All Policies for a Healthy Europe

Improving citizens' well-being

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Empowering Citizens

the key to a successful digital health transformation

All Policies for a Healthy Europe is a multi-stakeholder initiative geared towards **putting people's well-being at the centre of all areas of EU policy-making.** The coalition brings together a diverse group of NGOs, think-tanks, associations, companies, and individuals to support the European Commission's vision for a healthy, climate-neutral and socially inclusive Europe.

All Policies for a Healthy Europe is organised around Working Groups focusing on strategic clusters that reflect the priorities of the European Union: **Environment, Digital** and the **Economy**.

The Digital Working Group is proud to present its 2020 Policy Paper, focusing on empowering citizens to reap the benefits of the digital transformation of health & wellbeing.

The Digital Working Group is chaired by Bleddyn Rees, Deputy Chair of the European Connected Health Alliance (ECHAlliance).

> **"We need to better tie health measures to other linked areas such as the environment, climate, digitalisation, food nutrition and pharmaceuticals."**
>
> **Margaritis Schinas,**
> Vice-President for Promoting the European Way of Life

1. Introduction

The COVID-19 pandemic brought to the fore the untapped potential for the deployment of digital health[2] in Europe.

In its 2020 European Semester review of Member States' health systems, the European Commission pointed at issues with the development and use of digital health services:

> **"with insufficient coordination and cooperation between healthcare providers, and a limited integration of health and social care services."**

Simultaneously, as lockdowns were imposed through Europe, telemedicine helped ensure the continuity of care while keeping patients and healthcare workers safe. The development of new technologies and the use of health data also proved indispensable to better manage health risks and anticipate crises. Public awareness and interest in digital healthcare have now undeniably increased. The coronavirus crisis confronted health systems with the need to embrace long-expected changes and adopt digital health tools.

> **"Digital solutions for health and care can increase the well-being of millions of citizens and radically change the way health and care services are delivered to patients, if designed purposefully and implemented in a cost-effective way."**
>
> – Commission's Communication on the Transformation of Digital Health and Care, April 2018

The emergence of new technologies creates both opportunities and challenges for the development of better healthcare.

In the context of an ageing society, increasing levels of chronic diseases and rising concerns about the sustainability of health systems, digital tools hold significant potential to help identify diseases earlier, create and improve treatments, boost prevention and promote well-being.

However, the digital transformation of healthcare could also exacerbate inequalities. As recently highlighted by the OECD, the people most likely to benefit from digital health tools are also those who are most likely to face difficulties in accessing them. To build a more resilient and fairer Europe, citizens should be given the opportunity to reap the full potential of digital health solutions.

A successful digital health transformation requires empowering citizens[3] to access, understand and trust the benefits that new technologies can bring into their lives.

Only through a wide uptake of digital tools can these solutions significantly improve both the quality of health services and citizens' well-being.

This Policy Paper thus focuses on how the European Union (EU) can ensure that citizens are fully empowered and truly engaged in the development of digital health & well-being tools.

All Policies for a Healthy Europe welcomes the proactive approach taken by the European Commission in shaping Europe's digital future and linking it to health outcomes, notably as an area of action within the EU4Health Programme, as well as through advancing the European Strategy for Data and the deployment of Artificial Intelligence (AI) in healthcare by developing a European Approach on AI. However, more needs to be done to guarantee both optimal use of new technologies and a broad societal engagement in the digital transformation of healthcare. **Citizens' empowerment must be put at the centre of European digital policymaking.**

> **"Well-being should be put at the heart of EU policymaking and digital policies do not make an exception to this principle."**
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> **MEP Alex Agius Saliba (S&D, MT)**
> Well-Being Ambassador of All Policies for a Healthy Europe

This Policy Paper will tackle three key aspects of the digital transformation of healthcare and how they relate to the empowerment of EU citizens; **Digital Skills & Literacy,** the **European Health Data Space** and the development of **Artificial Intelligence (AI).**

II - Policy Recommendations

New technologies and health data will be crucial to improving health outcomes in the European Union.

