

Digital Literacy: The Great Divide

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Intro

Digital literacy is a regionally defined and culturally amplified topic, which concerns all nations and regions across the globe to a varying degree. While the speed of digitalization in the last couple of decades has improved the living standards and conditions in a variety of geographies across the globe, groups of people are left outside of the current wave of innovations. To mitigate this disparity, global entities, such as the UN could take a proactive stance to ensure that individuals with little or no digital literacy are up to par with the New Age of AI preventing further gaps in economic and lifestyle advancement.

On 09.03.2023, Dr. Monika Manolova (<u>Digital National Alliance Bulgaria</u>) hosted a meeting in collaboration with Dr. Haydee Sheombar (<u>Kankan*Tree</u>) and Jaisal Surana(<u>MKAI.org</u>) to implement a consultation on the topic of "Digital Literacy: the Great Divide" with organizations and *experts from North America, South America, Asia, Africa and Europe*

Each of these organizations was invited to determine the key pain points and potential solutions which could be implemented at a more global scale. The focus is on addressing three core issues concerning the <u>UN Digital</u> <u>Cooperation Roadmap.</u>

On 28.03.2023 A second meeting was hosted to cover the aspects, which were not included in the previous meeting, to allow for confirmation of inputs and for further suggestions - including **calls for action to the UN**.

The outcome of these two meetings supports the UN's aim for an inclusive and participatory process, managing to attract experts from a variety of countries, to voice a variety of issues in the digital realm.

The consultation was attended by experts from 27 countries:

Australia, Belgium, Bulgaria, Ecuador, Eritrea, Germany, Hungary, India, Ireland, Italy, Kenya, Mexico, Morocco, Netherlands, Nigeria, Peru, Portugal, Pakistan, Romania, Serbia, Slovakia, South Africa, Spain, Türkiye, UAE, UK, USA

Consultation Brief for the Public Side of the UN Digital Compact

DNA Bulgaria, Kankan*Tree and MKAI hosted a public consultation for the UN Digital Compact on the topic "Digital Literacy: The Great Divide", which was attended by over 40 experts from 24 countries.

Conclusions of the consultation

While the world is connecting through digitalization, the disconnected remain a majority. This inequity disempowers people, especially educators and students, and creates social divisions.

Regional differences are a significant factor in the analysis of digital literacy but geography is secondary as literacy is an issue even within large metropolitan areas. Access to basic services based on digitalization (such as transport, telecommunications, energy, and healthcare) is faced with barriers in the evolving digital context, affecting vulnerable groups and the elderly.

Recommendations

Education and literacy

- Effective awareness campaigns for digital literacy (via mediators) should be done in remote areas in Africa, but also for rural areas in Eastern Europe (e.g. Bulgaria, Romania, Serbia, N. Macedonia), where people are unaware of opportunities created through the use of technology. Awareness about digital literacy is also needed in main cities of several African countries, mainly sub-saharan countries.
- Methodologies encouraging augmented education, higher order thinking skills and multimodal learning should be developed for all social groups and regional extremes (e.g. Italy, most African countries), to deal with the high speed of digital evolutions (e.g. ChatGTP).
- A "cultural invite" approach is needed, because while certain parts of the world integrate AI literacy to preserve jobs and upskill (e.g. Mexico), others perceive access to digital goods and services as an ethics issue.
- Investments in user-friendly hardware are needed to prevent significant accessibility barriers (for children with disadvantages in e.g. UK, the elderly in e.g. Portugal and Belgium, children with disabilities e.g. Morocco).

Economy

- Digital education needs to include "informed consent" and "dynamic consent" for data use (e.g. healthcare). Even for executives these may be concepts that require training(e.g. USA).
- In the various stages of innovation additional investment is needed to support upskilling SMEs which provide jobs. (e.g. Philippines, Myanmar)
- Trusted innovation networks should be established to demonstrate the advantages of digitalization to various segments of end-users (e.g. digital hubs approach in the EU)

Digitalization

- Digital literacy, skills, and divide must be clearly defined to support learning within growing evolving digital tools, (e.g. AI).
- Transparency, trust, representation, safety, and security should be integrated in convergence tech and digital strategies.

- Regulatory and strategic frameworks in AI/XR should be developed and/or improved through global expert oversight and collaboration to establish a baseline standard for all stakeholders to comply with.
- Collaboration must be established between education and economic segments to implement innovative digital standards (through global communities and initiatives).
- Expansive digitalization must include environmental mitigation in alignment with CODES UN and should support educating the end users about the impacts of digitalization.

