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Project acronym: **IMPULSE**
Project title: **'Integrated Management and reliable oPerations for User-based Laser Scientific Excellence'**

DELIVERABLE 6.1

Setting-up and operation of ELI central ILO and local units, annual reporting of activities

Work Package #	6
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Abstract: This report covers activities of Work Package 6 in the period November 2020 October 2022 within Tasks 6.1 – 6.3. Facility Innovation Offices were set up and got operational. ELI Innovation Policy and a concept of ELI Innovation Strategy were approved. ELI outlined innovation-related processes incl. a concept of Innovation Board and Industry Panel. ELI presented opportunities for industry and innovation development at meetings with companies and industry-oriented conferences and events.

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Date	Version	Author/Editor/Contributor	Summary of main changes
08/12/2022	V1	Ales Hala	Final version approved by PMT

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Table of Contents

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
EC	European Commission
ELI	Extreme Light Infrastructure
ELI-ALPS	ELI Attosecond Light Pulse Source Facility
ELI-NP	ELI Nuclear Physics Facility
ELI ERIC	ELI European Research Infrastructure Consortium
ERIC	European Research Infrastructure Consortium
ESFRI	European Strategy Forum on Research Infrastructures
H2020	Horizon 2020
KPI	Key Performance Indicators
PC	Project Coordinator
RIs	Research Infrastructures
TL	Task Leaders
WP	Work Packages
WPL	Work Packages Leaders

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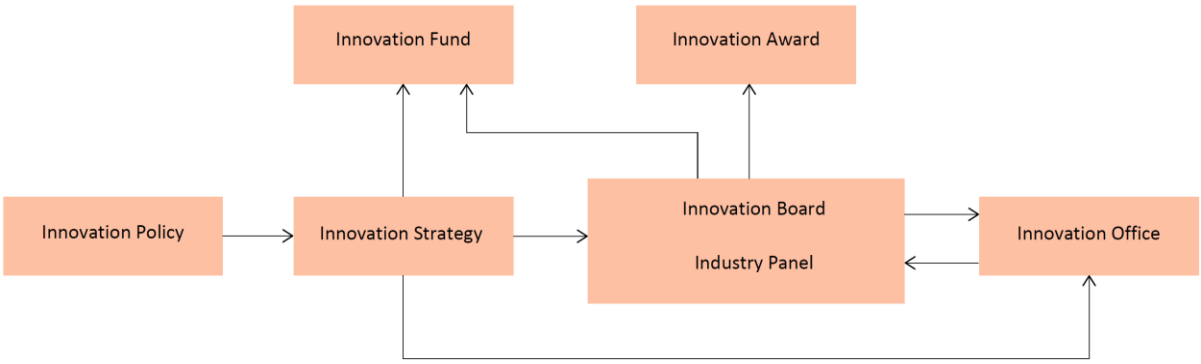
1 Introduction

This report summarizes innovation-related processes and operations at ELI ERIC and ELI Facilities within the project Impulse. All WP6 stakeholders (ELI ERIC, ELI Beamlines, ELI ALPS, ELI NP and the project partners of Elettra and STFC) were actively contributing to the reported outcomes.
The covered period is November 2020 – October 2022.

2 Task 6.1 Setting-up of ELI ILO with presence at ELI Facilities

The aim of Task 6.1 is to establish an innovation ecosystem at ELI and define policy and strategy for innovations at ELI.

Scheme of the ELI framework for innovation:



2.1 Established ILO (Innovation Offices)

Facility ILOs have been renamed to Facility Innovation Offices. This name represents more accurate description of units dealing with innovations and industry relations at research infrastructures as ELI. The name of Industry Liaison Office (ILO) remains only with the ILO network, which will have close relations with ELI and will be described in D6.2 (Strategy for ELI Innovation).

Facility Innovation Offices were set up on 12 May 2021. They became functional units responsible chiefly for coordinating and managing all relations with the industry, specifically with technology developers in relation with the innovation role of ELI, and for monitoring and capturing of innovative ideas, commercialisation of IP created or co-created at ELI, industrial use of the ELI's instrumentation and outreach to industrial and application partners. The responsibilities are defined in the MS62 (Initial ILO key staff hired).

