

AI in healthcare – the medtech perspective

The 2020 Techmed event, 28 October 2020
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Agenda

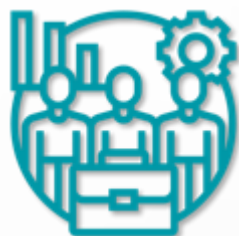
- About MedTech Europe
- Socio economic impact of AI on European health systems
- Conclusion: barriers and recommendations
- Q&A

About MedTech Europe

The European trade association for the medical technology industry including diagnostics, medical devices and digital health.



OUR MEMBERS



130+ multinational corporations*



50+ medical technology associations

The MedTech Industry in Europe



€ 115
billion market



675,000+
employees



50,000+
In vitro diagnostic tests



500,000+
Medical devices



27,000+
Companies of which
95% are SMEs



#1
In filing patent applications **12%**
more than computer technology
industries and **double** the
pharmaceutical industry

Medical Devices (MDs)

What are MDs?

- They are products, services or solutions that prevent, diagnose, monitor, treat and care for human beings.
- They are innovative engineered technologies available to hospitals, physicians and patients.

Why are they useful?

- They save lives, replace & restore body functions, prevent diseases development, monitor patients' conditions and equip health institutions and home.

Examples of medical devices

- Hospital beds, mattresses, sheets
- Surgical tools, gloves, tables
- Bandages
- Wheelchairs
- Surgical robots
- Pacemakers, defibrillators, stents
- Artificial hip, knee, legs.
- Eye lenses
- Hearing aids



In Vitro Diagnostics (IVDs)

What are IVDs?

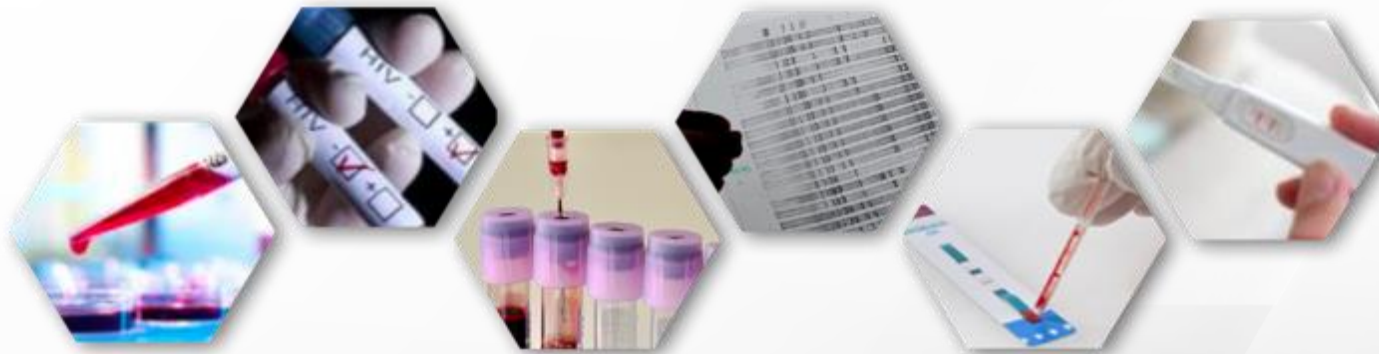
- IVDs are devices that provide diagnostic information by examination of a specimen derived from the human body.
- Specimens include blood, urine, tissue

Why are they useful?

- Major source of information to determine the healthcare pathway
- They also monitor, screen, manage and assess predispositions to diseases

Examples of IVDs

- Pregnancy tests
- Blood glucose monitoring
- HIV tests
- Cancer screenings
- Blood type identification
- TB testing
- DNA genotyping & analysis
- Companion diagnostics