Link to the consultation report

Summary of the meetings/discussions

The "Digital Literacy: the Great Divide" discussion was focused on a variety of issues from unequal access to internet services across the globe, unequal levels of education access and divergent understanding of the terminology of digital literacy with some regions in the world, age and demographic groups facing computer knowledge gaps, others facing digital literacy gaps and others needing to come to terms with the inclusion of the term "AI Literacy" in the compendium of terms within their digital literacy frameworks. (*Dr. Mulugetha T. Solomon, Omdena Milan* - suggested a clear delineation between the terminologies to focus areas of expertise on solving the variety of problems – digital literacy, computer literacy and artificial intelligence (AI) literacy)

Issue 1: Improvement of Digital literacy to prevent further class divisions of societies within Europe and globally. Ensuring regional cohesion and stronger economic growth via digitalization. */Target:* Ensuring digital inclusion for all, including the most vulnerable/

Background: Africa leads the world in the percentage of the population without internet connection at 88 percent. Furthermore, in the countries that are connected, male internet users outnumber their female counterparts in every region of the world.

The 'digital divide' we face globally does not just signify those who have access to the internet and those who do not, the gap also encompasses several other discrepancies, including the quality of digital infrastructure in rural communities, the speed of connectivity in remote areas, and the training and skills required to navigate such technology.

(Source: UNICEF)

The average % of Digital Skills in Europe is 31% and this % does not account for AI skills

Intro by Dr. Haydee Shoembar, Kankan*Tree "Digital literacy is about navigating the technology and using it well. Digital literacy is a lot more than access to the internet. If we don't get this right, we'll leave a lot of people behind across the globe and the goal is "leave no one behind""

RECOMMENDATIONS/DISCUSSION

<u>USA Marisa Zalabak, Open Channel Culture/IEEE AI Ethics in Education/Planet Positive 2030</u> (Education and literacy) provided insights into >350 schools in New York and the lack of capacity for some of the children in high school age to access the internet – in one of the most highly developed cities in the world. Thus, outlining the existing divides even within developed countries which need to be brought to the attention of policy makers as a "social justice issue" to ensure equal career opportunities for children. *Inequality exists both locally and in macro degrees*.

Belgium Laura Babío, POLIS Network, Brussels, Belgium(**Education and literacy**) The massive wave of digitization of transport has a huge impact – apps to access the transport services, to evaluate the service, have quite a significant impact on social exclusion especially on the elderly. *It is an issue of transport justice*. Trying to keep the human factor as part of the system was noted as highly valuable and important to keep things inclusive and intuitive. A variety of industries have already tackled digitalization successfully(banking), but transport is still in between.

Portugal Mónica Rogério, ACDIPE, Portugal(**Education and literacy**) In rural areas in Portugal landline phones are still used due to lack of internet. Their recent project experiences show that elderly people are excited and want to be included in the digital world, but they face a variety of issues, from lack of internet in

rural areas to purely physical issues in interaction with touchscreen phones. An issue of age barriers throughout Europe was raised.

<u>UK Richard Foster-Fletcher, MKAI, UK (Economy)</u> Noted that recent experiences in digital literacy seminars conducted across the globe with a variety of governmental bodies(Philippines, Bermuda, Myanmar) and targeting SMEs, and organizations in the startup sphere, which ought to produce innovative outputs(patents, jobs, economic viability in sustainability) also struggle with digital literacy in the frame of AI, which moves through these 3 stages – 1st stage "Awareness of these technologies and inspiration"(high level of interest), 2nd stage "Use cases and design thinking"(medium level of interest), 3rd stage "Prototyping"(low level of interest). *Digital literacy in SMEs should be a focus of more interest in the 3rd stage of innovation*.

<u>Nigeria, Daniel Opanubi, Omdena (Education and literacy)</u> - There are people so far removed from digital culture that they are unaware and uninterested in getting digital culture. *Contribution needs to be made for people like that.* To get them aware of what people are doing. Then there are people who lack access to the basic minimum. Some people do not even have access to a mobile phone. *A sort of awareness needs to be made, because there are people unaware of the opportunities which digital skills bring.*

Nigeria, Oluwaseun Wey, Nigeria Inter-Bank Settlement System, Nigeria(Education and literacy) agrees as in Nigeria - it also goes beyond driving awareness only. Deploying systems and infrastructures that promote digital literacy and inclusion is crucial. Also, affordability is another critical area to promote digital literacy and inclusion; if these people cannot afford to buy internet-enabled mobile phones and subscribe to internet services, there will be no inclusion no matter how much awareness is done. This links to the number 1 Millennium Development Goal Another key area of recommendation to bridge this digital literacy gap in *Nigeria and across Africa is Early Literacy i.e. equipping schools with digital systems and internet services so that children in the most rural areas can be exposed early on to the concept of digitization.*

Bulgaria, Jasen Tanev, Digital National Alliance/CyberClub (Education and literacy) – Noted that his experience with recent projects with minorities in Samokov, Bulgaria have led him to believe that people need to travel around the country and there need to be moderators of "digital gateways" which need to transfer the knowledge to the communities, which have the lowest interest in advancing their own digital literacy.

