

OBJECTIVES

ERROR's main objective is the development of a new software tool, which will offer to the clinician the possibility to assess imaging and therapeutic protocols predicting the absorbed dose per organ. This tool will be designed, implemented and evaluated for pediatric applications, since this is a rather sensitive target group, where dose considerations are high and no standard protocols and solutions exist.

METHODS

ERROR will exploit:

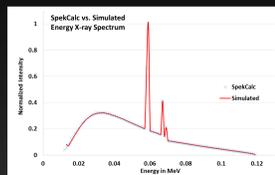
- New generation of anthropomorphic phantoms
- Well validated Monte Carlo simulations
- Machine learning tools

In this way, it is envisaged that advanced, yet mature technologies will be integrated, to provide a novel tool, which can lead to a final product.

MC SIMULATIONS

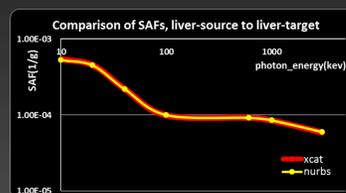
Computed Tomography

MC modelling of X-ray spectra, according to clinical CT scanners' characteristics.



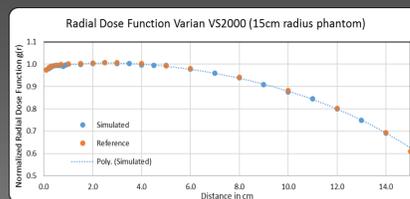
Nuclear Medicine

Calculation of S-values based on specific radiopharmaceutical biodistributions and personalized anatomical characteristics.



Brachytherapy

A list of commercial brachytherapy sources is being simulated and validated based on AAPM & ESTRO protocols. Extraction of isodose curves and absorbed doses / organ.



PEDIATRIC MODELS

XCAT / IT'IS / CLINICAL

The population of the pediatric models is based on the XCAT and the ITIS series. The population will be completed with a list of custom computational models which will be created based on clinical PET / CT data.



CONSORTIUM

The **ERROR** project brings together a multidisciplinary consortium of specialists in different areas of medical physics, biomedical engineering, physicians and computer engineers, who will join forces in order to design, implement and clinically assess novel software tools. Two new SMEs will provide their expertise and will exploit project outcome.

Project Partners

Role in project

University of Patras (UPAT – GR)	Project Coordinator – Database – MC simulations
Université de Bretagne Occidentale (UBO – FR)	MC simulations – GPU – Clinical assessment
Guy's and St Thomas NHS Foundation Trust (GSTFT – GB)	Clinical data – assessment – procedures
BET Solutions (BET – GR)	Dissemination – MC simulations – Software Development
LIBRA MLI Ltd. (LIBRA – GB)	Machine Learning – Software Development

WORKING PACKAGES

ERROR is split in 7 WPs, closely interlinked.

#WP	Task
1	Project Management (UPAT)
2	Collect clinical data / Creation of pediatric population (UBO)
3	Pediatric dosimetry (UPAT)
4	Integration of the data in a platform (LIBRA)
5	Creation of a software (BET)
6	Dissemination / Exploitation / Training (BET)
7	Ethics Requirements (EU)

CONTACT

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ACKNOWLEDGMENT

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 691203.