Socio-economic impact of AI





The socio-economic impact of AI in European health systems

October 2020

Introduction

Context

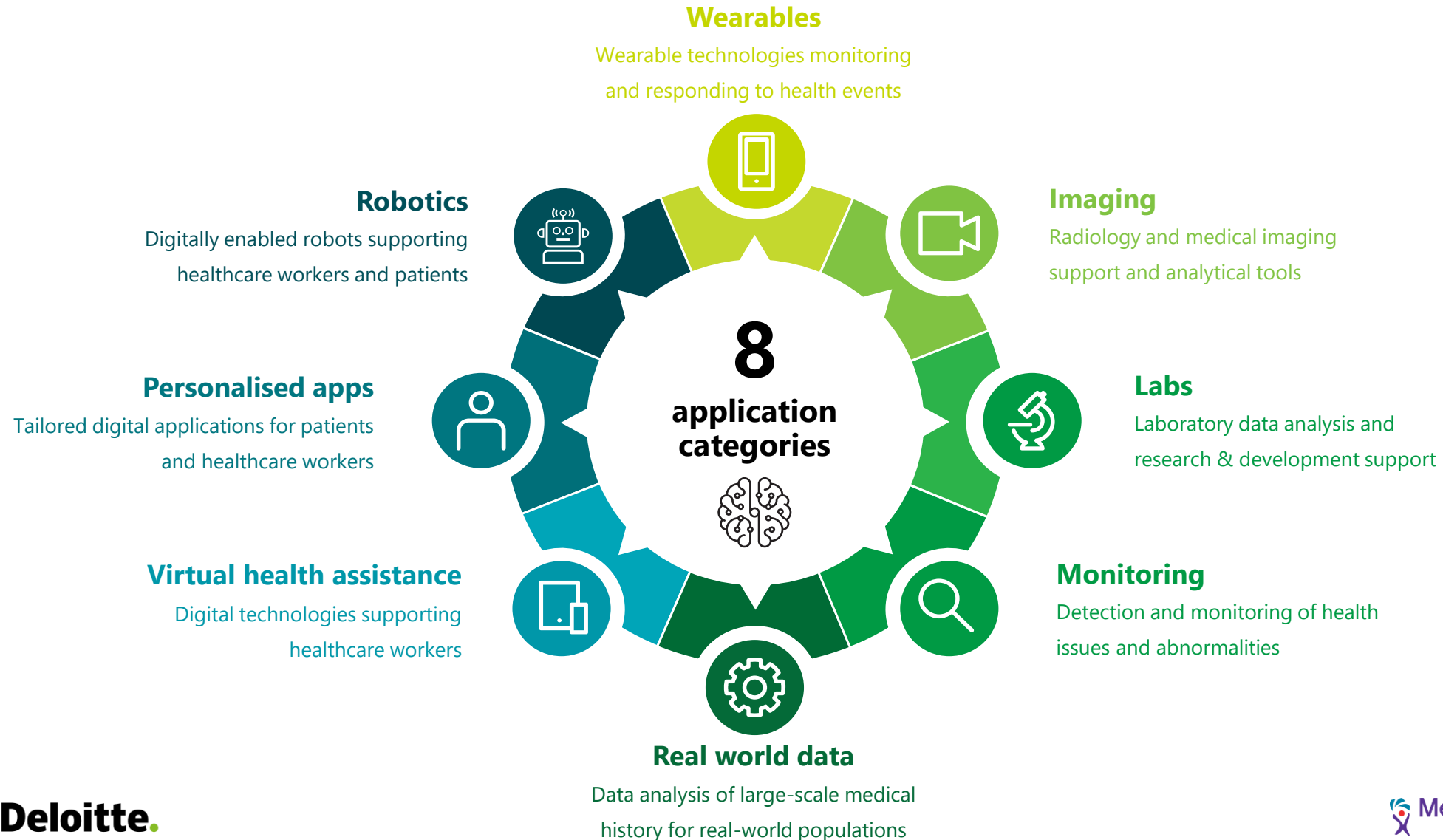
- Evolving technologies such as AI have the potential to **assist European health systems** in responding to some major challenges they face
- AI technologies can **empower patients**, for example by helping them monitor their health to make healthier decisions, and by **supporting doctors** in the diagnosis and treatment of patients
- Estimating the **socioeconomic impact of AI** on European health systems is fundamental to advancing the current discourse on the role AI can and should have in healthcare

