**OVERVIEW OF PROJECT PROPOSAL UNDER CALL INFRADEV-04-2019**

*‘Fast Track to the Implementation of an ESFRI Research Infrastructure’*

*“The transition from construction to full operation of a new pan-European research infrastructure, can be slowed down by the difficulties to align the funding cycles of the different countries committed to contribute to its implementation.*

*A significant EU contribution to support the preparation for full operation could trigger the alignment and accelerate the research infrastructure transition from the implementation to full operational phase and enhance its sustainability.”*

* Deadline: March 20, 2019
* Expected project start: January 1, 2020

**Scope and ambition**

The following are expected outcomes from the INFRADEV-04-2019 call:

* Accelerate the initial operation (start-up phase) of the Extreme Light Infrastructure (ELI)
* Synergetic use of the European Structural and Investment Funds (ESIF), Horizon 2020 support and national funding
* Complement investments coming from ESIF in order to expand the scope and impact of both funds
* Transform ELI from construction to an operational European user facility with participation of all interested countries in the establishment of a European Research Infrastructure Consortium (ERIC).
* Demonstrate the involvement of the three ELI facilities and at least the other four ELI-DC (Delivery Consortium) members as well as the relations with other relevant laser initiatives in Europe (LASERLAB)

This is a non-competitive call that must nevertheless meet the minimum criteria in regards to ‘impact’, ‘excellence’ and ‘implementation’. In particular, the call is focused on start-up activities and enabling ELI ERIC to become a sustainable, integrated organization.

The following document is a summary of the work packages, including a description, the tasks, and the deliverables. This proposal is based on 14 months of work and analysis done by the three ELI Facilities and their respective host institutions, together with the ELI Delivery Consortium.

That work included an analysis of the predicted costs (Operational Expenditure) of the facilities, a proposed ‘Operational Model’ and a detailed ‘Technical and Scientific Description’ of the scope of each facility. Each of those documents has been reviewed and commented by the ELI-DC General Assembly and supporting governance committees (the ELI-DC Administration and Finance Committee, or AFC, and the International Scientific and Technical Advisory Committee, or ISTAC).

Additional contributions are acknowledged for work under EUCALL, ELITRANS, and the particular ESIF projects for implementation of each ELI Facility, as well as other EU and nationally funded projects.

**Project Objectives**

The primary goal of the project is to develop sustainability of ELI during ELI’s start-up years. Expected outcomes at project end:

* World-leading excellence in terms of breakthrough science, and user-access
* Efficient, integrated organization
* World-class, risk-controlled, cost-effective, sustainable operations
* Expanded user community and ERIC membership

The 19,9M EUR project takes place over 42 months, with a timeframe matching the “Transition Period” during which the ELI Facilities transition to steady-state operations, stand up the facilities for users, and integrate into a single organization, ELI ERIC.

**Key assumptions**

In keeping with the letter and spirit of the call, the project has been designed to enable an immediate transition in the management of three separate organizations into one integrated organization. The project is governed by a project steering board consisting of members of management from ELI ERIC and the ELI Facilities. Key assumptions are:

* ELI ERIC (ELI-DC at the proposal date) as project coordinator, due to focus of call on sustainability of ELI;
* The ELI Facilities, under the auspices of their host institutions, as Linked Third Parties (LTP) in the management of the project;
* ELI ERIC responsible for management of WPs, with strong involvement of ELI Facilities;
* WP leaders to be seconded from ELI Facilities to ELI ERIC or hired from the outset;
* Flexible/integrated management of resources among ELI participants over project timeframe, to accommodate gradual integration
* Dedicated staff involvement in the project, unlike previous projects (ELITRANS) where responsibilities were distributed;
* Financing of access for flagship/experiments and to ensure early scientific success.

The seven Work Packages in the Work Breakdown structure reflect the key priorities of ELI during the transition to operations. Those include a) the need for *management to efficiently integrate resources across the three facilities* b) to *identify opportunities for technical synergies* across three of the world’s leading high-power, short-pulse laser centers and c) to *scientifically demonstrate the performance and potential of the ELI systems* early in the operations phase of the scientific program.

