



EUCAIM

CANCER IMAGE EUROPE

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Background and rationale

The fragmentation and decentralization of medical imaging data across Europe pose a significant challenge to large-scale observational research and the development of AI-driven solutions for cancer care. While AI holds the potential to transform diagnosis and treatment towards precision medicine, the lack of interoperable and reusable datasets limits its clinical translation.

To overcome these barriers, the EUCAIM project was launched as a flagship activity under the European Cancer Imaging Initiative to establish a secure infrastructure, known as Cancer Image Europe, to enable the trusted secondary use of cancer images and related clinical data. This project lays the groundwork for harmonized data governance and cross-border data sharing, directly addressing key policy challenges.

Our Approach and Methods

- A **hybrid infrastructure** (reference & federated nodes) to accommodate diverse data providers.
- Strict adherence to **GDPR** and the **EHDS** regulation.
- Key components for interoperability:
 - Hyperontology
 - Common Data Model
 - ETL pipeline for standardization & pseudonymization
- Data sourced from completed projects, ongoing projects, and clinical trials.

Our Results

The EUCAIM project has successfully established a scalable and compliant framework for integrating diverse cancer imaging datasets. **The Cancer Image Europe infrastructure is already host to over 80 datasets from more than 91,150 patients.** The data encompasses various imaging modalities and a broad spectrum of cancer cases, which is a major step towards creating a comprehensive and representative atlas for AI development. The successful piloting of the integration process has provided a robust proof-of-concept, demonstrating that large-scale, cross-border data sharing is achievable under European regulations.

Conclusions

The EUCAIM project has successfully laid the **foundations for a pan-European digital infrastructure for cancer images.** Cancer Image Europe is positioned to become a **cornerstone for AI-driven oncology innovation** in Europe. The insights gained offer a practical framework for future initiatives, reinforcing Europe's capacity for trustworthy AI-driven solutions in medicine and shaping the future of precision medicine.

Future Outlook & Sustainability

To ensure long-term sustainability, discussions are underway to establish a European Digital Infrastructure Consortium (EDIC), which so far has received letters of interest from 14 EU member states.