Objective

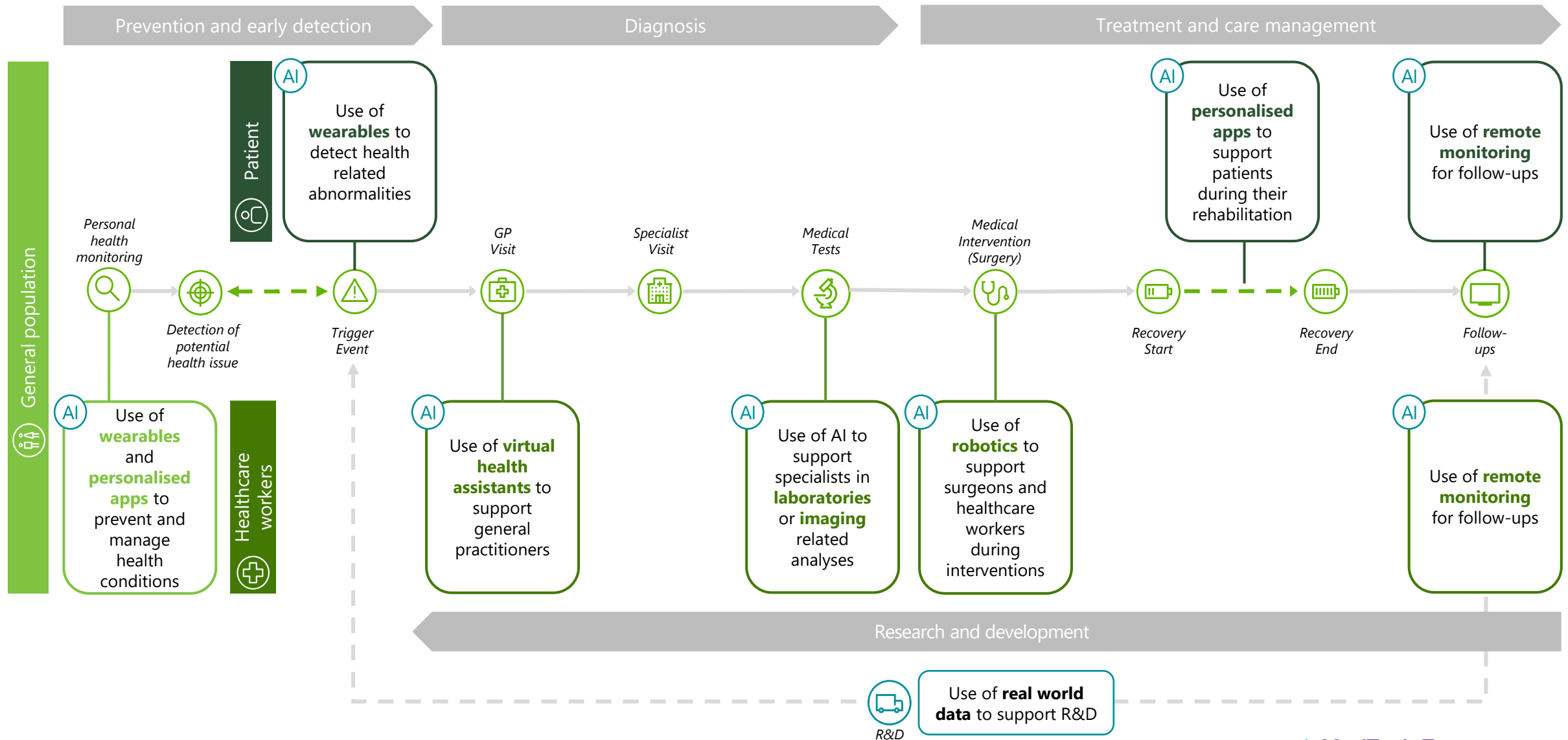
This AI report has 3 main objectives:

- **Quantify the impact of AI** across different AI Applications in Europe
- **Identify barriers** that must be addressed by public and private stakeholders to enable AI to reach its full potential
- **Articulate policy recommendations** based on the report's findings

AI applications have been segmented in eight application categories, covering both data capturing and insights generation capabilities



AI is present all along the patient journey



Impact of AI in European healthcare systems



400,000 lives
saved yearly



That's the population of a medium-sized city, or **almost two thirds of Luxembourg**



200 billion Euros in
annual savings
(including opportunity costs)



