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ELI-NP as a crucible for innovation: the ELAP project

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ELAP is the Extreme Light Applications Park of the ELI-NP facility in Magurele (RO).

The Extreme Light physics is a novel approach to laser-matter interaction, made possible by the groundbreaking works of Prof. T. Tajima (UCI, CA, USA) and Prof. G. Mourou (IZEST-Ecole Polytechnique, FR). The unique characteristic of the extreme light laser is to produce enormous amounts of energy and pressure; enough to rip matter apart, releasing sub-atomic particles such as protons, moving close to the speed of light. The core activities of ELAP are based on the breakthroughs in the field of the nuclear physics made possible by extreme light, especially in the field of nuclear medicine, but also to other real life applications like nuclear waste disposal.

Since the preparation of the ELI-NP white book [1], the project team identified the need of an application park to transform the scientific results into real-life applications. ELAP is the natural outcome of such an ambitious and unique project.

The present project for an Extreme Light Applications Park was defined by the brainstorming activity of the IZEST laboratory team (Ecole Polytechnique, France), the ELI-NP (Magurele, Romania) scientific team and private sector representatives (industry, investment).

Within the EUCALL project, senior scientists from SRS, FEL and HPL facilities will join to identify novel research opportunities, methodologies, and technologies. Strategies will be implemented towards optimum use of the laser light facilities, promotion of innovation, and coordinated user training/experience exchange. These activities help actively innovation projects like ELI-ELAP by supporting the following activities:

- collect information about scientific opportunities and instrument implementation,
- collect information about innovation opportunities, technical transfer, industrial access to the research facilities, success stories of laboratories spin-offs and start-ups,
- study of a few cases of existing cross-community collaborations.

In conclusion, ELAP answers, on the short term, to the need of building applications on the scientific novelties discovered at the ELI-NP facility. On the long term, the creation of an innovation activity in the environment of Magurele will represent a unique advantage for the development of the ELI-NP project and of Romania in general.

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[1] *The White Book of ELI Nuclear Physics, Bucharest-Magurele, Romania, The ELI-Nuclear Physics working groups*

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