BREAST SCREENING DILEMMA

http://med_physics.i-do.science/

IFIC Elena Larrea

IFIC Kiko Albiol

MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES
VNIVERSITAT DE VALÈNCIA
525 anys
CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS
IFIC
EXCELENCIA SEVERO OCHOA

vithas
La Fe Departament de Salut
radiologie münchen
CSIC PTI SALUD GLOBAL
aep Asociación Española de Pediatría
SES Gerencia del Área de Salud de Badajoz
GENERALITAT VALENCIANA
Fundació Fisabio
murcia salud El portal sanitario de la Región de Murcia
isc Instituto de Salud Carlos III

MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES
CSIC CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS
CSIC PTI SALUD GLOBAL
Financiado por la Unión Europea NextGenerationEU
Plan de Recuperación, Transformación y Resiliencia
Artemisa
ISO 27001

CHALLENGES OF BREAST SCREENING

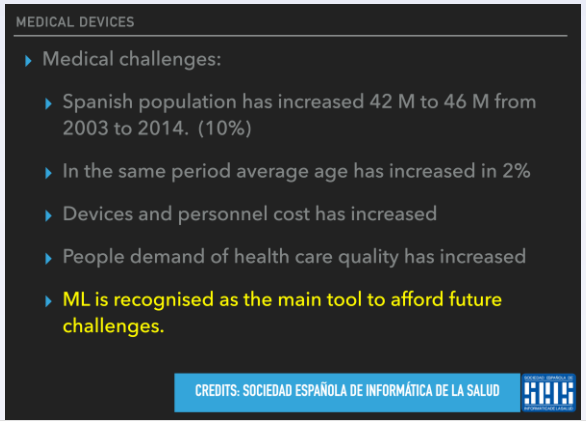
- Mammography screening programs seek to reduce mortality through early detection.
- Current recommendations: To expand the eligible age range and adjusting screening frequency.
    - Higher patient volume → Structural strain on the healthcare system (radiological reading, follow-up procedures, biopsies).
- Shortage of specialists and growing case accumulation threaten the sustainability of the current model.
- This creates a need of scalable solutions that can support expanded coverage without compromising diagnostic quality or system sustainability.

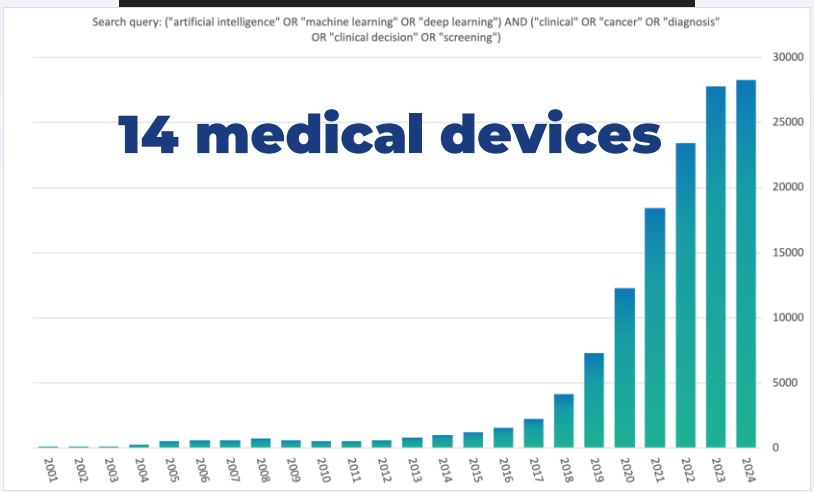
Financiado por la Unión Europea NextGenerationEU
Plan de Recuperación, Transformación y Resiliencia

AI IN HEALTHCARE: POTENTIAL VS REAL IMPACT

- Clinical reality is dynamic and complex:
  - Interoperability across systems.
  - Distributed and heterogeneous environments.
  - Regulatory requirements.
  - Multidisciplinary communication.
  - Imbalanced and non-standardized data.

- Our goal is to develop solutions that don't stay at scientific publication, but instead **achieve validation, regulatory approval, and real clinical use.**





PRECISION MEDICINE (SCREENING) 🚧

- **Objective**: Expand radiologists' capacity and improve diagnostic accuracy.
- Which is our approach?
  - **Working closely with hospitals and industry partners**.
  - Training, regulatory compliance, validation, and model interpretability (GDPR).
  - Integrate studies from different systems.
  - **Facing technical and scientific complexity.**