Digital tools empower citizens to manage their own health, allow healthcare workers to treat patients remotely, improve outcomes, fuel innovation and equip authorities to accurately track public health through data. The COVID-19 pandemic has demonstrated many of the benefits of digital health and has sparked an increasing public demand for efficient tools. Long-term policies are now needed to build on these evolutions and empower citizens to reap the full benefit of the digital transformation of care.

> **"We need more health and digital literacy, more education and information about the benefits of digital health. We have to involve the citizens, especially the patients, in structuring digital health solutions in Europe."**
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>
> **Ms Birgit Bauer,**
> Digital Health Expert & Patient Advocate

All Policies for a Healthy Europe believes that the EU can play a key role in promoting citizens' uptake of digital health by addressing social, technical, legal and organizational barriers, as well as through closer cross-sectoral collaboration with patients, healthcare professionals and the private sector. First, the EU should guarantee that its citizens are equipped with the right **digital skills** to foster public trust and understanding of digital health tools. Second, the creation of a **European Health Data Space** is crucial to effectively leverage data and drive healthcare benefits. Finally, the development of **Artificial Intelligence (AI)** should adapt to the needs of European citizens.

A. Digital Skills & Literacy

To fully benefit from the digital transformation of healthcare, it is key to enhance citizens' understanding of emerging technologies and to foster their trust in, and use of, digital health tools.

Digital education efforts should thus raise healthcare professionals and citizens' awareness of the benefits digital health tools can bring, including the implications of data sharing and AI. In this regard, healthcare workers play a central role in helping patients understand and interact with digital tools. The wider uptake of digital tools can also lead to better access to healthcare by overcoming traditional barriers such as the lack of resources and staffing constraints.[4] The EU should lead the effort to increase digital health skills for both healthcare professionals and citizens.

Innovative digital health tools can help citizens take control and be more empowered to take care of their own health[5]. Digital tools offer preventive, personalised and responsive ways for people to interact with health services. Digital healthcare can thus support a necessary paradigm shift where citizens' well-being and the maintenance of good health is the primary focus rather than disease management and recovery.

> **"The Commission will promote knowledge and skills of citizens, patients and health and care professionals in using digital solutions in collaboration with health professional organisations and academia."**
>
> – Commission's Communication on the Transformation of Digital Health and Care, April 2018

Policies in this respect should include education and communication efforts towards citizens to help earn their trust, educate them and make them aware of the advantages that health data and digital tools can bring to their health & well-being. **The focus should not only be on the potential risks of such new technologies but also on their far-reaching potential to improve the lives of all Europeans.**[6]

All Policies for a Healthy Europe calls on the European Union to:

i. **Include a focus on digital health literacy in the Digital Education Action Plan** to promote the development of skills needed for the effective use of digital health tools by citizens, notably the ability to interact with new technologies, to access health information, data literacy, and the understanding of emerging digital technologies such as AI.

ii. **Promote closer collaboration with key healthcare and cross-sectorial stakeholders to develop online learning resources on digital skills and health literacy,** including patients, healthcare professionals, schools, and the private sector .

