EUROPEAN CANCER IMAGING INITIATIVE

in the context of the EDIC application

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EUCAIM CANCER IMAGE EUROPE

European Cancer Imaging Initiative

Presentation for MS

THE CANCER IMAGING INITIATIVE

THE EDIC APPLICATION

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Problem / Opportunity

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100 million medical images are populated in the EU every year...
(i.e. from clinical practise, studies and research projects, cancer screening programmes...)

But they are…

Distributed into thousands of Hospitals and repositories, resulting in **scattered**, **heterogenous** and **non-standardized** data

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Problem / Opportunity

AI can revolutionise cancer diagnosis and treatment as long as **quality datasets** are available for training

Running **Cancer Screening** programmes or **Observational studies** implies intense resources in terms of time, effort and coordination between the different clinical centers involved in the studies.

National/EU **R&D funded projects** could have a greater and lasting impact if, once finished, their **scientific community** and **results** (tools and high-quality Research data for secondary use) obtained remain operative and accesible for further research.

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Value Proposition

A pan-European federated infrastructure, linking and making research cancer imaging data from EU-level and national hospital networks and research repositories **accesible**, **ready** & **usable** .

An **accelerator** for medical research and industry to better understand, diagnose and fight cancer.

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Target Groups

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DATA HOLDERS

They provide access to the cancer imaging and related data to be shared through EUCAIM

- Clinical sites
- Existing cancer image repositories
- Research infrastructures
- Cancer screening programmes
- Others (e.g. data altruism organisations, etc.)

DATA USERS

They use the EUCAIM infrastructure to easy or enrich their achievement of research results

- Researchers & innovators in data science & AI
- Researchers & innovators in new therapies
- Medicines regulatory agencies
- Others (e.g. policymakers, etc.)

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Value Proposition

Federated Infrastructure with a Central Node Atlas of Cancer Images

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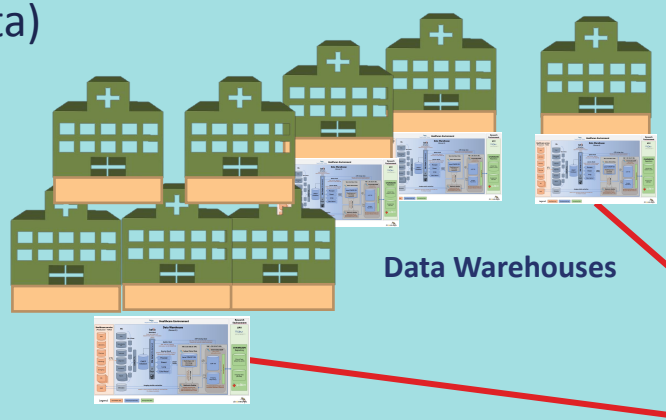
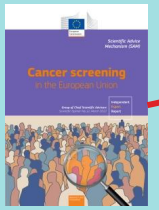
Observational RWD Studies

(new data)



Data Warehouses



Cancer Screening Programs and Grants

Data Altruism

Experimental AI Image Optimization

(existing data)

Open Challenge

AI4Health Imaging

imi innovative medicines initiative

Horizon Europe

ERIC
EUROPEAN RESEARCH INFRASTRUCTURE CONSORTIUM

CLINICAL TRIALS

Biobanks

Central HUB Platform

Observational RWD Studies → Central Storage Anonymized

Governance & Access

Integrated / Standardized

Accessible High-Quality Data into a Secure Processing Environment

European Commission

Value Proposition

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Two main Value Axis:

1. Accessible **Quality Data**

EUCAIM Atlas of Cancer Images

- Provides data users with existing collections of cancer medical images
- Meets data holders needs / interest to make their **existing** collections accessible for secondary use.

EUCAIM Observational Studies + Screening: New multicentric data collections in response to specific research purposes.

EUCAIM Services: data-based/intelligence services (i.e.: validator of medical devices and AI algorithms, statistics, regulatory agencies partner

2. **Secure Processing Environment**

For Data Holders

- **Maximises guarantees of safety and compliance with technical, ethical and legal requirements**, thanks to the EUCAIM technology, governance and sharing models (the "*EUCAIM Standard*").
- **Minimise the effort, time and cost related to the preparation of datasets** thanks to tools and services provided by EUCAIM.