WP1: Setting-up and project management 948,813 €

WP2: Joint Development of ELI as an Integrated Organization 3,017,500 €

WP3: Ramping-up Towards Excellent Steady-State Operations 3,197,848 €

WP4: Key technologies for enhanced experiments 5,348,283 €

WP5: Enabling Excellent User Access 4,572,500 €

WP6: Fostering ELI’s Innovation Impact 1,169,833 €

WP7: Promoting ELI Membership & Communication 1,741,453 €

**Total** **19,996,234 €**

**WP1 Setting-up and project management**

**Objectives:** supporting the initial setting-up, planning, implementation and reporting of the project’s activities in compliance with the grant agreement, enabling and stimulating efficient exchange of information and collaboration among the project partners and other key stakeholders.

**Lead partner:** ELI-DC/ERIC

**Involvement:** ELI-DC/ERIC and ELI-BL, ELI-ALPS, ELI-NP

**External Partners:** none

**Tasks**

* Task 1.1 – Installation of project bodies and advisory boards
* Task 1.2 – Setting-up of key project management processes
* Task 1.3 – Internal project communications and setting up of supporting communications and data management systems
* Task 1.4 – Organization of project meetings and workshops, including kick-off and closing events
* Task 1.5 – Financial and administrative management of the project
* Task 1.6 – Communications with the EC
* Task 1.7 – Risk monitoring and management

**Deliverables**

* D1.1 Project and Risk Management Documentation
* D1.2 Installation and terms of reference of project advisory bodies
* D1.3 Report on setting-up of project communications systems and communications rules
* D1.4 Project data management plan
* D1.5 Annual project progress reports and final report
* D1.6 Agendas and minutes of all project meetings (SB, PMT, advisory bodies)

**WP2 Joint Development of ELI as an Integrated Organization**

**Objectives:** development of ELI as an integrated organization through the design and implementation of a shared management system and supporting systems enabling joint operations during the Initial Operations Phase in the framework of the operating agreements between the ERIC and the ELI Facilities.

**Lead partner:** ELI-DC/ERIC

**Involvement:** ELI-DC/ERIC and ELI-BL, ELI-ALPS, ELI-NP

**External Partners:** none. Consultancy on management organization (ISO compatible management system) and ERP development

**Tasks**

* Task 2.1 – Implementation of operating agreements between ELI ERIC and ELI hosting organizations
* Task 2.2 – Design and implementation of resource management rules and processes, including cost standards, cost control processes, budgetary processes
* Task 2.3 – Design and implementation of ELI’s management system for in-kind contributions
* Task 2.4 – Setting-up and implementation of integrated management system for ELI
* Task 2.5 – Implementation of legal transition from operating agreements-based operations to fully integrated operations
* Task 2.6 – Development and implementation of IT infrastructure supporting the integrated management of ELI
* Task 2.7 – Definition and implementation of training measures supporting the implementation of the integrated management system

**Deliverables**

* D2.1 Operating agreements between ELI ERIC and ELI hosting organizations
* D2.2 ELI ERIC Cost book
* D2.3 Financial rules, including in-kind management rules
* D2.4 ELI ERIC management system definition
* D2.5 ELI ERIC policies and processes
* D2.6 ELI ERIC key procedures and workflows
* D2.7 Roll-out of integrated management system
* D2.8 Detailed requirements and implementation roadmap for ELI ERIC IT systems and ERP
* D2.9 Report on deployment and adoption of ELI ERIC IT systems and ERP
* D2.10 Implementation plan for transition from operating agreements to fully integrated operations
* D2.11 Lessons learnt and revision of ELI integrated management system

**WP3 Ramping-up Towards Excellent Steady-State Operations**

**Objectives:** the operations at the ELI facilities reach the excellence in performances in routine operation with a joint approach aiming to optimizing performance and efficiency and tackle critical challenges and standardization requirements, together with the communities of users and large RIs.