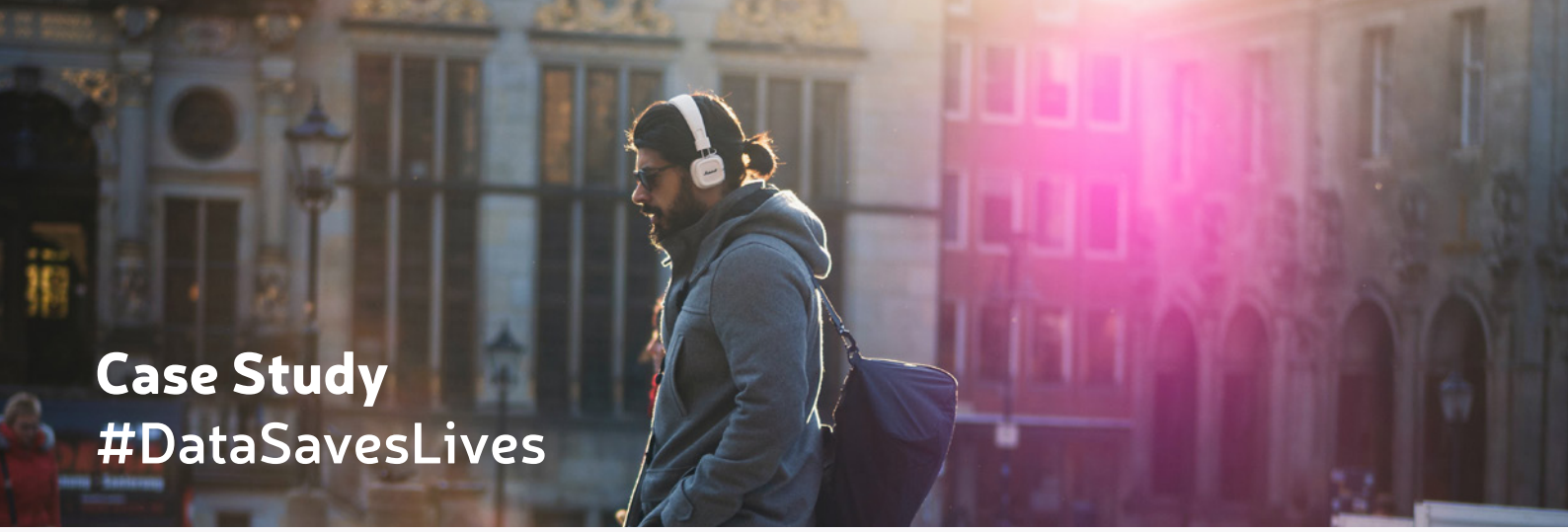
iii. **Review and transform health and care professionals' curricula to include greater knowledge on digital health,** data sciences and emerging technologies, together with Member States and European universities. Healthcare professionals have a key role to play to optimise the use of digital technologies and clearly communicate to patients their rights and the implications of tools such as data sharing and AI. Increasing the digital health education of healthcare professionals would avoid putting an excessive burden on citizens whilst ensuring access to accurate information for all.

iv. **Encourage the development of specific curricula and life-long training programs for key stakeholders,** such as data scientists, IT professionals in health and care, as well as patients representatives and organisations, in order to help bridge the gap between new technologies and societal needs, as well as champion the benefits of digital health. Targeted attention should be given to the availability of continuing education opportunities for both the permanent and flexible healthcare workforce.

v. **Build citizens' trust and demonstrate the societal benefits of digital tools for healthcare.** The value of digital health should be illustrated through communication efforts around visible success stories where data sharing and new technologies have improved health outcomes and research efforts. A first step could be to devise clear, shared and accessible definitions of digital health and care tools in all EU languages, including definitions of health data, AI technology or Electronic Health Records.

vi. **Explore and promote innovative models for data altruism,** in compliance with the GDPR, to encourage citizens to easily enable their data to be used for beneficial research purposes. Such efforts would also contribute to communicating the objectives and advantages of data sharing.

vii. **Help bridge health inequalities through the development of digital tools.** Together with the Member States, the EU should invest in digital health and disseminate best practices to help citizens, notably Europeans living in remote areas, disadvantaged socio-economic groups and elderly citizens, to benefit from the digital transformation of health. A successful example of European collaboration on this issue are the European Reference Networks (ERNs) projects through which citizens in rural areas can access the best experts on rare diseases in Europe.



Case Study
#DataSavesLives

Data Saves Lives is a multi-stakeholder initiative with the aim of raising wider patient and public awareness about the importance of health data, improving understanding of how it is used and establishing a trusted environment for multi-stakeholder dialogue about responsible use and good practices across Europe. Led by the European Patients' Forum (EPF) and the European Institute for Innovation through Health Data (i~HD), Data Saves Lives has launched a web portal, sharing relevant information and best practice examples about the use of health data and generating easy-to-use materials about the basic concept related to data sharing, the data journey and the safeguards in place.

Data Saves Lives features easy-to-access case studies, such as a 2016 Taiwanese research undertaken to improve medical and research understanding of which diseases are most likely to occur in patients with cancer. The data provided to the research team was fully anonymised and accumulated for millions of patients, to highlight the disease associations that occur most often. The results were used to create a system called the Cancer Associations Map Animation (CAMA). Patients with cancers benefit from this development as their clinicians can be more easily aware of which other diseases a patient might be at risk of, seek to detect those early or possibly to avoid them occurring.