Hungary, Dr. Tuan Trinh, EIT Digital Hungary (Education and literacy) What can be measured, can be managed. We need tools and methods to measure and monitor the performance and the level of maturity in digital literacy and readiness, e.g. DESI - Digital Economy and Society Index. There are a number of efforts in Hungary to do that, and also to compare the local measurement to the DESI figures. Hungary performs relatively well in digital infrastructure but there is a huge gap in the digital skills of citizens and digital readiness of businesses. According to a research by the ICT Association of Hungary, the majority of Hungarian businesses are not exploiting the opportunities offered by digital technologies with only 34 percent of SMEs having at least a basic level of digital intensity, significantly below the EU average of 55 percent, which is confirmed by the DESI 2022 figures. In addition, 49 percent of the Hungarian population aged 16 to 74 have basic digital skills, compared to 54 percent on average in the EU. It should also be noted that, during the pandemic, 81 percent of Hungarian Internet users used online public services, 16 percentage points better than EU average. It is thus recommended that the business sector in Hungary to increase their effort in adopting digital technologies to increase business efficiency as well as to continue the good work done in the public sector. Further notable efforts implemented in Hungary with the support from the European Commission is the creation of the European Digital Innovation Hubs network to support digital literacy, digital innovation awareness and to improve digital maturity for the business and public sectors alike, focusing on SMEs. In Hungary, currently 5 EDIHs are running covering key topics in digital innovation and digital technologies, as well as digital applications. Finally, we recommend the strengthening of regional efforts. For Hungary case, exchanging and sharing the best practices between Visegrad 4 countries (Poland, Czechia, Slovakia, Hungary) as well as countries situated along the Danube river (Germany, Austria, Slovakia, Hungary, Romania, Croatia, Serbia, Bulgaria, Moldova, Ukraine) are highly recommended.

<u>UK, Jaisal Surana, MKAI (Education and literacy)</u> Noted that higher public investment in hardware technologies for vulnerable children and children with disabilities will need to be increased to prevent further expansion of the gaps within the education system.

<u>Serbia, Miloš Dimitrijević, University of Kragujevac, Serbia (Education and literacy)</u> - Many remote areas do not have access to the Internet, while only urban areas are covered by high-speed Internet. The level of digital skills in Serbia is lagging the EU average. Digital literacy index in 2022 observed a decline. There is a

gender gap in digital skills. *These results point to the conclusion that policymakers should support elderly, rural population, women, disabled persons, as the most vulnerable groups.* Empowering these groups and increasing their digital literacy, which is a prerequisite for AI, would have an impact on the decrease of the gender gap, increase of female entrepreneurs and reduction of poverty.

<u>South Africa, Lavina Ramkissoon, Advisor African Union (Digitalization) -</u> Tech colonization is amplified through both offline and online, that prevents digital citizens participating in information and communications technology sectors due to infrastructure, politics, or economic circumstances. We have a unique opportunity to contribute to the normative framework on equality, technology, innovation, and education in the digital age. Examples include Digital Violence amongst youth, women, and children.

<u>Australia, Dr. Stephanie Camarena, Founder of Source Transitions(Education and literacy)</u> Australia has a well-developed digital literacy program in a country where between 80-100% of people have access to the internet and to both mobile and computers. *Significant divide between regional and metropolitan literacy, between younger and older people, education levels still exists.* One of the difficulties to be analyzed is the fact that the starting point for digital literacy is so widely spread from little access and resources to highly developed levels of access therefore the priorities would be very different.

Improved collaboration should come from forgetting about where we start from and to instead focus on the type of future we want to build. That would mean that different countries could work towards a preferred state and that developing countries could leapfrog to ways of integrating Tech unimpeded by existing power structures and existing infrastructures.

Summary of Issue1 recommendations:

While digital literacy seems to be regionally oriented, geography alone is not the cause of digital disparity and illiteracy. It is important to recognize digital literacy as a social and resource inequality to support populations who are underserved. Regardless of their regions. Further investment in usable hardware needs to be implemented to prevent a significant barrier for children with disabilities in the UK, access to basic services such as transport are also faced with barriers in the digital context within Europe(Brussels, Portugal) that affect vulnerable groups and the elderly. The upskilling in SMEs in a variety of global territories(Philippines, Bermuda, Myanmar) should target additional value creation in the innovation stages to support local economies and bridge the gaps.

Additional support and awareness are needed within the farthest removed areas in Africa where people are unaware of the opportunities, which digital skills provide, but such unawareness exists in small communities within countries like Bulgaria, requiring a "human interface" to the digital divide. Access to the internet needs to be made a basic need covered by human rights.