The initial Facility Innovation Office personnel had been nominated by the management of ELI Facilities:

- ELI Beamlines – Aleš Hála, Andrea Cejnarová
- ELI ALPS – Dávid Bereczkei, László Jaloveczki, Zsuzsa Hegedüsné Halmágyi, Zoltán Gyarmati, József Kanyári

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- ELI NP – Daniela Zamfir, Marius Jurca

In the reported period, ELI Innovation Offices together with the project partners of Elettra and STFC held 30 meetings, of which 3 were in-person and 27 online. The meetings were led by WP6 leader (ELI Beamlines) and concentrated on WP6 progress in fulfilling Tasks 6.1 – 6.3.

In the period of June 2021 – Dec 2021, WP6 stakeholders mapped the background IP used for development of innovation cases at ELI Facilities. Project partners shared with ELI Facilities their innovation cases and best practices of their facilities.

List of presented innovation cases at ELI Facilities:

Date	Presented by	Innovation cases/technologies
28 July 2021	ELI Beamlines	Licence of Compact XUV spectrometer / beam profiler to HP Spectroscopy GmbH
11 August 2021	ELI ALPS	Research project of nuclear waste management (Shortening of halftime of nuclear waste)
25 August 2021	ELI NP	Introduction of IRASM (Multipurpose Irradiation Facility Centre) devoted to production and R&D centre offering industrial irradiation services, consultation, analyses, training and research in radiation processing
22 September 2021	ELI Beamlines	QURe- technology offering radiotherapy with high energy electrons generated by high power lasers combined with X-ray monitoring
6 October 2021	ELI ALPS	Research project of infrared reflective polymer/phase change materials encapsulations for rendering perovskite photovoltaics environmentally robust and efficient
20 October 2021	ELI NP	Non-destructive material inspections using brilliant gamma beams at ELI-NP
15 December 2021	ELI ALPS	New aspects of industrial use of ELI ALPS

Table of innovation cases shared by project partners

Date	Presented by	Innovation cases/technologies

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3 June 2021	Elettra	Alifax, SXFEL
14 July 2021	STFC	Cobalt Ltd., SciTech Ltd.
8 September 2021	STFC	Keit Spectrometers Ltd., Thru vision
22 September 2021	Elettra	KYMA
3 November 2021	Elettra	Dynamic High Pressure, Environmental monitoring station, case study of the Pall Corporation
3 November 2021	STFC	EPAC centre, Industry access mechanisms (de-risking, ROI), case studies of OxSyBio, Pepsico, Finden, Malvern Panalytical, Johnson Matthey, UCB, Oxford Nanoimiging, EvoTech, AstraZeneca

In the following period starting in January 2022, ELI Innovation Offices have been engaging in development of innovation cases identified at ELI Facilities. These cases resulted from collaborations that have been upgraded or launched within the Impulse project. All developed cases are based on the ELI background IP.

- GLAD coating technology (ELI Beamlines);
- LIDT station material and optics testing for UKRI (ELI Beamlines);
- Dual-stage gas target for laser plasma electron acceleration (ELI Beamlines);
- Electron radiation effects for Cubesat-dimensioned devices (ELI Beamlines);
- ELIGIA – non-destructive material inspection with brilliant **γ**-beams (ELI NP);
- GRIPS – fast grating interferometer imaging with low dose and high resolution (ELI NP); and
- Infrared reflective polymer encapsulations for rendering perovskite photovoltaics (ELI ALPS).

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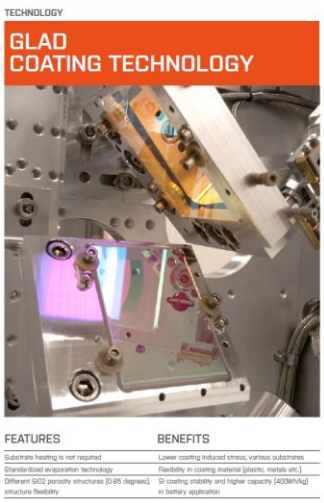

2.2 ELI Innovation Policy

ELI Innovation Policy defines the general approach of ELI to innovation and industrial collaborations. The policy terms ELI's vision to be an innovation leader among public research institutions in photonics, its commitment to develop innovation activities with direct societal and economic impact and support to ELI personnel in order to create new values with innovations.

The final draft of ELI Innovation Policy took into consideration the compatibility of ELI Innovation Policy with the ELI management system and was presented to the ELI ERIC General Assembly at the meeting on 17 – 18 October 2022, where it was unanimously approved.

2.3 ELI Innovation Strategy

ELI Innovation Strategy is being finalized to be a document based on the ELI Innovation Policy with an objective to make ELI a global innovation leader among public research organisations in the domain of high power lasers. The ELI Innovation Strategy concept focuses on exploring paths for promoting excellent research and enhancing innovative approaches to address global challenges, create socio-economic impact, expand the user community, provide opportunities for world-class education and training and create recognizable ELI brand in the industrial community.