> **"Personalised medicine will better respond to the patients' needs by enabling doctors to take data-enabled decisions. This will make it possible to tailor the right therapeutic strategy to the needs of the right person at the right time, and/or to determine the predisposition to disease and/or to deliver timely and targeted prevention."**
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> Commission's Communication on a European Strategy for Data,
> February 2020

B. European Health Data Space

Health data is a key enabler for the digital transformation of healthcare[8].

The rapidly expanding corpus of health data holds clear potential to improve citizens' health as well as care systems. However, leveraging health data is faced with the double challenge of balancing citizens' need for privacy and security with regulatory frameworks that promote research, innovation and patient empowerment through the use of personal health data. Additional technical challenges relate to data quality and the interoperability of health data systems, not only at cross-border level but also at national and local level. Most patient data are now siloed in disparate systems such as hospitals, clinics and laboratories, which are often not interoperable and do not meet the same quality standards.

> **We are planning a legislative initiative on the European Health Data Space, which aims at strengthening the use of data for healthcare. The idea is to strengthen interoperability and portability.**
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>
> **Ms Ioana-Maria Gligor**
> Head of Unit, European Reference Networks and Digital Health, DG SANTE

> **The pandemic has demonstrated the complete failure by countries to properly prepare for a pandemic.**
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> **We to have to realize the need for data exchanges and collaboration between Member States. It cannot have been more starkly demonstrated.**
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> **Mr Bleddyn Rees**
> Deputy Chair of the European Connected Health Alliance - Chair of the Digital Working Group of *All Policies for a Healthy Europe*

The COVID-19 crisis has clearly shown the current lack of unity, coordination, scale and interoperability among European health systems. It has also shed light on the benefits that better sharing and use of health data can bring to healthcare in the EU. Due in part to the pandemic, citizens are now becoming more aware than ever before of the benefits of health data sharing. The time is right to create a trustworthy **European Health Data Space (EHDS)**, with citizens' needs placed at its centre.

All Policies for a Healthy Europe calls on the European Union to:

i. **Rapidly create a European Health Data Space to facilitate health data exchanges and strengthen cooperation across Member States,** in line with F.A.I.R[9] principles and through federated data models. The EHDS should effectively enable value-based approaches to health as well as to help promote a research environment fit for innovation. We therefore support the launch of the 'Joint Action for the European Health Data Space' set up to help the Members States and the Commission facilitate the sharing of health data for public health, treatment, research and innovation in Europe. Similarly, we call for further deployment of the eHealth Digital Service Infrastructure (eHDSI).

ii. **Facilitate greater trust that increased health data sharing remains in full compliance with the GDPR by encouraging Member States to better align through an EU Code of Conduct**[10] on the primary and secondary use of health data, in order to stimulate research and enable data-driven healthcare for citizen benefits while protecting their privacy[11]. Consistent GDPR interpretation across Member States is needed to provide clarity and certainty for every stakeholder in the European health data ecosystem.

iii. **Promote interoperability of health data systems through the further development of common interoperability standards,** building on the 2019 European Commission's Recommendation On Electronic Health Record Exchange Format with recommended technical specifications based on open, international standards[12]. The use of transparent global standards would also further promote citizens' trust in the safety, security and appropriate use of health data.

> **"A Common European health data space, [...]is essential for advances in preventing, detecting and curing diseases as well as for informed, evidence-based decisions to improve the accessibility, effectiveness and sustainability of the healthcare systems."**
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> Commission's Communication on a European Strategy for Data,
> February 2020

iv. **Advance the development of digital infrastructures and facilities for citizens to access, manage and share their health data,** such as Electronic Health Record systems, while ensuring the portability of their health data within and across borders. Patients and citizens require better access to their own health data and the option to share them with healthcare professionals[13]. Equal access to broadband across Europe is therefore needed to ensure the availability of such services to all citizens.

v. **Allow EU citizens, patients, carers and healthcare professionals to contribute to the policy agenda** towards a more interoperable and empowering digital health ecosystem, through targeted surveys and representations opportunities such as an Observatory on digital health, allowing citizens and experts to provide real-time feedback on the EU digital health policies.