Issue 2: Digital Literacy and AI - the Dawning of a New Age of Digital Societies /target: Supporting global cooperation on Artificial Intelligence/

Background: The ability to understand, use, monitor, and critically reflect on AI applications without necessarily being able to develop AI models themselves is commonly referred to as being "AI literate" (Long et al., 2021; Ng et al., 2021a).

Some nations which are speeding up their AI strategies and developments will permanently increase the gap between nations – making some regions AI developing; others AI developed. The world map is being reshaped by these processes which is why a global collaboration on AI should be implemented and supported.

https://www.weforum.org/agenda/2022/03/without-universal-ai-literacy-ai-will-fail-us/

Jaisal Surana, MKAI UK: "Corporations and nations are increasing and accelerating their investments in AI and how are various sectors going to be affected by the investment, should we consider that the UN needs to consider changes in the SDGs. The unifications in definitions and standards happening in the background might be valuable but there ought to be a consideration for long-term strategies across the space."

Dr. Tuan Trinh, EIT Digital Hungary, "Notable efforts and initiatives in Europe include, among others, the initiatives led by the European Institute of Innovation and Technology (EIT), e.g. Cross-KIC Activity on Artificial Intelligence, AI on Demand platform, just to mention a few examples."

RECOMMENDATIONS/DISCUSSION

Peru, Andres Leon-Geyer, Pontificia Universidad Católica del Peru – PUCP (**Digitalization**) Outlined that there are groups which have access to the internet but have no literacy and there are areas with lack of access to the internet. *For Peru "the unconnected" are not an exception but a majority*. Exclusion has a strong effect on the economies – such as the purchase power compared to Geneva. Digital literacy needs to be clearly defined for everyone and as *we introduce new definitions such as "AI literacy" we need to be cognizant that access to the goods and services of the internet is an ethical issue.*

Italy, Oleg Missikoff, Earth 3.0 Foundation(**Education and literacy**) as an expert in digitalization for Africa and Europe, Oleg noted that *there are extremes of access and purchasing power*. Mobile internet usage in Africa compared to the internet usage in Europe is quite expensive and unsustainable. But, on the other hand, there are people in the world wondering how to deal with ChatGPT-4(noted as the other extreme). The solution to the problem is in "knowledge" so that people can take advantage of the digital economy and *adaptive learning, upskilling across the entire spectrum from low educated to highly educated, who have learned under outdated school curriculums that no longer serve the current economic needs.*

South Africa, Jessica Gardner, Worth Marketing Solutions (**Digitalization**) noted that access to the internet may indeed be a challenge due to things such as cost of internet (mobile and uncapped) and loadshedding of electricity in long intervals. Oftentimes there are barriers in developing solutions for the startup economy due to cultural disparity and lack of inclusion within funding the digital innovation sphere.

Ecuador, Maria Mac Andrew, Executive Director My Zalu/AIEthics.World (**Education and literacy**) shared recent experiences in working with educators who are reluctant to introduce digital technologies *in Africa due to pessimism that the social divides, which exist, may be bridged*. Such pessimism would preclude students in rural schools in Africa (Zimbabwe) from being able to understand what a computer is, due to lack of basic access to technologies(a single computer). So, while there are currently ICT topics in education programmes for far-removed areas, there need to be "creative and inspirational" programmes for the teachers themselves, so that they may introduce digital skills to the far removed. *Storytelling and prioritizing teacher education will be fundamental for the solution of these challenges*.

USA, Marisa Zalabak, Open Channel Culture/IEEE AI Ethics in Education/Planet Positive (Education and <u>literacy</u>) noted that there are areas in the world(the Amazon) where digital education is perceived by local communities of native culture as imposition(due to anxiety of learning and unlearning). *There needs to be a holistic approach and understanding for the issues not only from the "hierarchy of need" perspective, but from a "hierarchy of emotions" perspective.*

Bulgaria, Monika Manolova, Digital National Alliance (Education and literacy) Noted that some people in rural areas(farmers in particular) do not believe that "digital is a solution to their problems" and rational/psychological reasons exist for that which need to be considered at least regarding education systems.

Mexico, Victor M. Larios, Universidad de Guadalajara, CUCEA Smart Cities Innovation Center, (**Digitalization**) in Latin America, in Mexico, in there have been extensive investments in AI Ethics, but it is still difficult to match the regulation with the applications of the technology, and the velocity with which some people may lose their occupation when certain applications of artificial intelligence are introduced. Within Mexico there are 70% people with access to the internet, but it is mostly utilized for social networks and there needs to be a *guided approach to the application and deployment of artificial intelligence, which secures jobs and provides people with access to higher levels of digital skills.*

Bulgaria, Monika Manolova, Digital National Alliance (**Digitalization**) noted that there are significant regional divisions in the world – with some areas facing difficulties in the bare minimum of access to the internet and then there are those already dealing with concepts such as AI and XR.

