



COMFORT research project is developing a cutting-edge decision support system delivering improved care for people affected by prostate and kidney cancer.

COMFORT strives to develop transparent and accurate computational models by integrating complex health data from multiple sources. These models will use advanced AI-driven risk stratification methods to predict, prioritise, and prevent disease progression to guide healthcare professionals in prioritising the best therapies for patients.



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1. Describe your project through key words/key phrases that identify it.

Computational Models for Genitourinary Cancers; Multimodal AI; Detection and Diagnosis; Trustworthy Artificial Intelligence

2. In terms of impact, what will be the most tangible your project will achieve?

The COMFORT project delivers several tangible results that will impact healthcare for prostate and kidney cancer patients across Europe. We're developing multimodal AI models that combine medical imaging, text, and laboratory data to enable more accurate cancer detection and classification. These models, tested in a multi-center clinical study across six European hospitals, will help identify high-risk patients earlier and support personalized treatment approaches.

Currently, about one-tenth of kidney tumor surgeries involve benign masses, subjecting patients to unnecessary procedures. Our aim is to reduce unnecessary surgeries by 30-50% through better identification of benign kidney tumors, potentially saving €15-40 million annually in healthcare costs. For prostate cancer, our tools can help reduce overtreatment by 20-25% through more reliable cancer detection, saving approximately €200-300 million per year while improving patient quality of life.

3. Please describe your project's overall impact, if applicable, at the European level.

At the European level, COMFORT addresses important healthcare challenges while advancing the EU's position in medical AI applications. By developing AI models that improve diagnosis and

treatment planning for prostate and kidney cancers, we can help reduce mortality rates for these diseases, which cause over 130,000 deaths across Europe annually.

Our project promotes healthcare equity by enabling high-quality cancer care even in regions with limited specialist resources. COMFORT also strengthens Europe's technological sovereignty in healthcare AI by creating European-developed tools tailored to European healthcare systems. Our focus on trustworthy AI—emphasizing explainability, fairness, and privacy—aligns with the EU's ethical AI framework and can serve as a model for responsible AI development in healthcare.

The project fosters multinational collaboration across clinical, technical, and patient advocacy domains, creating networks that will continue to drive innovation after the project concludes. By demonstrating the value of personalized medicine approaches through practical clinical applications, COMFORT contributes to Europe's transition toward more effective, patient-centered healthcare delivery.

4. As an applicant, what advice would you have wanted in the Horizon project design process? What support did you receive from National Contact point (NCP) and your organisation, and what improvement of support would you benefit from?

In retrospect, I would have appreciated more guidance on balancing technical innovation with practical clinical implementation requirements. Initial enthusiasm for cutting-edge AI solutions needs to be balanced with realistic assessments of clinical workflow integration, regulatory pathways, and institutional adoption barriers.

Our university's research support office provided valuable assistance with administrative aspects of the application, including budget planning and

consortium agreement drafting. The National Contact Point offered informational webinars that helped us understand Horizon Europe's general structure. However, more specific domain knowledge about medical AI regulations and clinical validation requirements would have been beneficial.

For future applications, I would benefit from support in two key areas: First, early consultation with regulatory experts familiar with both EU medical device regulations and AI-specific guidelines; and second, connections with previous successful applicants in similar domains for practical advice on implementation challenges.

An improvement in the NCP support system could be the addition of specialized thematic advisors who understand the intersections between technology, clinical practice, and regulatory frameworks. Additionally, a more structured process for evaluating the feasibility of technical proposals within healthcare settings would help avoid implementation challenges later in the project.

5. Please highlight aspects of your Horizon project's strengths that you consider important and that may constitute good practice for other applicants.

A key strength of our project is the interdisciplinary composition of our consortium, bringing together clinical experts (radiologists and urologists), computer scientists, ethicists, patient advocates, and industry partners. This diversity ensures our technical solutions address real clinical needs while remaining implementable within healthcare systems. We dedicated significant time during the proposal phase for different disciplines to align their understanding and expectations, which proved invaluable for developing a coherent work plan.

Another important practice was our early focus on data quality and accessibility. We conducted an inventory of existing datasets, their annotation quality, and accessibility limitations before designing our technical approach. This allowed us to develop realistic data management strategies and identify potential challenges early.

We incorporated prospective clinical validation from the outset, allocating resources to a multi-center study. While this increased complexity, it will enhance our project's credibility and potential for clinical adoption. For other applicants, I recommend planning for real-world validation early rather than treating it as an afterthought.



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