Digital Health and Artificial Intelligence in the European Market

Ceri Thompson, DrPH

Deputy Head of Unit eHealth, Well-being and Ageing

DG Communications Networks, Content and Technology (DG CONNECT)

Trust in a Digital Society

bit.ly/ECdigitalsociety

Digital Single Market Strategy

*The European Commission has **placed digital at the core of its strategy**, by setting the Digital Single Market as **one of its 10 priorities***

*The aim is to **open up digital opportunities** for people and business and to make the EU's single market **fit for the digital age***

Digital Single Market /// Mid-Term Review
- ✓ 16 key initiatives
- ✓ 35 proposals
- ✓ Further actions on:
  - data economy
  - cybersecurity
  - online platforms
  & more

One of the fields identified to deliver: "Digital transformation of health and care"

Health Priorities in the Digital Single Market Strategy

Digital transformation of Health and Care in the Digital Single Market

Give citizens **better access** to their **health data**, everywhere in the EU

Use **digital** services for citizen empowerment and person-centred care

Connect and share health data for research, faster diagnosis and better health outcomes

YOUR HEALTH DATA

Digital Health and Care

TRANSFORMATION OF HEALTH AND CARE IN THE DIGITAL SINGLE MARKET – Harnessing the potential of data to empower citizens and build a healthier society

European health challenges

- Ageing population and chronic diseases putting pressure on health budgets
- Unequal quality and access to healthcare services
- Shortage of health professionals

Potential of digital applications and data to improve health

- Efficient and integrated healthcare systems
- Personalised health research, diagnosis and treatment
- Prevention and citizen-centred health services

What EU citizens expect...

90% agree
To access their own health data
(requiring interoperable and quality health data)

80% agree
To share their health data
(if privacy and security are ensured)

80% agree
To provide feedback on quality of treatments

Support European Commission:

1 Secure access and exchange of health data

Ambition:
Citizens securely access their health data and health providers (doctors, pharmacies...) can exchange them across the EU.

Actions:
- eHealth Digital Service Infrastructure will deliver initial cross-border services (patient summaries and ePrescriptions) and cooperation between participating countries will be strengthened.
- Proposals to extend scope of eHealth cross-border services to additional cases, e.g. full electronic health records.
- Recommended exchange format for interoperability of existing electronic health records in Europe.

2 Health data pooled for research and personalised medicine

Ambition:
Shared health resources (data, infrastructure, expertise...) allowing targeted and faster research, diagnosis and treatment.

Actions:
- Voluntary collaboration mechanisms for health research and clinical practice (starting with "one million genomes by 2022" target).
- Specifications for secure access and exchange of health data.
- Pilot actions on rare diseases, infectious diseases and impact data.

3 Digital tools and data for citizen empowerment and person-centred healthcare

Ambition:
Citizens can monitor their health, adapt their lifestyle and interact with their doctors and carers (receiving and providing feedback).
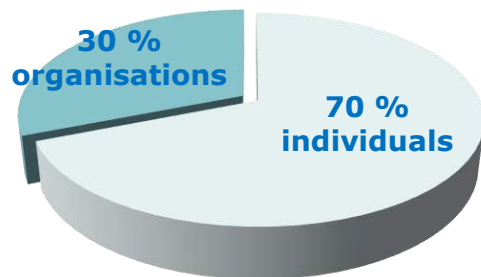
Actions:
- Facilitate supply of innovative digital-based solutions for health, also by SMEs, with common principles and certification.
- Support demand uptake of innovative digital-based solutions for health, notably by healthcare authorities and providers, with exchange of practices and technical assistance.
- Mobilise more efficiently public funding for innovative digital-based solutions for health, including EU funding.

European Commission

Updated 24/04/2018

#DigitalSingleMarket   #DigitalHealth   @eHealth_EU   @EU_Health

Giving citizens better access to their health data

- *The eHealth Digital Service Infrastructure (eHDSI) enables exchange of patient data across borders*

- *Recommendation on a European Electronic Health Record exchange format – cross border interoperability*

Pooling health data for research and personalised medicine

- *Pool, inter-connect and exploit health data*

- *Genomics Declaration*

- *European health data space*

Towards access to at least one million genomes in the EU by 2022

Austria
Bulgaria
Croatia
Cyprus
Czech Republic
Estonia
Finland
Greece
Hungary
Italy
Lithuania
Luxembourg
Malta
Portugal
Slovenia
Spain
Sweden
Netherlands
UK
Latvia

Standards in place for sequencing, alignment, quality control and storage

In most cases there are standards for interpretation of DNA sequences

Interoperability standards often deployed for data exchange

Digital tools to foster citizen empowerment and person-centred care

- *Deployment of digital services, capacity building*
- *Common principles for validation and certification*
- *Mobilise investments*

Communication Artificial Intelligence for Europe

(1) Boost EU's technology and industrial capacity and AI uptake

(2) Address AI's socioeconomic impact

(3) Ensure an appropriate ethical and legal framework

COM(2018) 237 final

Around **€2.6 billion**
over the duration of Horizon 2020
on AI-related areas
(robotics, big data, health, transport,
future and emerging technologies).

Opportunities of artificial intelligence for health and care

- *Empower citizens to better manage their health*

- *Enable faster and more accurate diagnoses*

- *Support clinicians in taking informed decisions*

- *Allow for more precise treatments and personalized medicine*

- *Improve drug testing and clinical trials– improve patient safety*

- *Provide cost-effective solutions*

Key challenges

- **Transparency and accountability** – explain AI, mitigate bias, increase trust

- **Data protection and security** – consent, protect sensitive data

- **Safety and liability** – ensure data quality, increase reliability, sort out responsibilities

- **Ethics and governance** – ensure privacy and adequate management of data and processes

- **Expertise and digital skills** – train workforce and digital literacy

EC funding for AI-based research projects in health and care

- *Modelling and prediction of disease and in-silico clinical trials*

- *Decision Support Systems for diagnostics and treatments*

- *Intelligent health and care advice systems (choice of drugs, devices, procedures, interventions, diagnostics methods, etc.)*

- *AI-based solutions for independent living*

HORIZON 2020

Horizon Europe – ongoing topics

- **DT-TDS-05-2020: AI for Health Imaging** - *large interoperable repository of health images for developing &, testing of AI solutions to improve cancer diagnosis, disease prediction and follow-up.*

- **DT-TDS-04-2020: AI for Genomics and Personalised Medicine** - *AI solutions for clinical research and decision-making based on linking distributed genomics repositories across Europe*

HORIZON 2020

HLEG-AI
Guidelines for Trustworthy AI

- *Seven key requirements*
    - *Human agency and oversight*
    - *Technical robustness and safety*
    - *Privacy and data governance*
    - *Transparency*
    - *Diversity, non-discrimination and fairness*
    - *Societal and environmental well-being;*
    - *Accountability*

- *Assessment list - piloting phase*

EU contribution

- **Research & innovation** – *H2020, CEF, Horizon Europe, DEP*

- **Support data infrastructure** – *cross-border interoperability and data pooling for research*

- **Legislative Framework** – *links with data protection, liability, safety of medical devices*

- **AI ethics -** *trustworthy AI*

Conclusions

- *AI is an area of strategic importance for Europe*

- *AI-based solutions can speed up the digital transformation of health and care in Europe*

- *The Commission supports AI solutions for health in care through research, shared data infrastructure and legislative frameworks*

- *Multi-stakeholder approach*

THANK YOU!

Twitter: @eHealth_EU

Facebook: EU.ehealth

Newsletter

'eHealth, Wellbeing & Ageing'

bit.ly/eHealthinFocus