IFIP Digital Equity Committee (DEC) also supports the participation of students of developing and emerging countries and/or underprivileged communities in the scientific conferences organized by IFIP bodies. DEC is investigating financial models to increase the means for supporting such students. For this cooperation will be sought with a variety of partners, such as IFIP member societies but also industry.

Chapter V. Transforming global governance

In an era dominated by technological advancements, including artificial intelligence (AI), smart cities and digital twins, the transformation of global governance is imperative to ensure that innovation empowers humanity rather than replace it. The essence of effective global governance lies in adopting a comprehensive and interconnected approach that considers the myriad components influencing our world today.

As we navigate the transformative landscape of emergent technologies, it is crucial to align global governance with the Sustainable Development Goals (SDGs), integrating applications that contribute positively to societal progress, economic development, and environmental sustainability.

Reframing our global governance for responsible and sustainable innovation and development serves as a rallying call for a paradigm shift in our approach to governing technological progress. This reframing involves acknowledging the interconnectedness of global systems, understanding their ethical implications, and embracing a holistic perspective that integrates economic, social, and environmental considerations.

The correctly understood and implemented ‘synergy human-computer’ may help solve the complex challenges governments and people face today. Related to education, it is most important to learn how

and what to learn, to use our critical thinking, to learn the art of asking questions, especially with Generative AI and the know-how of discernment.

We are facing a major paradigm shift which will require significant rethink of some of our long-established structures and principles, as we must now take into consideration, machine learning systems that have the ability 'to learn', adapt and 'make decisions' from data'.

We are and will be experiencing successive waves of technological change—impacting on how we Work, Life and Play—raising fundamental questions on our values as humans—disrupting our existing business models, our human structures and beliefs on equality and fairness, and our long-established framework of governing laws, regulations and rules. The fast pace of waves of technological innovation will test our resilience as humans to cope with change.

We should pay close attention to automation processes using technology. We are moving rapidly towards a world where autonomous and intelligent systems are connected, embedded and integrated in complex environments. These systems can perform tasks at levels that may increasingly exceed human ability and raise many challenging questions including calls for greater transparency to minimize the risk of bias, discrimination, unfairness, error and to protect consumer interests.

Embedding transparency, accountability and explainability in system design requires more extensive planning and oversight, requiring input and knowledge from a wider mix of multi-disciplinary skills and expertise. Different systems create and pose different benefits, risks and issues. If not appropriately addressed, human trust will suffer, impacting on adoption and oversight and in some cases posing significant risks to humanity and societal values.

With our world undergoing rapid technological recalibration, our Work, Life and Play will be molded by technological advancements in many ways in the years to come. While new job roles will develop, one thing is certain—work in the future will be different.

Global governance should also focus on ensuring that IT service providers and developers are certified to deliver to professional standards: competence; trustworthiness; ethical behaviour and decision-making. [IFIP IP3](#) is tasked with advancing Professionalism in ICT.

ICT professionals understand better than most in relation to the trends and trajectories of technologies and their potential impact on the economic, safety and social constructs of the workplace and society. ICT professionals are well placed to address some of the risks and challenges during the design and lifecycle of systems. It would be beneficial to society for ICT professionals to assist government, legislators, regulators and policy formulators with their unique understanding of the strengths and limitations of the technology and its effects.

With our network of Member Societies and organizations, and our scientists from academia and industry across 5 continents, IFIP looks forward to further collaborate with the UN to mitigate some of the pressing challenges confronting our world.

From this brief submission, future values and issues will benefit from much broader debate and consultation—as for many, it is a matter of perspective and a balancing of legitimate interests.