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Light ion therapy software for data exchange

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The Italian National Center for Oncological Hadrontherapy is currently upgrading one of the software environments of its medical accelerator control system. This environment, named configuration and support environment, is tasked with the configuration of accelerator components, management of the control system repository, and other support tasks. The objective of the three year technological upgrade project is to integrate of mobile devices into the environment, and update the technological stack used, resulting in a more maintainable, testable, and versatile software layer. For this project, product line architecture was designed for the new applications in this environment, which will slowly replace the legacy applications, while coexisting with them. A service oriented development approach was chosen, resulting in the development of several REST API services. Additionally, commonly used operations were implemented as reusable libraries, and a skeleton application generator, designed to create customized, yet fully functional, base applications.

This talk aims to describe the lifecycle of this project, while presenting several challenges tackled in areas such as authentication and authorization, planning for efficient medical certification, separation of concerns, and platform interoperability.

Primary author: AFONSO, Carlos (Centro Nazionale di Adroterapia Oncologica)

Co-authors: CASALEGNO, Luigi (Fondazione CNAO (IT)); Prof. LARIZZA, Cristiana (University of Pavia)

Presenter: AFONSO, Carlos (Centro Nazionale di Adroterapia Oncologica)