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Contemporary challenges in european and national health care systems

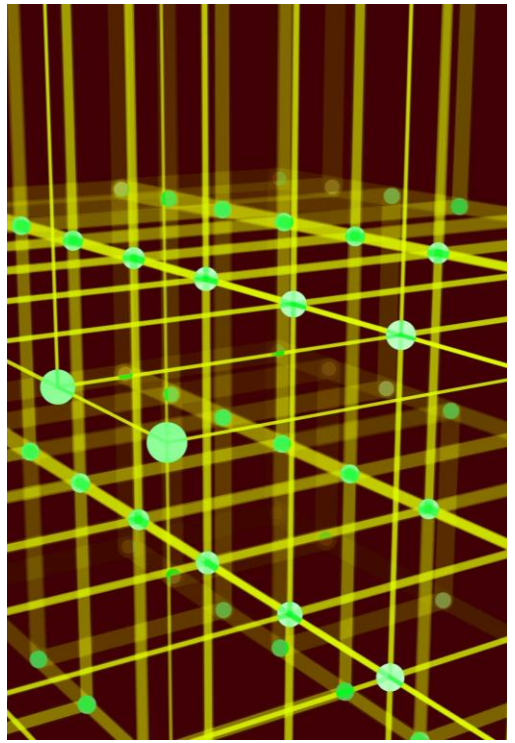
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Establishing interoperable digital frameworks

What is a digital ecosystem?

In the context of healthcare systems, a digital ecosystem represents an integrated network of actors and services — patients, healthcare professionals, institutions, and support systems — connected through digital solutions.

This type of ecosystem enables the circulation and efficient use of medical information at different levels, supporting a coordinated and modern approach to patient care.



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Role and purpose of digital ecosystems

Digital ecosystems in healthcare primarily aim to develop patient-centered care pathways tailored to the local context.
They support bringing medical services closer to the community and the patient's home, facilitating remote monitoring and care, especially for chronic or complex conditions.
Through the use of digital technologies, the goal is to ensure continuous, well-coordinated, and personalized care, as well as to increase patient engagement in their own health-related decisions.



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Importance of IT Infrastructure

Function of information systems
For a digital ecosystem to function efficiently, a solid and well-organized IT infrastructure is essential.

Information systems form the foundation of digital ecosystems and enable:
the integration of data from different sources and platforms, so that information can be used by all actors involved in patient care;
access to real-time, up-to-date data, supporting informed and rapid clinical decision-making.



Importance of IT Infrastructure

Benefits of IT support

A well-developed IT infrastructure enables the delivery of fast and reliable information to healthcare professionals, contributing to the efficiency of daily activities and improving the patient experience.

In addition, information systems facilitate the use of standardized data formats, which is essential for interoperability and collaboration between different institutions and healthcare services.



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Who is involved in a digital ecosystem?

A digital healthcare ecosystem includes a variety of actors, such as:
local health units (e.g., authorities or administrative structures);
case managers and care coordinators;
hospitals and medical centers;
specialist physicians and general practitioners;
pharmacists;
patients and caregivers;
other service and support providers.



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Types of sensitive data in digital ecosystems

- **Medical data**
  Importance: essential for continuity of care, avoiding duplication of treatments, and achieving a comprehensive understanding of the patient's health status.
- **Financial data**
  Importance: support access to healthcare services and the proper functioning of insurance, reimbursement, and payment mechanisms.
- **Personal Identifiable Information (PII)**
  Importance: necessary for accurate patient identification, medical record management, and compliance with legal requirements.
- **Behavioral and lifestyle data**
  Importance: contribute to personalized care and prevention strategies, particularly in the management of chronic diseases.

