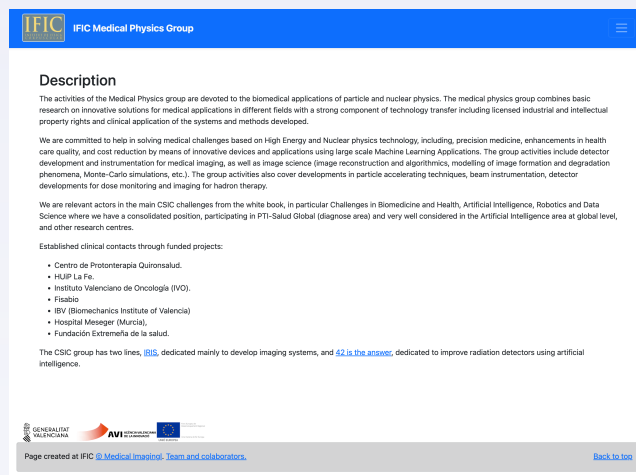
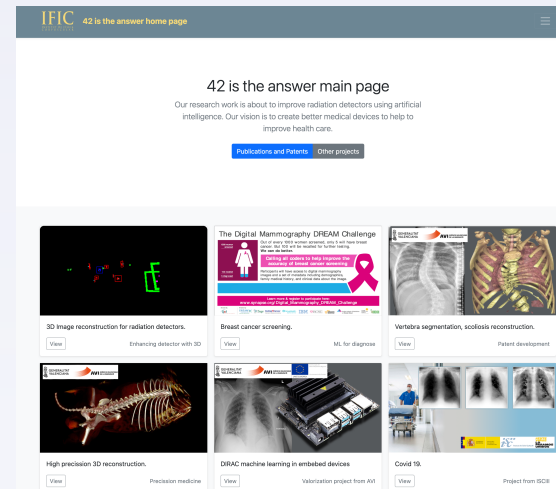


Medical Imaging for the Next Generation of medical devices

<http://medicalphysics.uv.es/>



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



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NextGenerationEU



Main objectives: “Science must drive the sustainability of healthcare”

Search query: ("artificial intelligence" OR "machine learning" OR "deep learning") AND ("clinical" OR "cancer" OR "diagnosis" OR "clinical decision" OR "screening")

MEDICAL DEVICES

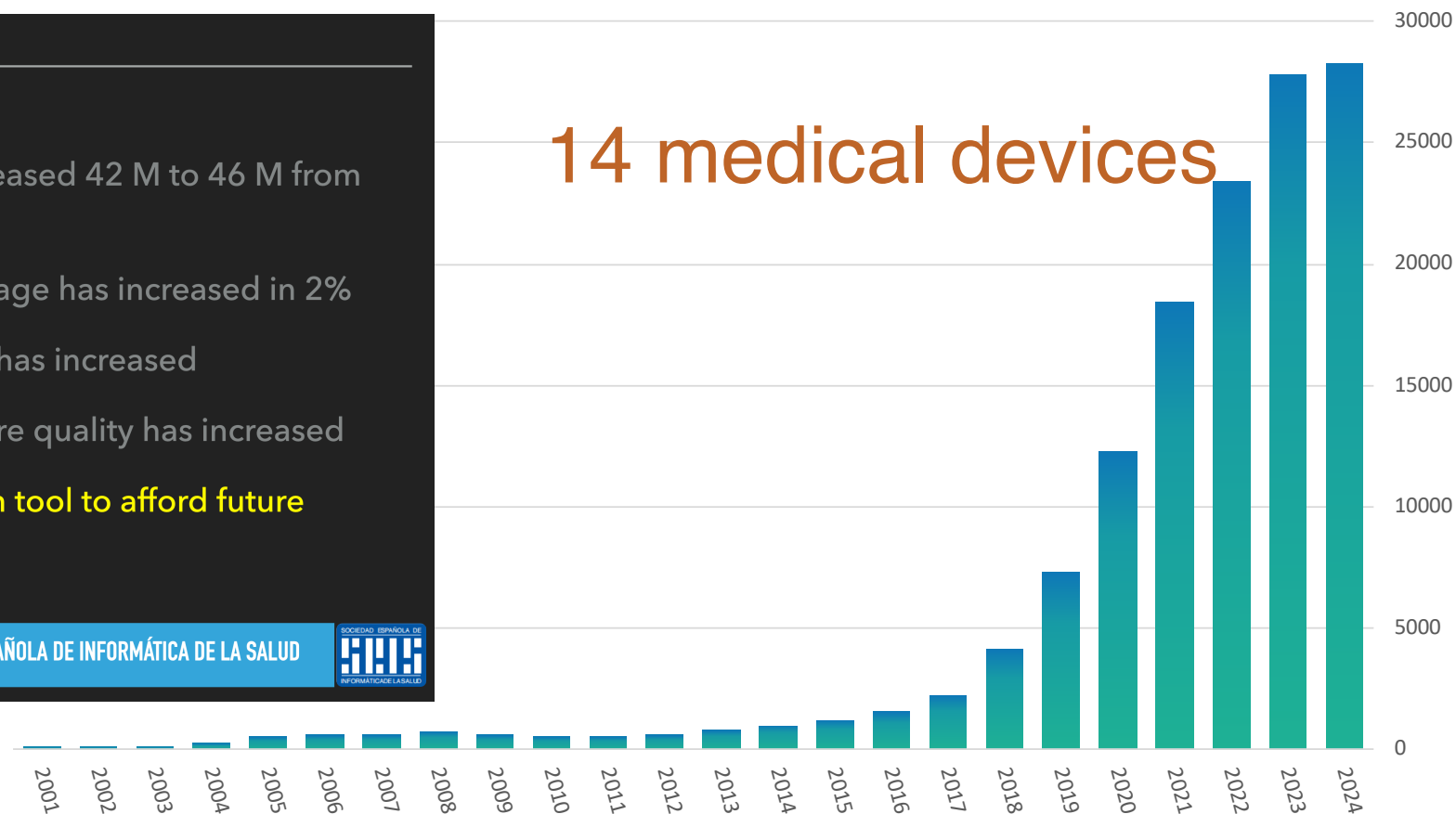
► Medical challenges:

- Spanish population has increased 42 M to 46 M from 2003 to 2014. (10%)
- In the same period average age has increased in 2%
- Devices and personnel cost has increased
- People demand of health care quality has increased
- **ML is recognised as the main tool to afford future challenges.**

CREDITS: SOCIEDAD ESPAÑOLA DE INFORMÁTICA DE LA SALUD



14 medical devices



Research Driven by regulators

- **PROBLEM: Published methodologies vs deployment matching**
- Look the regulations (**FDA/CE** marking requirements), as an opportunity.
- **Clinical viability starts at design:** without a certification path, implementation becomes the problem
- ***We focus on moving the research to match clinical requirements***
- ***We see the medical device as a medical process!!***

Goals in medical devices (strategy)

- Develop methods and methodology
- Comply with patient requirements
- The best of AI, and gamma Image Reconstruction (IR)
- Integrate medical imaging in clinical process with a **clear medical objective.**

Current tasks:

Work in progress 

- **Image registration:** Multimodality as a goal. **Localization + registration**
- SPECT (*Holographic Camera*) = Better quality reconstruction in 3D close field. **Advanced quality in image reconstruction.**
- AI approach friendly: we can **reduce non gaussian errors (GNN)** and use **Generative AI to image reconstruction.**

Conclusions: Why we say Next Generation.

“One Image, All Modalities.”

Multimodality is not about sensors — it's about meaning.

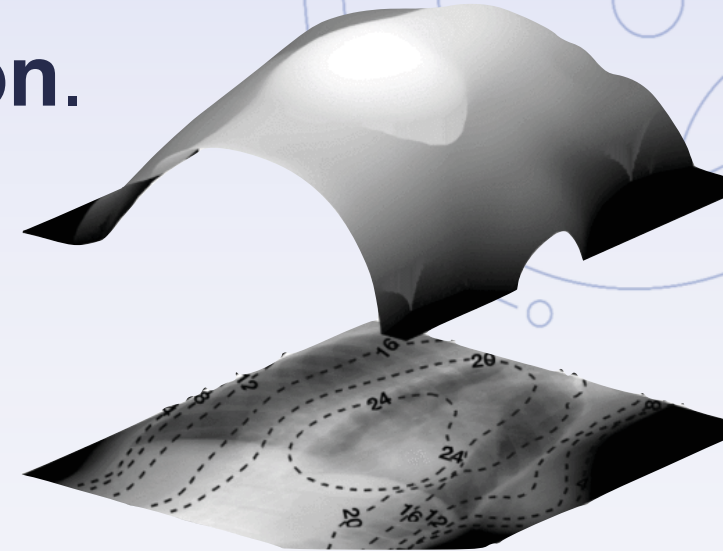
“Imaging Goes to the Patient.”

Portability and universality for real-world clinical impact. Democratize Compton Image

<https://ieeexplore.ieee.org/document/8628952>

“AI Doesn’t Interpret — It Connects.”

The glue between data, reconstruction, decisions, and diagnostics.



¡Thank you!