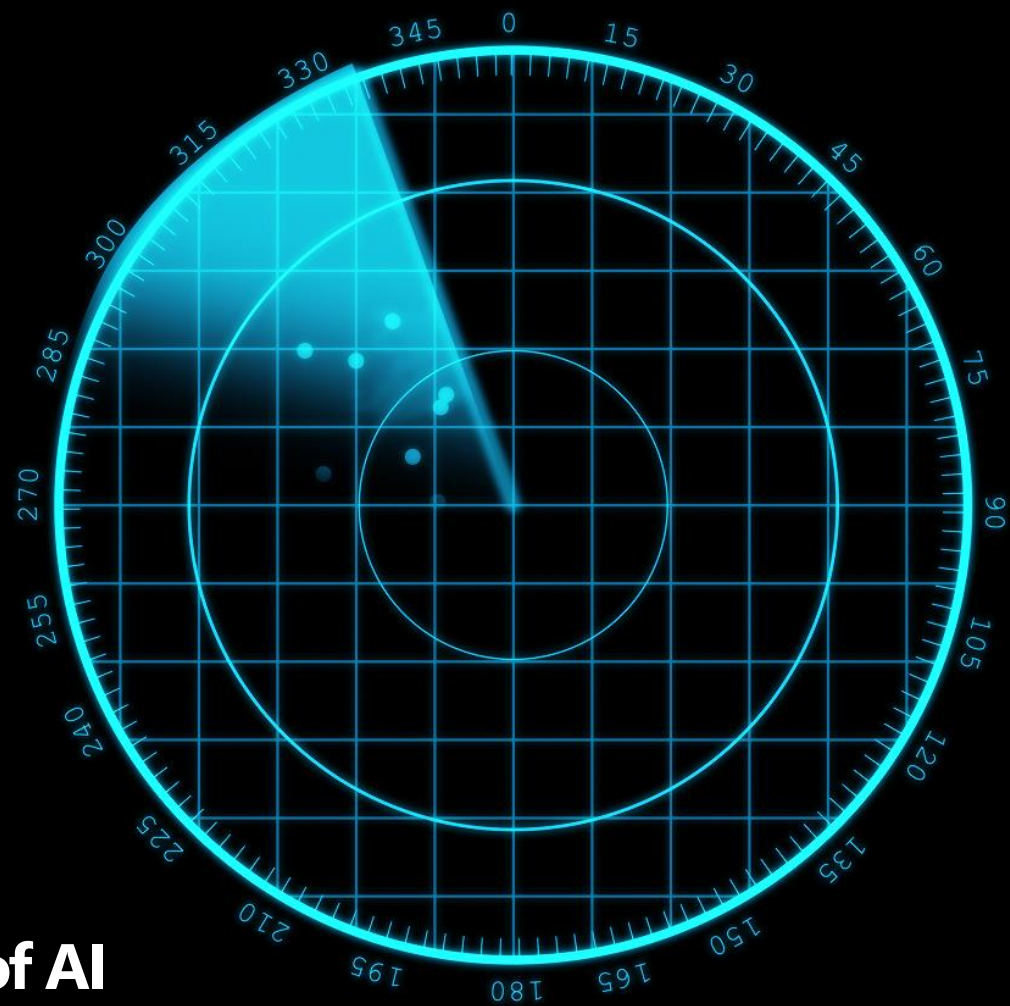
Which is approximately **12% of the total European healthcare expenditure** in 2018



1.8 billion hours
freed up every year



That's the equivalent of having **500,000 additional full time health care professionals**



Some categories of AI



Wearables – AI Impact

- › Prediction of falls
- › Prediction of heart failure
- › Continuous glucose monitoring
- › Remote monitoring with arm straps
- › Pre/post-surgery monitoring with activity trackers
- › Patient's recovery monitoring in neurology
- › Pill-cam

Key Indicators



298,000 - 313,000
lives saved per year



€46.6 – 50.6
billion in savings
(including opportunity costs)



301.6 - 336.1
million hours freed up



Examples

Prediction fall events

AI-enabled wearables show much promise in fall prevention for the elderly. **Accelerometer bracelets** or **smart belts** combined with an AI algorithm allow the accurate prediction of fall events pre- and post-impact. This application has the potential to help save *1,800 lives a year*

Prediction of heart failure

Atrial fibrillation and cardiac arrhythmias, important indicators of heart failure, can now be detected by a combination of **smart watches** with electrocardiograms and AI algorithms. This has the potential to significantly reduce hospitalisations and save up to *€36.9 billion*

Remote monitoring with arm straps

A wearable **remote monitoring arm strap** can continuously track patients' vital signs and send them for analysis by AI technologies. Nurses are automatically alerted if there is any deterioration, instead of having to check on their patients with daily home visits, potentially saving up to *301.8 million hours*





Imaging – AI Impact

- › Detection of pulmonary pathologies with chest X-rays
- › Detection of coronary artery diseases
- › Image acquisition and reconstruction
- › Detection of breast cancer
- › Detection of COVID-19
- › Diagnosis of dermatological conditions
- › Preparation time for radiation
- › Skin cancer self-scanning solutions

Key Indicators



36,000 - 41,000
lives saved per year



€16.1 - 18.6
billion in savings
(including opportunity costs)



15.1 – 32.7
million hours freed up



Examples

Detection of breast cancer

It has been demonstrated that AI software was able to **interpret mammogram** results up to 30 times faster than doctors, with a 99% accuracy. Moreover, when double reading of mammograms is necessary, AI can take the role of second reader. This can be especially useful in areas where there are not enough trained radiologists. Combined, these AI applications have the potential to save up to **16,000 lives**