**Lead partner:** ELI-DC/ERIC

**Involvement:** ELI-DC/ERIC and ELI-BL, ELI-ALPS, ELI-NP

**External Partners:** CLPU (ES), CEA (FR), LMU (DE), HZDR (DE), CNRS (FR), STFC (UK)

**Tasks**

* Task 3.1 – Joint definition, review and optimization of operational modes
* Task 3.2 – Standardization of metrology procedures for lasers and secondary sources
* Task 3.3 – Optimized management of spare parts to maximize cost efficiency, machine safety and reliability
* Task 3.4 – Capacity building through training of operating teams

**Deliverables**

* D3.1 Facility Operations and Maintenance Plan
* D3.2 Report on implementation and review of Facility Operations and Maintenance Plan
* D3.3 Detailed description of metrology procedures and diagnostics instrumentation for operators and users of ELI Facilities
* D3.4 Report on ELI-led metrology standardization initiative with key stakeholders
* D3.5 Spare parts database including data on consumption, life expectancy and cost of key spare parts of ELI Facilities
* D3.6 Report on operational risk management procedures and reviews
* D3.7 Report on implementation of spare parts standardization strategy and procurement guidelines
* D3.8 Report on training needs and implementation of training measures for ELI operators

**WP4 Key technologies & enhanced experiments**

**Objectives:** The risk mitigation of the routine operation of research infrastructures as ELI, based on state-of-the-art high peak power, high repetition rates laser systems requires the understanding and control of a few key technologies. The secondary sources are critical to the attractiveness for the users: selected key technologies contribute in enhancing the capabilities of the ELI facilities.

**Lead Partner:** ELI-DC/ERIC

**Involvement:** ELI-DC/ERIC and ELI-BL, ELI-ALPS, ELI-NP

**External Partners:** CNRS (FR), TU Darmstadt (DE), STFC (UK), HZDR (DE), CEA (FR), INFN (IT), QUB (UK), CNR (IT)

**Tasks**

* Task 4.1 - Key optical components long term sustainability: strategies to increase the LIDT
* Task 4.2 - Definition of a standard approach to target design and debris shielding
* Task 4.3 - Development of software toolboxes to enable optimized operation
* Task 4.4 - Key technologies to enhance the experimental performances of the secondary sources

**Deliverables**

* D4.1 Report on results of testing and design activities for improvement of LIDT of key optical components
* D4.2 Guidelines for optimization of LIDT of key optical components and report on implementation
* D4.3 Feasibility study and cost-benefit analysis of ELI-wide mirror coating facility
* D4.4 Detailed analysis of users' target needs and related production requirements
* D4.5 Target production strategy and report on implementation
* D4.6 Development of integration solutions to control system for critical diagnostics instruments
* D4.7 Simulation solution for optimization of high-peak power laser operation
* D4.8 Report on implementation of key technologies for attosecond and particle acceleration breakthrough experiments

**WP5 Enabling Excellent User Access**

**Objectives:** implementing standards and practices in all areas related to user experience to support the development of ELI as the most advanced user facility in the world in the field of laser-driven science.

**Lead Partner:** ELI-DC/ERIC

**Involvement:** ELI-DC/ERIC and ELI-BL, ELI-ALPS, ELI-NP

**External Partners:** Elettra (IT), HZDR (DE)

**Tasks**

* Task 5.1 – Setting up and development of user management processes and user offices
* Task 5.2 – Development and maintenance of user portal, including online data services
* Task 5.3 – Implementation of access pilots
* Task 5.4 – Training measures towards users (including safety)

**Deliverables**

* D5.1 Management procedures and workflows of user offices and access-related processes
* D5.2 Detailed design report and implementation roadmap for ELI ERIC user portal
* D5.3 Report on implementation of ELI ERIC user portal
* D5.4 Annual reports on implementation of access pilots
* D5.5 Detailed description of training measures and tools for users
* D5.6 Report on implementation of user training activities

**WP6 Fostering ELI’s Innovation Impact**

**Objectives of the WP:** Maximize ELI’s impact on innovation through the development of a shared approach to knowledge transfer and industrial access.