<u>Netherlands</u>, Haydee Shoembar, Kankan*Tree, Netherlands (**Digitalization**) suggested a further discussion of the ethical elements, where technological advancement should not be imposed on people, but at the same time we run the risk of continuously leaving people behind with the current speed of digital growth.

USA, Marisa Zalabak, Open Channel Culture/IEEE AI Ethics in Education/Planet Positive 2030(**Education and literacy**) noted that the soft skills approach of "inviting" people to join in the digital evolutions might alleviate some of the "wicked problem" facets of the digitalization issue, where some populations may not want to be digitized.

Serbia, Miloš Dimitrijević, University of Kragujevac (*Digitalization*) - According to FAO, the world population will reach over 9 billion by 2050, so we need more productive systems, which will at the same time protect the environment and optimize the use of resources. AI holds promise in addressing the challenges of this new paradigm. AI in the agricultural sector offers the potential to feed an ever-growing global population and contribute to the achievement of the UN Sustainable Development Goals (SDGs). *Because of that we need global support to build a long-term framework and strategy. International organizations must adopt a unique framework in this segment, building some global platform for* collaboration, as well as encourage innovative food hubs and guide FinTech companies in this area.

The introduction of AI in agriculture, and other economic sectors, will be enabled by technological advances, including big data analytics, robotics, the Internet of Things, the availability of low-cost sensors and cameras, drone technology, and even widespread Internet coverage in geographically dispersed fields. FinTech companies should be encouraged to introduce technological innovations (precision agriculture). Special attention should be directed towards technological innovations for small farms, bearing in mind the costs of their introduction as a major obstacle.

South Africa, Lavina Ramkissoon, Advisor African Union (*Education and literacy*) Digital literacy will be key in a world transformed by AI, therefore digital literacy must be taken seriously. A beginning point is how to implement these skills in our social practices and bring these ideas into legislation. Today's adolescents are transitioning from childhood to adulthood in an era of rapid digitalization in nanoseconds. Digital media are accessed through mobile phones, tablets, and computers and remain an important window into the world for adolescents. While levels of digital access and experiences of the digital world vary widely, adolescents are typically among the highest users of digital media. Young people often rely on smartphones to go online, but one third of school age children also have a fixed internet connection at home. *Younger people also tend to spend more time online than older generations, by simple default education and awareness is critical inclusion into countries education policies.*

India, Vibhav Mithal, IPR lawyer, Anand and Anand To achieve global collaboration on AI, it is critical to first appreciate that AI, as on date, is a pattern recognition tool, which when combined with existing processes, helps humans achieve certain pre-determined and pre-defined objectives. AI which functions as a tool (known as Artificial Narrow Intelligence) must be clearly distinguished from the aspirational goal of AI becoming as 'intelligent' as a human (a concept known as Artificial General Intelligence). Understanding this distinction would be an important step in promoting Digital Literacy and AI. A facet of AI ethics, on the other hand, concerns the ethical choices which humans make while developing AI systems. If one is looking to achieve global collaboration on AI then we must be on the same page as to the meaning of AI as well as the impact AI systems may have. For example, the draft EU AI Act seeks to regulate the impact of an AI systems. However, *The EU AI Act is only one approach to look at the impact of AI systems, and countries should be free to choose a mechanism that suits them the best*. Only from this basic agreement of the meaning of AI and the impact that AI systems may create, can we then have subsequent discussions of how the path to achieve global collaboration will unfold.

Pakistan, Ahmad Manzoor Founder & CEO Pakistan Blockchain Institute & AnZ Technologies The convergence of digital literacy and artificial intelligence (AI) is ushering in a new age of digital societies, where AI is increasingly used as a productivity tool. Digital literacy, which involves the ability to access, evaluate, and use digital information effectively, is becoming increasingly critical as AI usage becomes more prevalent. AI is transforming the way we work by automating repetitive tasks and enabling us to process vast amounts of data quickly. However, to maximize the benefits of AI as a productivity tool, individuals and organizations must have the necessary digital literacy skills to effectively use and integrate AI into their workflow. With AI as a productivity tool, employees can free up time to focus on higher-value tasks, and organizations can improve efficiency and effectiveness. As we continue to embrace AI as a productivity tool, it is essential to prioritize digital literacy to ensure that everyone can participate in and benefit from the new age of digital societies.

Summary of Issue2 recommendations

The unconnected in some areas in the world are a majority and not a minority(Peru, South Africa) which creates cultural and social divisions, leading to pessimism even for educators(Zimbabwe) where digital literacy is concerned. Adaptive learning, knowledge, and creativity for all social groups from and regional extremes needs to be introduced, due to the speed with which current education systems are becoming redundant in the face of AI(Earth 3.0, Italy, Africa).