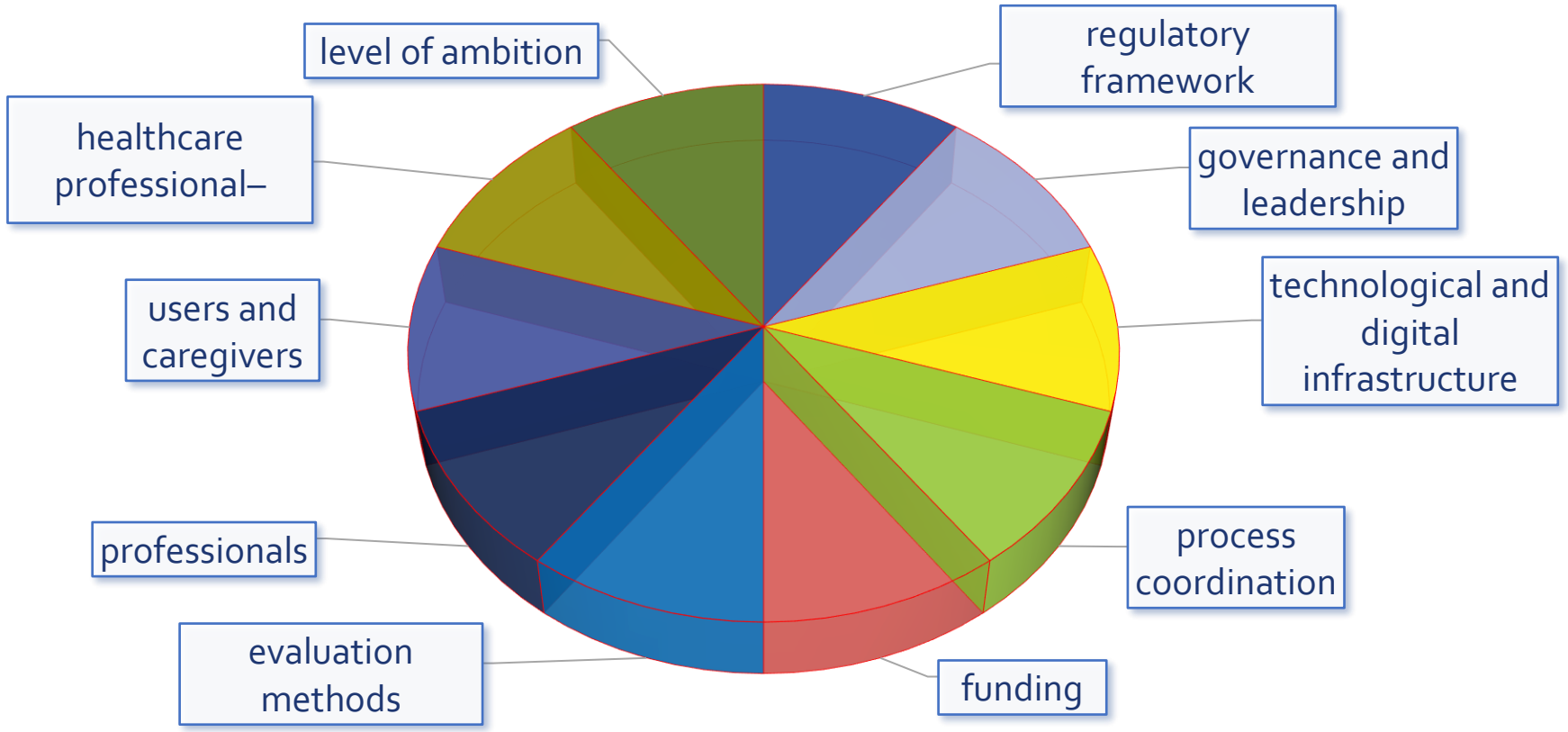
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Challenges in managing sensitive data

- **Privacy protection:** the use of sensitive data requires strict compliance with confidentiality and personal data protection regulations.
- **Information security:** digital healthcare systems are exposed to cyber risks, requiring robust security measures.
- **Interoperability:** differences between systems and data formats can hinder efficient information exchange.
- Effective management of digital ecosystems requires continuous improvement of security, process standardization, and compliance with the regulatory framework, in order to maintain user trust and system efficiency.

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Maturity model



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Maturity model domains

- **Regulatory framework**
  Regulations are clear, up to date, and aligned with strategic objectives for the management of chronic conditions.
- **Governance and leadership**
  Institutional leadership is results-oriented and supports the implementation of best practices through appropriate management structures and tools.
- **Technological and digital infrastructure**
  The technologies and equipment used are functional and sufficient to fully implement digital solutions.
- **Process coordination**
  Clinical processes and information flows are well defined, clear, and free of redundancies.
- **Financing**
  Financial resources are adequate and support the implementation and sustainability of best practices.

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Maturity model domains

- **Evaluation methods**
  Evaluation systems reflect the level of engagement in applying best practices.
- **Professionals**
  Healthcare staff are well trained, motivated, and adapted to new digital care models.
- **Users and caregivers**
  Patients and caregivers are willing and able to use digital solutions, without significant health literacy barriers.
- **Doctor/ healthcare staff–patient relationship**
  The use of digital ecosystems maintains or improves trust and the quality of care.
- **Level of ambition**
  Digital initiatives are built on a long-term strategic vision, with broad social impact.

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Exercise: Maturity Model – Group A

For each of the following domains, identify at least two key elements:

- Regulatory framework
- Governance and leadership
- Technological and digital infrastructure
- Process coordination
- Financing

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Exercise: Maturity Model – Group B

For each of the following domains, identify at least two key elements:

- Regulatory framework
- Governance and leadership
- Technological and digital infrastructure
- Process coordination
- Financing

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Exercise: Maturity Model – Group C

For each of the following domains, identify at least two key elements:

- Evaluation methods
- Professionals
- Users and caregivers
- Doctor–patient relationship
- Level of ambition

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Exercise: Maturity Model – Group D

For each of the following domains, identify at least two key elements:

- Evaluation methods
- Professionals
- Users and caregivers
- Doctor–patient relationship
- Level of ambition

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