

Chapter 3.4

Health & Wellbeing

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*Strategic Research and
Innovation Agenda 2025*

Aeneas



Scope

- Healthcare 4.0 leverages Industry 4.0 technologies to transform care delivery through connected, personalized, and data-driven approaches, facilitating integrated and coordinated care.
- Driven by Big Tech (Apple, Google, Amazon), the consumerization of medical devices is reshaping health expectations, prioritizing preventive care, patient engagement, and fostering innovation
- Data enables large-scale healthcare customization, driving P4 medicine through AI, IoT, and wearables, enabling personalized treatments
- MedTech and Pharma are moving towards comprehensive healthcare platforms using smart devices, remote monitoring, data analytics, and AI to improve outcomes, enhance patient engagement, and enable early interventions, while addressing regulatory challenges in digital health.
- Digital health solutions, advanced wearables, and remote patient monitoring are blurring the boundaries between Pharma, MedTech, and Chips companies, fostering cross-industry collaboration.

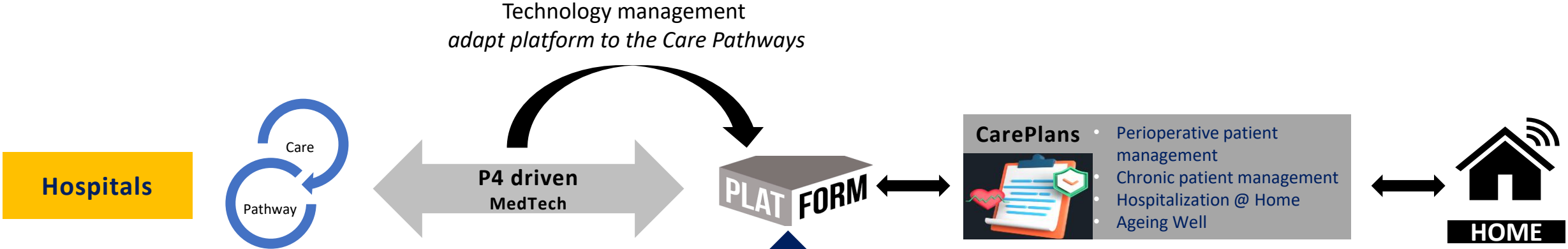
Major challenges

5 Major Challenges have been identified for the healthcare and wellbeing domain:

- **Major Challenge 1:** Enable digital health platforms based upon P4 healthcare
- **Major Challenge 2:** Enable the shift to value-based healthcare, enhancing access to P4's game-changing technologies.
- **Major Challenge 3:** Support the development of the home as the central location of the patient, building a more integrated care delivery system.
- **Major Challenge 4:** Enhance access to personalised and participative treatments for chronic and lifestyle-related diseases.
- **Major Challenge 5:** Ensure more healthy life years for an ageing population.

Key trends

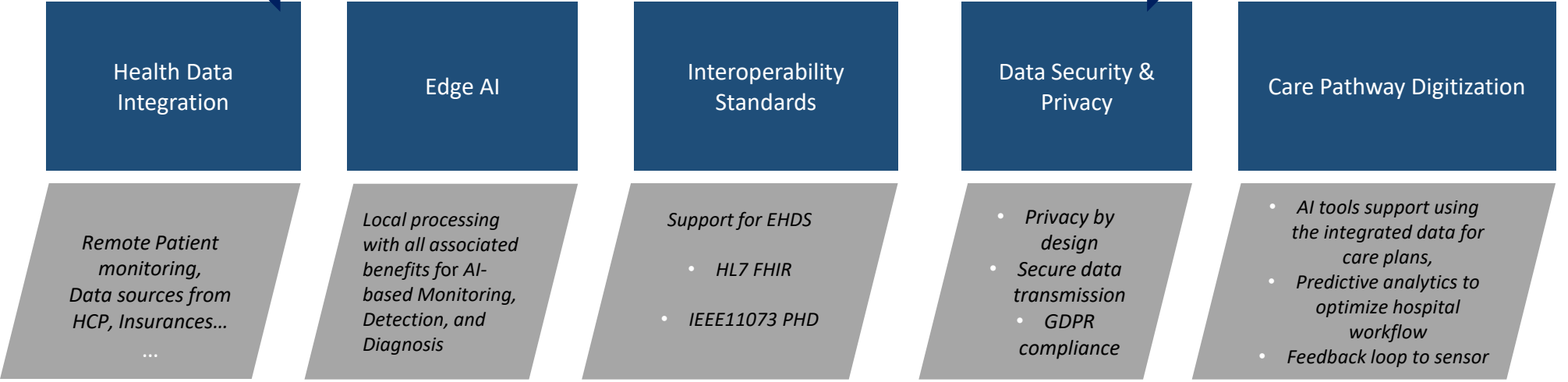
- *EHDS: European Health Data Space
- *PHD: Personal Health Device
- *HCP: Healthcare professionals
- *HL7: Health Level 7 standard for health info
- *FHIR: Fast Healthcare Interoperability Resources (widely adopted version of HL7)
- *GDPR: General Data Protection Regulation



ECS Community technologies

- Bio-sensing
- Photonics
- MEMS
- Ultrasound
- Acoustic
- Microfluidics
- Energy harvesting
- Processing
- Security
- Connectivity
- Digital twins
- ...

Feeding the Health & Wellbeing Digital Health platform



R&I focus areas

Enable digital health platforms based upon P4 healthcare

Enable the shift to value-based healthcare, enhancing access to P4's game-changing technologies

Support the development of the home as the central location of the patient, building a more integrated care delivery system

Enhance access to personalised and participative treatments for chronic and lifestyle-related diseases

Ensure more healthy life years for an ageing population

- *New tools for clinical decision-making and precision medicine*
- *Scalable digital health platforms*

- *Shift from general hospital to specialised integrated practice units*
- *Efficient healthcare information infrastructure, lowering costs while improving health outcomes*

- *Build an integrated care delivery system covering the full cycle of care for the condition*
- *Track the patient's health status after care is completed*

- *Make treatment adherence more efficient*
- *Organ On Chips platforms addressing pathologies currently without effective treatment for chronic disorders (rare diseases)*

- *Optimisation of patient follow-up at home to support ageing in place*