Detection of coronary artery diseases

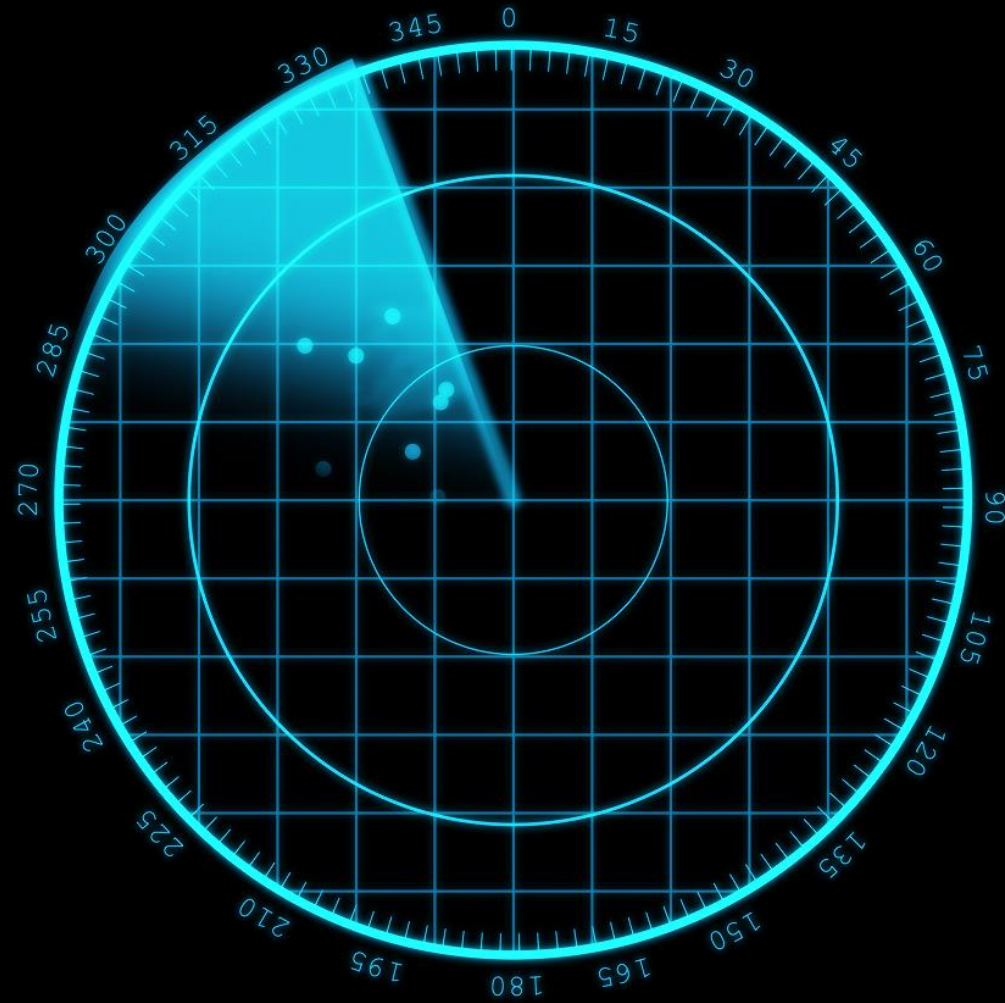
Combining coronary computed tomographic angiography images and clinical data, a machine learning algorithm was able to **predict five-year mortality rates** for patients at risk of CAD with greater accuracy than standard techniques. This could lead to potential cost savings of up to **€7 billion**

Detection of pulmonary pathologies with chest X-rays

A chest X-ray is currently the best available medical imaging method for detecting multiple pulmonary pathologies. **Digital pathology algorithms** can support and sometimes outperform the diagnosis from image analysis by screening and autonomously detecting pathologies. This has the potential to save up to **32.7 million hours**



More examples...



Conclusions

Barriers to adoption of AI in healthcare



Policy recommendations

- 1 | Develop **policy frameworks** to build trust and foster the adoption of AI in healthcare.
- 2 | Build and maintain a **balanced regulatory environment**, based on existing applicable regulations, that enables and stimulates future **technological innovation** and evolution.
- 3 | Build **data policies and infrastructure** to foster seamless access, connectivity and sharing of high-quality, harmonised data.
- 4 | Define **clear governance and partnerships** across healthcare professionals, academia, decision-makers and industry.
- 5 | Ensure appropriate **commercial incentives** and **reimbursement mechanisms** to foster innovation in Europe and support patient access.
- 6 | Advance **data interoperability** by defining data format standards, so data is generated and transferred in a more consistent way across market participants and Members States.
- 7 | **Advance AI skills among HCPs, and digital health literacy among citizens** to ensure the benefits will be achieved equitably across the EU regardless of proximity to a center of excellence.



The socio-economic impact of AI in European health systems

[Download the report at
medtecheurope.org](https://medtecheurope.org)



Thank you

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