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Monday 02 Sept. 2019

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WORLD HEART FEDERATION

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Artificial Intelligence in Healthcare

Nicole Denjoy
COCIR Secretary General

Overview

- About COCIR
- AI in Healthcare: myth or reality?
- COCIR AI in Healthcare
- European approach on AI
- Towards a global framework
- Conclusions

About COCIR

Presenting COCIR

COCIR is a European non-profit trade association representing the medical technology industry in Europe, covering 4 key industry sectors:

Medical Imaging | Radiotherapy | Health ICT | Electromedical

Companies
34

NTAs
13

VALUE BASED HEALTHCARE	Making healthcare systems financially sustainable demands a shift to a value based approach. To provide genuine value based care requires patient-centric approaches using integrated care pathways. It works by measuring both cost of intervention and quality of outcomes.
DIGITAL HEALTH	COCIR members develop innovative Digital Health solutions that have the potential to increase access to healthcare, improve the quality and safety of healthcare products and services while driving cost efficiency.

WWW.COCIR.ORG

AI in Healthcare: myth or reality?

"Artificial Intelligence (AI) *refers to systems that display intelligent behavior by analysing their environment and taking actions – with some degree of autonomy – to achieve specific goals"*

Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions on Artificial Intelligence for Europe, Brussels, 25.4.2018 COM(2018) 237 final

Artificial Intelligence in Healthcare

Artificial Intelligence in Healthcare is an essential tool – a companion – that supports the healthcare professional throughout the clinical pathway

- Big data analysis

- Pattern recognition and modeling

- Automating tasks

- Providing clinical decision support

As any other tool it should be efficiently integrated into the workflow and healthcare professionals should clearly understand how and when to use.
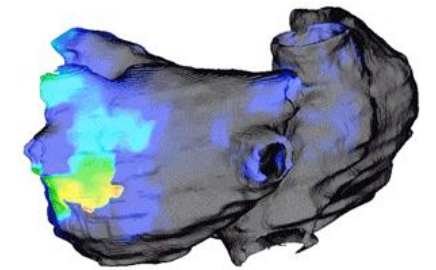
Artificial Intelligence in Healthcare

Artificial Intelligence in Healthcare is already a reality

[Computationally guided personalized targeted ablation of persistent atrial fibrillation](#)
Patrick M. Boyle *et al*
Nature, Biomedical Engineering, 19 August 2019

[An artificial intelligence-enabled ECG algorithm for the identification of patients with atrial fibrillation during sinus rhythm: a retrospective analysis of outcome prediction](#)
Zachi I Attia, MS *et al*
The Lancet, 01 August 2019

[Artificial Intelligence: a new clinical support tool for stress echocardiography](#)
Maryam Alsharqi, Ross Upton, Angela Mumith & Paul Leeson
Expert Review of Medical Devices, Volume 15, 2018 – Issue 8, 19 July 2018

COCIR AI in Healthcare

COCIR AI in Healthcare

- Dedicated AI in Health Task Force

- Partner of AI4People

- Member of the European AI Alliance Platform

- April 2019 - General Assembly Open Session

- April 2019 - White Paper "Artificial Intelligence in Healthcare"

7 key challenges that need to be tackled to increase development and deployment of artificial intelligence

in order to achieve better outcomes on the **patient** level, the level of the **healthcare providers and professionals**, and **society** at large

Wheel diagram segments: Build Awareness, Access to Data, Go-To Market, Use Cases, Legal matters, Regulatory & Technical matters, Ethical framework

COCIR AI in Healthcare

Activities in the upcoming months

- Review and publication of COCIR AI use cases

- Piloting the [Ethics Guidelines on Trustworthy AI](#)

- Contributing to the AI4People activities on Governance of AI

- Clarification on the technical regulations with regard to continuous learning systems

- Exploring models to facilitate better access to data

- Monitoring possible regulatory initiatives from the European Commission on Artificial Intelligence

- Following up on Horizon 2020 project on [AI for Health Imaging](#)

European approach on AI

Europe playing catch-up

April 2018 – European approach on Artificial Intelligence to 1)**boost the EU's competitiveness** and 2)**ensure trust based on European values**

- Being ahead of technological developments and encouraging uptake by public and private sector
- Prepare for socio-economic changes
- Ensure ethical and legal framework

AI Ranking, absolute metrics

Category	China	European Union	United States
Talent	3	2	1
Research	3	2	1
Development	3	2	1
Adoption	1	2	3
Data	1	3	2
Hardware	2	3	1

Source: "Who Is Winning the AI Race: China, the EU or the United States?", Daniel Castro, Michael McLaughlin and Eline Chivot (Center for Data Innovation, 19 August 2019)