Rather than a swift and forceful digital inclusion a cultural invite approach should be implemented. And while certain parts of the world recognize and implement AI literacy to preserve jobs and upskill(Mexico), others view the access to the goods and services of the internet as a digital ethics issue.

Issue 3: Tackling democratization of digital innovations as a public good. /target: Building a more effective architecture for digital cooperation/

Background: Digital innovations are siloed off and split in regions, geographies, and spheres. While the competitive nature of the digital market provides goods and services at better/competitive/ quality, collaboration, it is bridging differences, providing access which will support the betterment of everyone's future – democratic values, shared standards, improved collaboration, improved markets.

Global corporate investment in AI has reportedly reached US\$60 billion in 2020 and is projected to more than double by 2025.

https://www.brookings.edu/research/strengthening-international-cooperation-on-ai/

Into by Dr. Monika Manolova: "There are economic framework and regional frameworks currently developed across the globe(example – India's AI strategies target the protection of jobs, China's AI strategies target further economic growth and expansion of production), which define the future of Artificial Intelligence and digital literacy and place us on "rails" with very little room for collaboration and inclusion. To democratize digital and artificial Intelligence innovation for the good of all, it is necessary to engage stakeholders from other underrepresented regions"

RECOMMENDATIONS/DISCUSSION

Peru, Andres Leon-Geyer, Pontificia Universidad Católica del Peru – PUCP (**Digitalization**) The democratization of digital goods and services needs to be approached from the perspective of a large-scale education programme (from the UN), which will help the terminology of AI to be better understood and not cause people to be misled.

<u>UK, Jaisal Surana, MKAI (Digitalization)</u> People often understand computers and technology but not AI, there needs to be additional awareness about what AI applications capture and how they use and reuse it. At the same time *tackling democratization could be supported by the inclusion of experts from a variety of expert fields in the development of regulations and to support the commonalities between the policies as the variety of countries analyze the problems within countries.* Further collaboration between tech experts and legal experts is necessary to support the collaboration between the frameworks.

Netherlands, George Beers, Wageningen University (Economy) the speed of digitalization is higher than the traditional approaches to bringing innovations to society. Within the field of agriculture trust is a fundamental issue, where the utilization of digital technology is concerned. The establishment of excellence centers, centers of expertise and digital innovation hubs has shown to be successful due to the trust placed on local experts that are well-equipped to support *bringing* the new technology to the farmers. *Demonstration of the new technology close to the people you want to impact is of the most importance. While technological advancements are incredibly important, they can be a "zero-sum" game and it is important to address the downside as well as the advantages.*

USA, Dr. Ingrid Vasiliu Feltes, Founder & CEO Institute for Science, Entrepreneurship, and Investments, (Economy) Noted that increased education efforts are required to optimize the level of global digital literacy and digital fluency related to the use of digital products and services solutions are crucial for success. Additionally, there needs to be a greater collaborative effort to integrate AI impact metrics, with financial, operational, ESG(environmental, social and governance) metrics as there are currently numerous silos that cause cyber-ethics vulnerabilities. Harmonization and integration have the potential to restore societal digital trust and facilitate tracking the true ROI(return of investment) for artificial intelligence (AI) deployment.

Special attention to bioethics in healthcare and life sciences is required to increase awareness about the need of "informed consent" and "dynamic consent" concepts for highly sensitive genomic and precision medicine data sets. A cohesive effort to uphold digital ethics, while optimizing enterprise AI deployments is a moral and business imperative.

Bulgaria, Monika Manolova, Digital National Alliance (Economy) Noted that perhaps there are some intersections between segments which share a bond like agriculture and healthcare(the food we eat, being directly reflected in our health) and education and IT(the capacity for various domains to collaborate with digital technologies) which may be explored to break down the silos between innovation segments(such as working groups).

Hungary, Dr. Tuan Trinh, EIT Digital Hungary (**Digitalization**) As already noted earlier, the majority of Hungarian businesses are not exploiting the opportunities offered by digital technologies with only 34 percent of SMEs having at least a basic level of digital intensity, significantly below the EU average of 55 percent, which is confirmed by the DESI 2022 figures. It is recommended that Hungary to be more integrated in the European initiatives to strengthen digitalization in business sector. Initiatives like the EIT Strategic Regional Innovation Scheme (EIT RIS initiative from the European Institute of Innovation and Technology) in Europe should be implemented in other parts of the world as well to help the regions to strengthen its capability and digitalization and innovation. Within the EIT family, EIT Digital, the largest digital innovation ecosystem in Europe, acts as "gateway" to European digital innovation. EIT Digital Works hard for a strong digital Europe which is Inclusive, Fair, and Sustainable. Hungary hosts the EIT Digital Office in Budapest, corresponding to Region East.