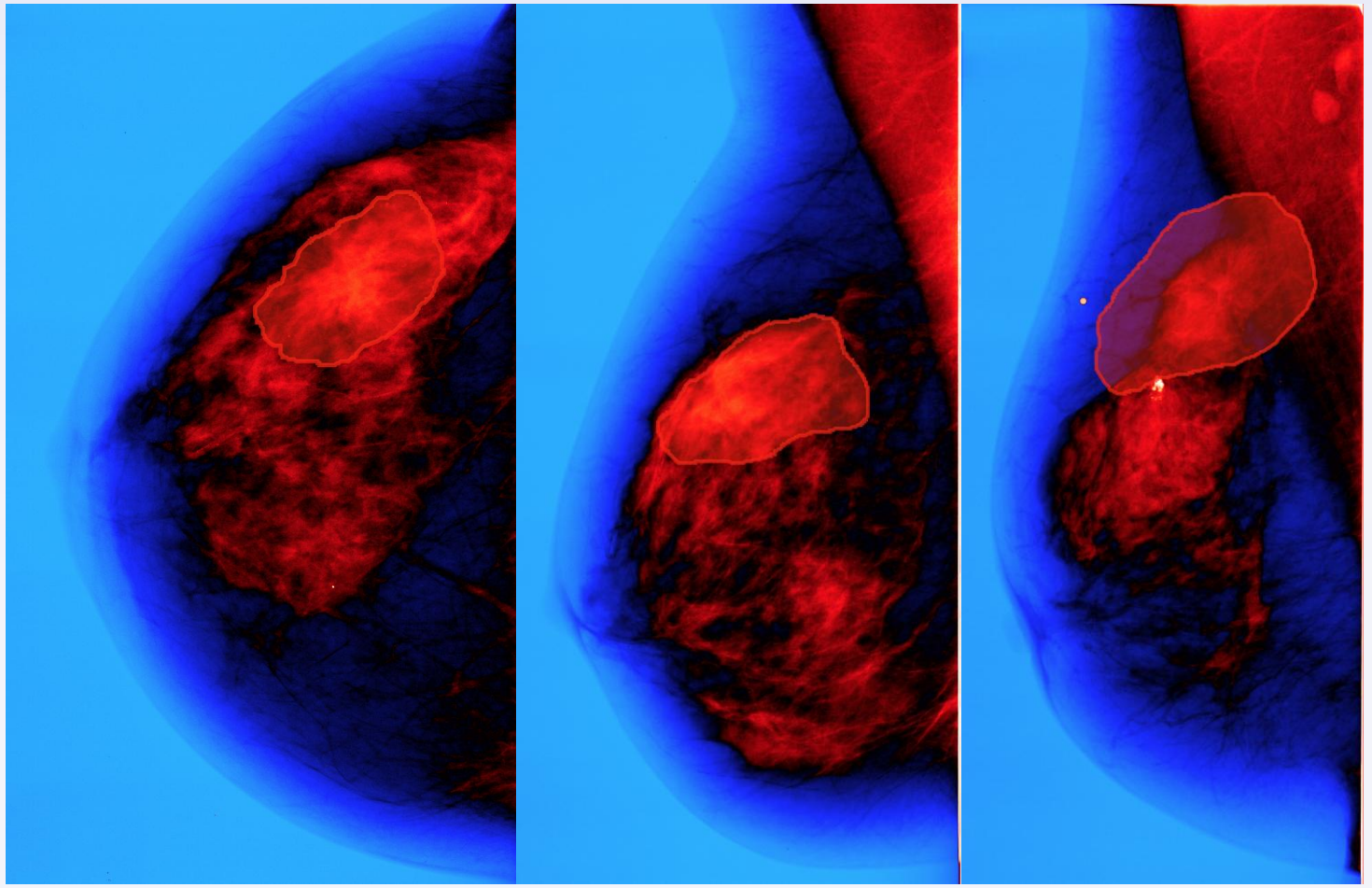
ORTHANC

docker

DICOM
Digital Imaging and Communications in Medicine

MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES
CSIC Consejo Superior de Investigaciones Científicas
SALUD GLOBAL
Financiado por la Unión Europea NextGenerationEU
Plan de Recuperación, Transformación y Resiliencia
Artemisa
ISO 27001

PRECISION MEDICINE (SCREENING)



- Our method uses the conversion of grayscale levels into different color layers.
- **Objective**: To generate a Turing test in which our diagnosis is indistinguishable from that of a radiologist. Using the state of the art of LLM and transformers.

Financiado por la Unión Europea NextGenerationEU
Plan de Recuperación, Transformación y Resiliencia

ENGAGEMENT WITH EXTERNAL PARTNERS

- Vithas group (*9 d'Octubre*)
  - José Cervera and *Manuel González* (*Radiologists*) – *Advisors in screening program management in the Valencian Community.*
  - Joan Ferràs – *Former collaborator in Idiopathic scoliosis project. Current Medical Director of Hospital Vithas Valencia 9 d'Octubre.*
- *IBV – Alejandra Gómez and Lia de Belda (*We are advisory support in image reconstruction).
- *UPV (PRHLT) – Alberto Albiol (Collaboration in patents and AI driven projects).*
- Ongoing industry contacts for licensing and scaling project outcomes.

Financiado por la Unión Europea NextGenerationEU
Plan de Recuperación, Transformación y Resiliencia

CONCLUSIONS

- AI innovation reaches its true impact when it connects science, clinical practice, and technology.
- Collaboration with established clinical partners is allowing us to consolidate a model with real world projection.
- The current development crystallizes a line of research consolidated over more than ten years.
- The current consolidation opens a stage of transition towards wider application environments.

Financiado por la Unión Europea NextGenerationEU
Plan de Recuperación, Transformación y Resiliencia

¡Thank you!