For Data Users

- **Maximises the usefulness of the data** for specific research purposes.

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SUSTAINABILITY OF OPERATIONS
Operational Model

Maintain the operation of the Central Hub beyond the project's end in full compliance with legal and ethical requirements.

EUCAIM: Hub Central + Federated Network of Data H.

- **Member States**
  - Central national node(s)
  - National nodes with federated structure
- Other structure (i.e **AI4HI** projects)

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SUSTAINABILITY OF OPERATIONS
Operational Model

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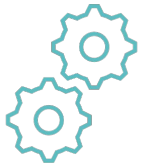

Cost structure and definition of operating procedures

- Cost and management of **HR** (Secretary General, administrative staff, technical staff...)
- Cost and management of **operating, maintaining and updating infrastructure** (cloud storage, processing power, equipment, etc).
- Cost and management of **operating, training, and upgrading technical teams** (Project management, federation and node management, relationship with hospitals, helpdesk, etc...)
- Cost and management of **related activities** (travel, dissemination, legal services, participation in forums, organization of events, etc.).
- **Others**...

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EUCAIM – The future

How could we maintain and improve EUCAIM's infrastructure and services in the future?

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Presentation for MS

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The Project: overview

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- Research infrastructure developed by the EU-funded **EUCAIM project**
  - Coordinated by EIBIR
  - Scientific Director Luis Martí-Bonmatí (HULAFE, Valencia/ES)
  - Consortium: 76 partners from 14 countries
  - Runtime: January 2023 - December 2026
  - Investment: €35.5 million total (50% EU Grant)

- Flagship activity of the **European Cancer Imaging Initiative**

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The Project: main challenges

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Infrastructure challenges

- Overall architecture (completed)
- Connecting different components

Data-related challenges

- Finding and connecting data (repositories, warehouses)
- Making data interoperable

Sustainability challenges

- **Business model definition** (Financial, Operational and Legal pillars)
- Gathering interest and **support from EUCAIM's stakeholders** (MS, industry, academy) and society in general.

How are we addressing them

- Regular internal meetings
- Developing guidelines and requirement documents
- Developing a common data model and hyperontology
- **Project Coordination (WP1) + Sustainability Unit (WP8) working together in Sust. planning + EDIC application.** Intensive Desktop + Networking + Customized communication actions.

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General Roadmap

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2023

Design completed

- Requirements analysis
- Design
- Collaboration mechanisms
- Early release of the data federation framework

2024

First version of platform

- Platform validated and populated for external production
- Data providers connected
- Prototype for federated learning
- Benchmarking platform

2025

Final release of platform

- Federated learning
- Final version of tools and services
- Federation of new cancer images databases through open calls
- Implementation of clinical use cases

2026

Full operation of federated repository

- Integration with other data infrastructures
- Piloting of the business model
- Legal and operation model finalised

2027

Expansion

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European Digital Infrastructure Consortia - EDIC

DECISION (EU) 2022/2481 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 14 December 2022

establishing the Digital Decade Policy Programme 2030

EDIC
(European Digital Infrastructure Consortium)

- The achievement of European digital objectives will be facilitated through **large-scale multi-country projects** (MCPs) by pooling EU, national and private funds and resources.
- These multi-country projects will have to be selected and implemented in a **coordinated** manner (Commission and Member States).
- **'Common European data infrastructures and services'** are included in the list of eligible areas of activity.
- The **EDICs are meant to be a mechanism for implementing these multinational projects**. European digital objectives will be achieved