Peru, Andres Leon-Geyer, Pontificia Universidad Católica del Peru – PUCP (**Education and literacy**) working groups may be further analyzed but there should also be a consideration for the difference between digital skill gaps and literacy a s literacy is another theme occurring in different countries and disciplines. **Romania,** Ana Prica Cruceanu, Association of Women in Engineering, Science and Technology (AFIST)

(Digitalization) outlined that there needs to be recognition for our own biases in the sphere of tech and that an elderly person from a village also needs to be represented in national frameworks, while at the same time greater levels of transparency and explainability need to be provided in the field of artificial intelligence to prevent furthering the gaps.

<u>Serbia, Miloš Dimitrijević, University of Kragujevac (Digitalization)</u> - The barriers for improved collaboration between the countries are in regulation, different goals and view of policymakers, too big bureaucracy, decision-making power at all levels, not enough projects etc. *The main drivers for improved digital collaboration may be in more projects in this area, harmonization regulation and globally framework of this topics, encouraging researchers to deal with this topic and networking researchers from all over the world among the some common bases of researchers and not through some decision makers, networking and building some platform of producers, consumers, policymakers and researchers.*

Ireland, Shaun Topham, DataVaults and PISTIS(Horizon project) (**Digitalization**) A key building block in "digitalization with social values" is data. More equal access to data, particularly to personal data is vital to prevent the evolution of a global data economy driven by more corporate and less social goals. This in turn shapes AI as wide access to data is a prerequisite. Digital SMEs find it harder to access data than they do finance. A pathway for release of personal data for the public good should be developed.

India, N. KISHOR NARANG,NARNIX Technolabs (**Digitalization**) The artificial-intelligence industry is often compared to the oil industry: once mined and refined, data, like oil, can be a highly lucrative commodity. Now it seems the metaphor may extend even further. Like its fossil-fuel counterpart, the process of deep learning has an outsize environmental impact. Although AI presents transformative opportunities to address the earth's environmental challenges, left unguided, it also has the capability to accelerate the environment's degradation. There is a major hype to leverage AI to bring sustainability in different aspects forgetting the extensive energy it consumes, in turn increasing GHG emissions and carbon footprint it adds to anything, when you apply AI to any product, system or solution. *Environmental considerations should be an integral part of digital literacy*

<u>UAE, Dr. Jane Thomason, Founder WMC (Digitalization</u>) First we need to address universal access to the internet. Gen Z and Gen Alpha will grow up with digital skills which. Older generations may miss out on. All education should teach kids from beginning to code therefore, we need to give access to the digital tools and how to use them. Digital literacy in the Age of AI means transformation of economic segments as well. AI

will directly impact the income streams of accountants, doctors, lawyers, journalists, artists, professors, teachers and more. *These professionals will need to evolve*.

<u>Australia, Dr. Stephanie Camarena, Founder of Source Transitions (Digitalization)</u> Noted that Digital literacy in the Age of AI means The ability to understand what AI means for oneself and for the industry/sector in which you operate. This means the ability to also imagine what AI could do for you and your future. *I would also say it is the ability to develop the muscle of critical thinking in an area which has deep ethical and social implications*. There are opportunities for a greater level of development in all economic segments. However, AI applications are often developed in tech industries which are effectively disconnected from the industries themselves. Often this results in high tech solutions which do not match the type of problems that these industries face. In the food industries, AI and digital are bringing changes to agriculture (crop monitoring and precision agriculture), intelligent packaging to reduce food waste, precision health and nutrition, and others.

Pakistan, Ahmad Manzoor Founder & CEO Pakistan Blockchain Institute & AnZ Technologies As digital innovations continue to reshape society, it is essential to ensure that democratization is at the forefront of their development. This requires capacity building and product development as a public good. Capacity building refers to providing individuals and organizations with the skills and knowledge necessary to effectively use digital technologies. Product development as a public good entails creating digital innovations that are accessible, affordable, and designed to meet the needs of all members of society. By investing in capacity building and product development as a public good, we can promote equitable access to digital innovations, empower marginalized communities, and drive inclusive economic growth. It is essential to prioritize democratization in digital innovation to ensure that technology serves all members of society and does not exacerbate existing inequalities.

Summary of Issue3 recommendations

The combination of digital literacy with digital fluency is fundamental for every segment of the economy and the integration of AI innovation in a meaningful way.

There needs to be a clear delineation between digital skill gaps and digital literacy, which affect different economic segments and economic spheres, but collaboration will have to be established between the fields to break down silos and to support the implementation of transdisciplinary and innovative digital standards. Within agriculture an approach which has proved successful is reliance on trusted professionals within excellence centers and digital innovation hubs which support the speedier acceptance of digital solutions via demonstration. Within healthcare, the solutions require understanding of "informed consent" and "dynamic consent". Transparency and representation are quite important towards the national frameworks, but there is also a need to open regulatory and strategic frameworks in AI to expert overview.