Case Study
Member States-based Initiatives

Finland – Creation of a data permit authority:
Findata promotes secondary use of health and social data, facilitates data permit processing and improves data protection for individuals. Findata operates within the National institute for health and welfare, but as a separate entity. The main task of Findata is to collect, and co-ordinate data received from different registers and provide services related to data utilization and knowledge. Its services include managing the request processes; obtaining the required data from different registries; combining the data with personal IDs; pseudonymization and anonymization; aggregation of the data and transfer of the data to a safe and secure environment[14].

Sweden - Improving patient engagement:
Cloud-based systems can enable healthcare professionals to interact with patients more easily in remote or under-served areas. This can lead to better treatment outcomes by enabling faster and more frequent patient assessment, counselling and follow-up. In Sweden, for example, Nordic Health Innovation, Sigma IT Consulting, Microsoft, Ericsson and Cambio are using the cloud to build self-service "virtual care rooms." These are capable of ensuring that patients in remote areas are looked after even though in person medical care is unavailable, by connecting them with carers via video link.[15]

The Netherlands – Creation of a national portal for data exchange: In cooperation with Erasmus Medical Center (Rotterdam, The Netherlands), Jeroen Bosch Hospital ('s-Hertogenbosch, the Netherlands) and the Netherlands Ministry of Health, Welfare and Sport (VWS), Philips created an online portal that allows Dutch hospitals to seamlessly share COVID-19 patient information with one another. In the fight against an escalating pandemic like COVID-19, being able to share patient data between hospitals at the 'touch of a button' is vitally important to optimizing the use of healthcare resources. It can, for example, assist in the seamless transfer of infected patients between hospitals to avoid local overload in critical care units. Since its launch on March 28, 95% of Dutch hospitals have already been connected to the portal for digital exchange of COVID-19 patient data.[16]

Ireland – Specialized regulations on health research: the Irish government adopted specialized regulations on health research, which include a broad definition of which activities falls into that category, and which enforce a range of safeguards on health data processing, including prior approvals by research ethics committees and compulsory data protection training for researchers[17].

EU – European Health Data & Evidence Network (EHDEN): this project under IMI runs from 2018-2024 and aspires to be the trusted observational research ecosystem to enable better health decisions, outcomes and care. Its mission is to provide a new paradigm for the discovery and analysis of health data in Europe by building a large-scale, federated network of data sources standardised to a common data model, OMOP. In effect, it is building a network of "railway tracks" on which different healthcare and research users can run their analyses on a large collection of data sources. A key challenge it is tackling is harmonising data from technical and process standpoints, using OMOP. EHDEN has so far had two calls for SMEs to learn how to map data to OMOP and become certified. There is also an open call for data partners, who can qualify for a grant of up to €100,000 to harmonise their data and make it available on the network, according to a Code of Conduct. Data partners may themselves be users of the network to run studies. The EHDEN Academy is free to join, and offers e-learning resources about EHDEN, the OMOP common data model and how to use the available tools to conduct federated query studies. Several research use cases have been pursued including on COVID-19. The EHDEN Academy will help to sustain this initiative post-project, and there are open conversations with the European Commission about how EHDEN can connect with the EHDS, and with the EMA on an interface with DARWIN.[18]

C. Artificial Intelligence (AI)

AI has the potential to improve people's lives from prevention through diagnosis to treatment, home care and public health management.[19]

Building on the analysis of large representative and interpretable health data sets, AI holds incredible potential in the field of healthcare. AI can help make more accurate medical analyses, determine more efficient treatments and improve patients' experiences by adapting to their needs and preferences. AI tools also have the potential to facilitate care beyond hospitals' walls, for instance by detecting warning signs, allowing access to personalised care and improving the quality of life of patients with chronic diseases[20]. **It is estimated that AI-powered medical technologies could save up to 400 000 lives every year, save about 200 billion euros, and free an average of 1.8 billion hours for healthcare professionals**[21].