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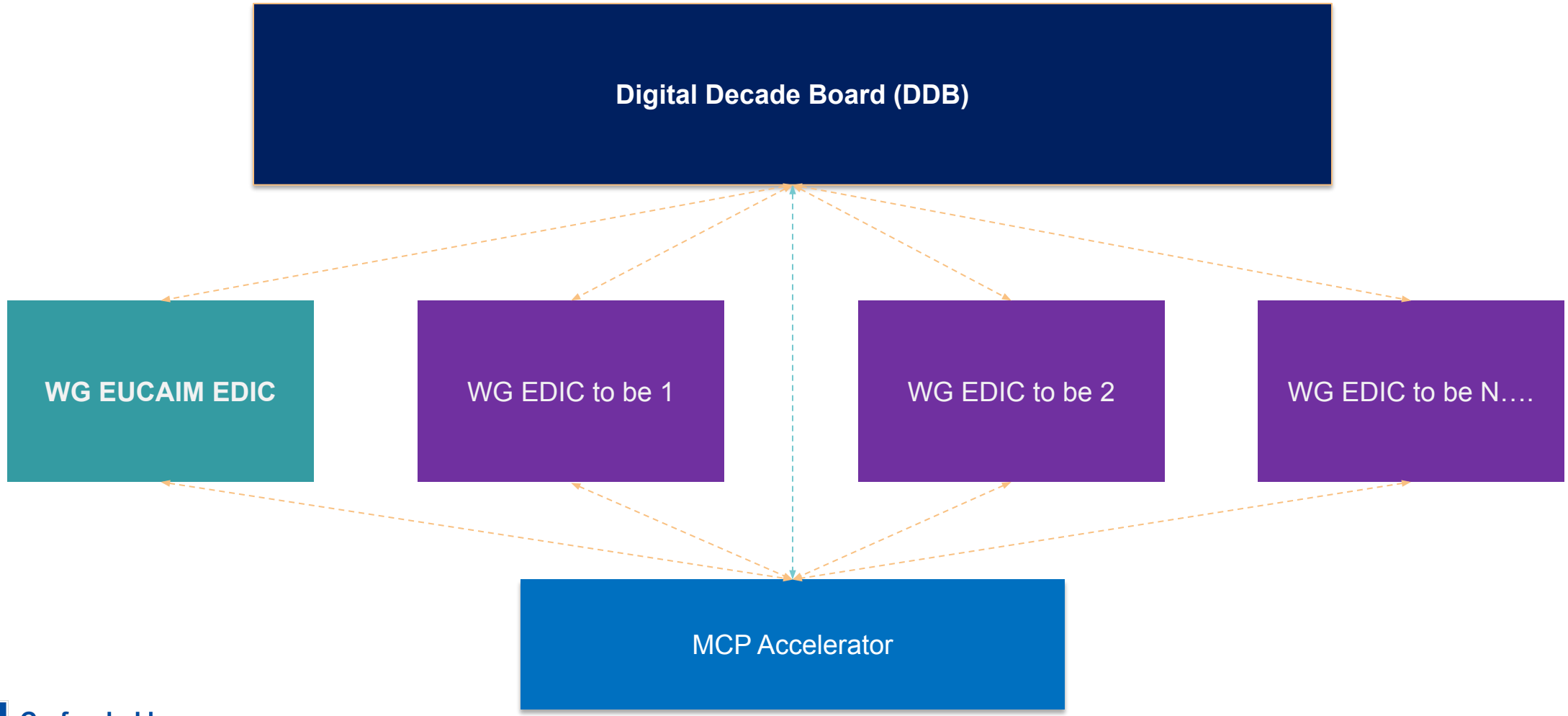
EDIC
Application progress



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EDIC
Application progress

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Actions accomplished during 2023

- *Letter of Interest (LOI) from 3 MS*: During the first quarter of 2023, we managed to gather the support of 3 MS: Spain, Sweden and Italy.
- *Additional Support from other MS (updated November '23)*: In addition, the interest of MS in supporting the EUCAIM EDIC application increased in the following months, adding to the list France, Belgium, Greece and Latvia.
- *EUCAIM EDIC Working Group (WG):* The EC has given its approval to the constitution of the official working group for the EUCAIM EDIC application.
- *Coordinating Country:* Spain has confirmed its commitment to act as Coordinating/Host Country for the future EDIC and for acting as Coordinator in the WG.
- Biweekly meetings with the Coordinating Country representative: every two weeks, a meeting with the representatives of the Spanish Ministry of Economy in support of the EUCAIM EDIC Application is held, providing updated information and sharing documentation for planning upcoming activities.
- *Individual interviews:* individual interviews with each of the MS already interested in EUCAIM have been programmed for the last quarter of 2023. These interviews are intended to share information with each MS representative on EUCAIM's goals and, at the same time, understand the main expectations and interests of the MS.