Summary of Consultation Recommendation

While the world is connecting through digitalization, societies who lack it remain disconnected, accounting for the majority of people on our planet. (e.g. Peru, South Africa). This inequity disempowers people, especially educators(e.g. Zimbabwe, Türkiye, Bulgaria, Romania) and creates cultural and social divisions. While regional differences are a significant factor in the analysis of digital literacy, the geography is sometimes secondary as literacy is an issue even within large metropolitan areas in the USA. Digital literacy should be connected to the UN SDG, becoming a basic human right on the principle of "leave no one behind". Access to basic services predicated on digital literacy (such as transport, telecommunications and healthcare) is faced with barriers in the constantly evolving digital context throughout Europe (e.g. Belgium, Portugal) that affects vulnerable groups and the elderly.

Education and literacy

• Additional support and awareness are needed within the farthest removed areas in Africa where people are unaware of the opportunities, which digital literacy provides, but such lack of awareness exists also in small rural communities within countries like Hungary, Bulgaria, Romania, Serbia, N. Macedonia, which requires a "human interface" to the digital divide.

- Adaptive learning, knowledge, and creativity for all social groups and regional extremes(e.g. Italy, some African countries) need to be introduced, due to the speed with which current education systems are evolving too slowly in the face of AI (e.g. Generative AI applications, such as ChatGTP or the recently emerging Emotion AI). Methodologies which encourage augmented education, higher order thinking skills and multimodal learning.
- Rather than assuming every culture desires increasing digitalization and forcing such solutions, digital inclusion and a cultural invite approach should be implemented. And while certain parts of the world recognize and implement AI literacy to preserve jobs and upskill (e.g., Mexico), others view the access to the goods and services of the internet as a digital & AI ethics issue.
- Further investment in user-friendly hardware needs to be implemented to prevent a significant barrier (for children with disabilities in the UK, disadvantaged schools in New York, the elderly in Portugal and Belgium).

Economy

- Within agriculture, manufacturing an approach which has proved successful is reliance on trusted professionals within excellence centers and digital innovation hubs which support the speedier acceptance of digital solutions via demonstration(e.g., Netherlands).
- Digital literacy solutions should include explanations of "informed consent" and "dynamic consent." (e.g. in healthcare, agriculture and manufacturing). Even for highly educated executives these may be concepts that require further training.
- To bridge the economic gaps and digital divide, various stages of innovation could provide additional value to support upskilling small and medium enterprises in global territories (e.g. Philippines, Bermuda, Myanmar)

Digitalization

- It is important to clearly define digital skills, digital divide and digital literacy, AI literacy, which affect
 education, economic segments, and spheres, to measure and resolve digital skill gaps.
 In addition, to provide the means for keeping up with the changing trends and tools in the marketplace
 and a mechanism for end-users to offer culture specific input.
- Transparency, trust, representation, safety, and security are quite important inputs for international digitalization strategies. When innovating, balance can be achieved through transparency, trust, safety and security, representation, as well as regulatory and strategic frameworks in AI/XR through transdisciplinary expert oversight. It is crucial to emphasize that policies and measures must be introduced and implemented to ensure transparency, trust in AI applications. AI ethics should be seriously dealt with early on in the development phases of AI applications. Data security and privacy issues should be ensured and respected when implementing and running AI applications. In the country level, sovereignty should be respected.
- Digital literacy and awareness together with Green AI should be properly addressed at multiple levels, ideally as early on as high school level, because "Green Literacy" is as important as Digital Literacy, keeping in mind the UN's 17 sustainable development goals. We recommend that efforts need to be taken to ensure that Green Literacy and Digital Literacy should go hand in hand and future initiatives.
- Guardrails need to be included within the realm of fast paced AI proliferation and its integration with social and education frameworks.
- Additional collaboration will have to be established between a variety of education and economic fields to break down silos and to support the implementation of transdisciplinary and innovative digital standards.
- This expanded digitalization must include mitigation solutions in alignment with CODES UN. Educating the end users about the impact of digitalization and engaging them for local innovative solutions. Development of educational programmes to understand the cost of digitalization for the environment(e.g. gamification, social, mass media) and provision of "how to use" frameworks for digital tools, which support sustainability.

• Alternative solutions for lowering and/or removing barriers for digitisation, promoting equity and the provision of balance to all actors and within all stakeholder should be an outcome of UN actions in the coming decade. These may include investment, global digital upskilling, drive sustained outcomes, have a society of intelligently augmented heroes, infrastructure with equal opportunity given to all.

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