> **"Artificial Intelligence is developing fast. It will change our lives by improving healthcare, e.g. making diagnosis more precise and enabling better prevention of diseases."**
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> –
>
> White Paper on Artificial Intelligence, February 2020

> **"In Europe we have top-notch research and federated machine learning. We should communicate to all places in society in order to bring AI closer to the people."**
>
> –
>
> **Ms Martine Lewi**
> Director Health Information Sciences - Janssen, Johnson & Johnson

AI can alleviate the burden off the overstretched healthcare systems and more particularly improve the management of health crises and pandemics through effective analysis of health risks. **Although the potential benefits of AI in healthcare are increasingly clear, the deployment of AI technologies faces many challenges including trust and privacy, bias, data access, data silos, as well as social, infrastructure, technical, skills, legal and ethical questions.**

To ensure that the development of AI tools is ethically and responsibly improving healthcare delivery and citizens' well-being, a multi-stakeholder approach is key. Engaging and empowering citizens, patients, healthcare professionals and the private sector will guarantee a sustainable, dynamic and flexible AI deployment. The development of AI in the EU needs the continuous involvement of stakeholders such as patients organisations **to co-design of AI solutions. Citizens' engagement would be to key to improve knowledge of AI, which appears to be mainly basic or inexistent amongst patients in the EU at the moment**[22].

All Policies for a Healthy Europe calls on the European Union to:

i. **Explore and invest in research to enable explainability of AI,** to ensure that healthcare professionals and citizens sufficiently understand AI technologies so they can be deployed efficiently and safely. Intelligibility involves transparency regarding the inputs used, easily accessible 'basic' knowledge of how AI systems reach their outcomes and how these results are validated and interpreted by professionals, as well as teaching users about the benefits and limitations of AI technology[23].

ii. **Facilitate development, experimentation, integration and adoption of AI in healthcare systems** through public funding, sector dialogues and the support of public procurement of AI systems, as announced in the White Paper on Artificial Intelligence.

iii. Recommend the use of the ethics guidelines for trustworthy AI developed by the High-Level Expert Group (HLEG) on AI, based on oversight, robustness, fairness and transparency. In particular, these guidelines should be fit for purpose for AI in healthcare scenarios.

iv. **Build on existing and emerging regulatory frameworks** to ensure safe and reliable use of AI in healthcare, focusing on operationalizing the HLEG"s 'trustworthy AI' principles, notably by incentivizing relevant stakeholders to adopt robust internal governance standards and procedures, also by providing legal certainty across sectors in order to encourage innovation and make it more accessible to citizens.

v. **Support the development of tools that empower all relevant stakeholders to identify relevant risks as early as possible and help mitigate them,** including mitigation steps, the adoption of escalation processes and trainings for those involved in the development of AI systems, building on frameworks such as the MDR/IVDR regulations.

vi. **Ensure that the healthcare workforce and patients are equipped with the right skills to maximise the potential of AI,** notably by providing reskilling and continuous learning opportunities required to embrace fast-paced technological developments[24].

> **"In Denmark, AI is helping save lives by allowing emergency services to diagnose cardiac arrests or other conditions based on the sound of a caller's voice. In Austria, it is helping radiologists detect tumours more accurately by instantly comparing xrays with a large amount of other medical data."**
>
> – Artificial Intelligence for Europe, April 2018

Case Study
Private sector initiatives

IntelliSpace Portal, developed by Philips – A comprehensive, advanced data integration, visualization, and analysis platform to enhance diagnostic confidence. It combines clinical data from various modalities using AI to enhance clinical workflows. The latest iteration features machine learning capabilities to automatically learn from prior application usage to predict the series and data type on which pre-processing should be applied. Healthcare professionals remain in control of diagnostic decision-making.[25]