**Lead Partner:** ELI-DC/ERIC

**Involvement:** ELI-DC/ERIC and ELI-BL, ELI-ALPS, ELI-NP

**External Partners:** Elettra (IT), STFC-CLF (UK)

**Tasks**

* Task 6.1 – Setting-up of ELI ERIC ILO with presence at ELI Facilities and Strategy
* Task 6.2 – Development of common processes and “toolbox” in the area of knowledge transfer and exploitation
* Task 6.3 – Promotion of ELI’s services towards industry

**Deliverables**

* D6.1 Setting-up and operation of ELI ERIC central/local ILOs, annual reporting of activities
* D6.2 Setting-up of ELI ERIC Industry Board and reports on board meetings
* D6.3 Report on organization of industry events at ELI
* D6.4 Strategy for setting-up of ELI Innovation Fund and ELI Innovation Award and report on implementation measures

**WP7 Promoting ELI Membership & Communication**

**Objectives of the WP:** Promote the sustainability of ELI through activities aiming at attracting new members and strategic partners within ELI ERIC and at promoting joint efforts within the European laser community around ELI and the development of high-intensity high-repetition-rate laser science. Develop the communication measures to disseminate the project’s progress and outcomes and raise awareness on ELI. Primary target groups will include the project’s direct participants, future users, the industry and policy-makers. Communication activities will also target the media, scientific associations and the public.

**Lead Partner:** ELI-DC/ERIC

**Involvement:** ELI-DC/ERIC and ELI-BL, ELI-ALPS, ELI-NP

**External Partners:** IST (PT), FORTH (GR)

**Tasks**

* Task 7.1 – Definition and roll-out of communication plan and development of communication material
* Task 7.2 – Development and maintenance of project website and social media channels
* Task 7.3 – Promote the enlargement of ELI ERIC membership through dedicated activities towards national user communities and national decision-makers
* Task 7.4 – Outreach and support to user communities
* Task 7.5 – Science and technology road-mapping for the European laser community
* Task 7.6 – Promotion of ELI's internationalization and establishment of strategic partnerships

**Deliverables**

* D7.1 New Members and Strategic Partners Engagement Plan
* D7.2 Scientific Community Outreach Strategy
* D7.3 Annual reports on activities to engage new partners
* D7.4 Annual reports on the implementation of community outreach activities
* D7.5 Report on "High Intensity Laser Science And Technology Roadmap For Europe"
* D7.6 Corporate identity guide and communications rules for ELI ERIC
* D7.7 Project communications and dissemination strategy
* D7.8 Project website and portal

**Budget overview**

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**Notes to the budget**

* The detailed costing of effort, in terms of full-time equivalents (FTEs) is not detailed in this summary, but it should be noted that in this proposal, consistent with the rules and guidelines for H2020 projects, the significant majority of costs cover effort, or labor. For the sake of planning and given the aim to deliver a unified organization, an indicative unified ‘ELI rate’ has been assumed, but salary rates depend on actual reported costs and will be adjusted. There are over 300 direct person-months planned for each ELI Facility.
* The overhead is 25%, and can be extrapolated from the costs for each partner.
* Generally, the proposal does not support significant capital investment costs, but will support prototyping and material costs to support activities.
* The WP2 budgets will be adjusted to reflect the real needs and priorities of each facility relative to the ERIC organizational integration during the 42-month time period starting in January 2020.
* The WP3, while including several external partners, mainly focuses on technical organizational efficiency and effectiveness of the ELI facilities, especially procedures and issues relative to quality and standard operations, safety, etc., at the ELI facilities.
* The WP4 budget is indicative, and based on a plan to launch flagship/pilot experiments at each ELI Facility to demonstrate the performance and scientific potential of the facilities. The ultimate plan will depend on then availability and readiness of systems, as well the relative costs of the chosen experiments, and so technical/scientific aspects will drive the financial distribution.
* The budget for WP7 will reflect the needs of specific user communities and may be adapted based on the agreed activities to promote and disseminate information about the readiness and use of the respective ELI facilities.