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EDIC
Application progress

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Countries supporting the initiative:

(Updated Nov'23. Note the project started just 01/01/2023)

- Spain
- Sweden
- Italy
- Greece
- France
- Belgium
- Latvia

…Short-term goal: 10+ MS Q4'23 / Q1'24 (talks with Portugal, Estonia, Lithuana, C. Rep, Finland, Norway in progress)

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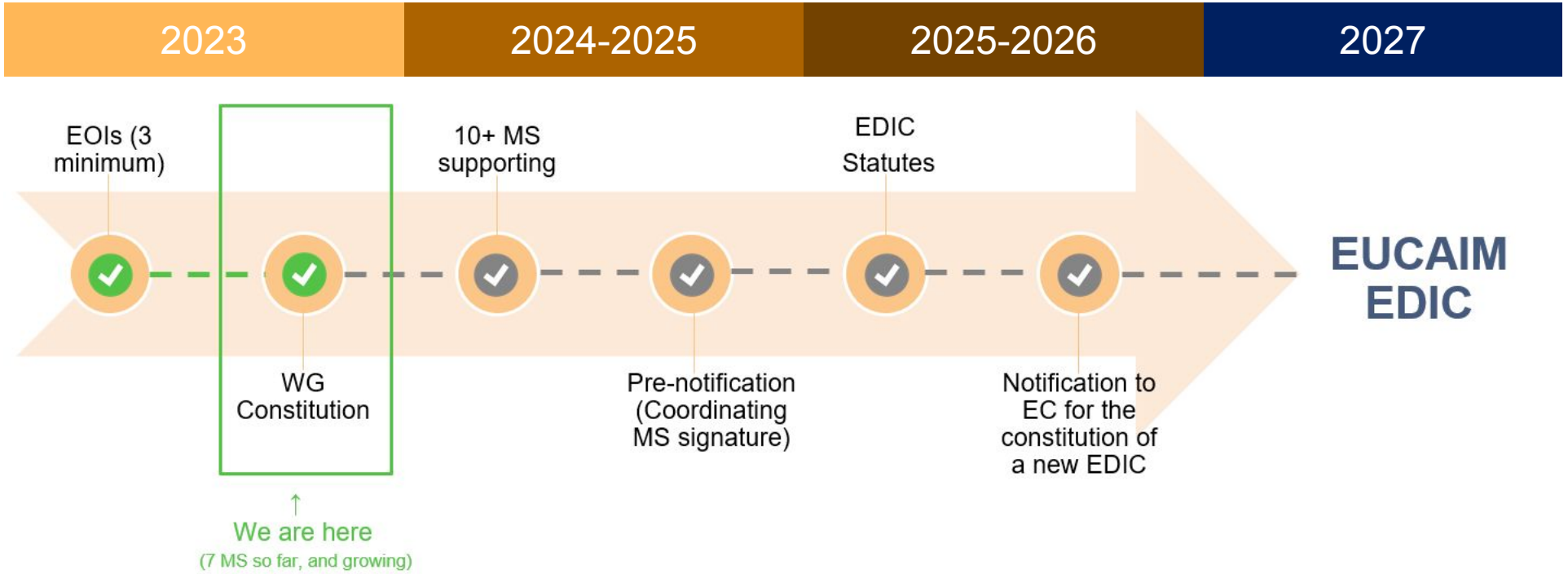
EDIC
Application progress

- **EDIC application:**



  - Current actions:
    a) Individual interviews with each Member State
    b) Communication actions to invite more Member States to the EUCAIM EDIC Working Group
    c) Organization of the WG Kick-off meeting (foreseen by Q1'24. After ind. Interviews)

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EDIC
Main challenge so far: MS Rep. identification

The main challenge faced by the EUCAIM's EDIC application has been (and still is) the **identification of the proper contacts in each MS**.

There is no process established to identify the MS representatives able to support the EDIC application under the Digital Europe programme.

Mitigation measures:

- asking support from the EC MCP Accelerator team to identify Digital Europe Board members;
- mobilising all the consortium members to ask within their governments and ministries
- contacting out of the blue potential MS representatives
- sharing documentation and presentations on EUCAIM to scientific leaders within our consortium and beyond to engage with potential MS representatives in events and congresses.
- digging on the Internet to find names of potential representatives in national administrations.

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visit **cancerimage.eu**
for a first preview of the platform

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Thank you

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