December 2018 – Coordinated plan on Artificial Intelligence

- Action for more efficient cooperation between Member States
- Four key areas: increasing investment, making more data available, fostering talent and ensuring trust
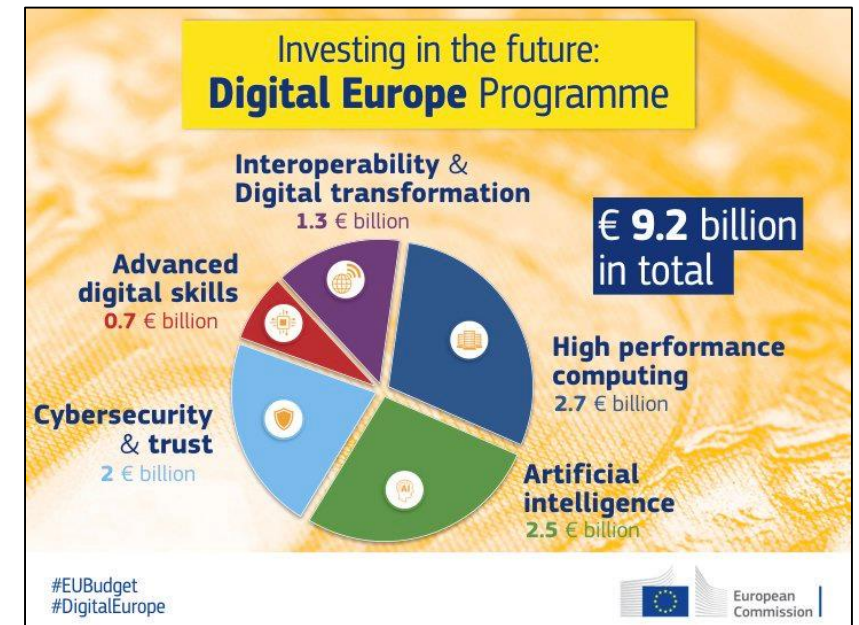
1)Boost the EU's competitiveness

- Horizon 2020 – Call for proposal AI for Health Imaging

- Digital Europe programme Proposed €9.2 billion EU funding for 2021-2027

Investing in the future: **Digital Europe** Programme

Interoperability & Digital transformation
1.3 € billion

Advanced digital skills
0.7 € billion

Cybersecurity & trust
2 € billion

€ 9.2 billion in total

High performance computing
2.7 € billion

Artificial intelligence
2.5 € billion

#EUBudget
#DigitalEurope

European Commission

€2.5 billion for artificial intelligence to:

Invest in and open up the use of artificial intelligence by businesses and public administrations

Facilitate safe access to and storage of large sets of data and algorithms

Strengthen and support existing artificial intelligence testing and experimentation facilities in areas such as health and mobility in Member States and encourage their cooperation

2)Ensure trust based on European values

- April 2019 - [Ethics Guidelines for Trustworthy AI](#)

- Principles
  - Respect for human autonomy
  - Prevention of harm
  - Fairness
  - Explicability

"Data and AI are the ingredients for innovation that can help us to find solutions to societal challenges, from health to farming, from security to manufacturing.

In my first 100 days in office, I will put forward legislation for a coordinated European approach on the human and ethical implications of Artificial Intelligence."

Ursula von der Leyen, European Commission president-elect

3) Ensure safety of AI-based medical devices

- AI-based medical software is regulated by [Medical Device Regulation](#)

- MHRA, supported by BSI and AAMI, identified aspects in need of further clarification in [2019 position paper](#)

- Discussion on possible initiative on AI in the framework of the MDR currently on-going in [New & Emerging Technologies Expert Group](#)

The emergence of artificial intelligence and machine learning algorithms in healthcare: Recommendations to support governance and regulation

Position paper
Prepared by BSI and AAMI

bsi.   MHRA   AAMI

Towards a global framework

Towards a global framework

- Discussions taking place on international level
  - Technical discussions
    - Regulators level (IMDRF)
    - Standardisation level (WHO/ITU-T)
  - Ethical discussions
    - G7 International Panel on Artificial Intelligence (led by Canada and France), 16 May 2019
    - OECD Principles on Artificial Intelligence, 22 May 2019
    - G20 AI Principles, 9 June 2019

Conclusions

Conclusions

- Artificial Intelligence in Healthcare is already a reality today

- As any other tool it should be efficiently integrated into the workflow and effectively being used by the healthcare professional

- Europe will increasingly invest money and resources to increase the uptake of artificial intelligence

- In the longer term we hopefully should see a convergence at global level on the technical and ethical issues related to artificial intelligence

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Thank you !

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