ATHENA Project (Augmenting Therapeutic Effectiveness through Novel Analytics), coordinated by Janssen and conducted in partnership with the Universities of Leuven and Ghent, IMEC, Robovision, Inovigate as well as several other hospital partners and small & medium sized companies - "Improving health insights and treatment choices by applying distributed machine learning across combined Omics and Non-Omics (OnO) patient level data" – The project aims at deploying machine learning methods across a distributed and multi-dimensional data set to provide input to key clinical and research questions in two cancer types, bladder cancer and multiple myeloma. In this innovative data science project, the data remains local, under governance of the data custodian (hospital) and "the analysis is brought to the data". Only query results will go back to a central location and no patient level data leaves the hospital. The AI system supports research organisations and biomedical companies to analyse the data to advance medical science, for the development of new treatments and to accelerate clinical research. Through this approach novel patient insights can be generated, e.g. for better stratifying patients in these two cancer types with regards to their predicted response to treatment. The project therefore fits with the overall goal of "personalised medicine".

III - Conclusion

Digital health tools constitute a clear opportunity to strengthen and scale up health promotion, disease prevention, diagnosis, management, rehabilitation and palliative care in the EU. Digital health can radically change health outcomes if it is sufficiently supported.

> **We are almost there – a lot of initiatives have proven useful but remain small. We need to create scale to bring the benefits of these initiatives to a much larger population with higher impact.**
>
> –
>
> Mr Bert Verdonck,
> Business Leader at Philips - Population Health Management

Now more than ever, it is time to consolidate the progress achieved and focus on scaling up the impact of the many digital health solutions that have already proved beneficial to European citizens.

Only through a wide uptake can these solutions significantly improve both health systems and citizens' well-being.

All Policies for a Healthy Europe therefore calls on the EU to accelerate the development and adoption of appropriate, accessible, affordable, scalable and sustainable people-centric digital health solutions. We stand ready to collaborate with all EU institutions to empower citizens to access, understand and trust the benefits of digital health tools.

References

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2. A 'Digital Health Glossary' is available in the Annex at the end of this Policy Paper.
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Note: The quotes featured in this paper are taken from the Virtual Roundtable Event (Zero-Pollution Ambition: Prioritising citizens' health & well-being) organised by the *All Policies for a Healthy Europe* initiative, which took place on 29 June 2020.

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All Policies for a Healthy Europe
Improving citizens' well-being

Digital Health Glossary

Digital Health

The field of knowledge and practice associated with the development and use of digital technologies to improve health. Digital health comprises the concept of eHealth, defined as the cost-effective and secure use of information and communications technologies in support of health and health-related fields, including health care services, health surveillance, health literature, and health education, knowledge and research. Digital health expands eHealth to include digital consumers, with a wider range of smart-devices and connected equipment. It also encompasses other uses of digital technologies for health such as the Internet of things, artificial intelligence, big data and robotics.

Telemedicine

The delivery of health care services, where distance is a critical factor, by all health-care professionals using information and communications technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and the continuing education of healthcare workers, with the aim of advancing the health of individuals and communities.

Digital Health Literacy

Citizens' ability to seek, find, understand, and appraise health information from electronic sources and apply the knowledge gained to preventing, addressing or solving a health problem. This empowers people to look after their health, stimulating prevention, and enabling feedback and interaction between users and healthcare providers.

Health Data

The systematic application of information and communications technologies, computer science, and data to support informed decision-making by individuals, the health workforce, and health systems, to strengthen resilience to disease and improve health and wellness. It Includes all data pertaining to the health status of a data subject which reveal information relating to the past, current or future physical or mental health status of the data subject. This includes information about the natural person collected in the course of the registration for, or the provision of, health care services to that natural person; a number, symbol or particular assigned to a natural person to uniquely identify the natural person for health purposes.

Artificial Intelligence

Systems that display intelligent behaviour by analysing their environment and taking actions – with some degree of autonomy – to achieve specific goals. AI-based systems can be purely software-based, acting in the virtual world (e.g. voice assistants, image analysis software, search engines, speech and face recognition systems) or AI can be embedded in hardware devices (e.g. advanced robots, autonomous cars, drones or Internet of Things applications).

Interoperability

The ability of different applications to access, exchange, integrate and cooperatively use data in a coordinated manner through the use of shared application interfaces and standards, within and across organizational, regional and national boundaries, to provide timely and seamless portability of information and optimize health outcomes.

Sources:

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