The concept of the ELI Innovation Strategy was presented by Allen Weeks, Director General of ELI ERIC, to the members of ELI ERIC General Assembly at their 6th meeting taking place on 17 – 18 October 2022, where it received positive feedback. This presentation is linked to MS64 (ELI Innovation Strategy presented to GA). The first draft of the Innovation Strategy is foreseen to be ready in November 2022 and further communicated with relevant stakeholders in order to be approved.

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3 Task 6.2 – Development of common processes and “toolbox” in the area of knowledge transfer and exploitation

Task 6.2 develops innovation processes consistent and integrated with the ELI Management System, including processes to incubate and develop early-stage innovative ideas and support to industry-related services.

3.1 Innovation processes at ELI

Key innovation and technology management processes at ELI have been identified in ELI Innovation Policy in order to maximize its impact on innovation through development of a shared approach to knowledge transfer and industrial access.

The key innovation processes at ELI are:

- Proprietary access for industry users;
- Support to innovative entrepreneurship of ELI personnel;
- Collaborations with industry leading to new technologies;
- Identification, protection and commercialization of ELI outcomes;
- Industrial Liaison network for partnership with industry community; and
- Building knowledge and skills capital.

The innovation processes will be described in detail in the ELI Innovation Strategy, see 2.3.

3.2 ELI ERIC Innovation Board

ELI ERIC Innovation Board has been designed to be an internal body for implementation of innovation-related processes and actions, which will discuss, assess and make decisions on all matters related to implementation of the ELI Innovation Strategy. Innovation Board will also act in preparation of procedures and implementation in ELI ERIC funding schemes and other mechanisms aiming at identification and development of innovations at ELI, proprietary access guidance and supervision, definition and guidance on innovation-driven procurements processes, making decisions on IP provisions and other innovation-related activities at ELI.

ELI ERIC Innovation Board concept has been drafted in compliance with the ELI ERIC Innovation Policy.

ELI ERIC Innovation Board terms of reference had been drafted by WP6 and submitted for an internal review on 30 September 2022. This action was linked to D6.4 (Setting-up of ELI Innovation Board).

The kick-off meeting of ELI Innovation Board has been scheduled for 22 November 2022. This kick-off meeting will be an official launch of its operations, linked toMS66 (Innovation Board convened).

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3.3 ELI ERIC Industry Panel

ELI ERIC Industry Panel has been designed to be an external advisory body to ELI ERIC Director General and other ELI management members, which will provide feedback on the industrial impact of ELI development directions and applications and suggests additional development topics.

A concept of Industry Panel had been drafted by WP6 and submitted for an internal review on 30 September 2022.

3.4 ELI ERIC Innovation Fund

ELI ERIC Innovation Fund will be a tool to provide funding for development and commercialisation of IP created at ELI, and for facilitation of other types of collaboration with industry. Its concept specifically focuses on early-stage investments, which are usually created in high capital-intensive fields and enjoy low interest of non-public investors.

A concept of the ELI ERIC Innovation Fund is being drafted by WP6 (ELI ALPS) and will be submitted for internal review in 1Q/2023.

3.5 Directive for the use of ELI ERIC outcomes in innovation and knowledge transfer

The objective of this directive is to identify how ELI will manage opportunities and support to research results, in particular with a potential to be turned into commercial spin-off projects that contribute to the positive socio-economic impact of ELI.

This directive is being drafted by WP6 (ELI Beamlines and ELI ALPS).

3.6 A market survey of potential ELI industrial partners based on actual offer of ELI infrastructure to industry

In the reported period, ELI Beamlines conducted a market survey on potential industrial partners for the technology of electron radiation effects on cube-sat dimensioned devices (see 2.1 for its one-pager). ELI ALPS conducted a survey on future potential users, partner institutions and research companies.

4 Task 6.3 – Outreach to industry

The aim of Task 6.3 is to communicate and promote ELI's opportunities for industry collaborations. ELI aims to continuously draw up industry-oriented promotional materials and communicate them to listed industrial, research and application partners.

4.1 Industrial outreach materials

WP6 (ELI NP) has prepared and presented outreach materials (leaflet and MS Powerpoint presentation) aimed at introducing technologies and services with innovation potential based on ELI science, technology and engineering outcomes. Inputs had been delivered by all ELI Facilities.

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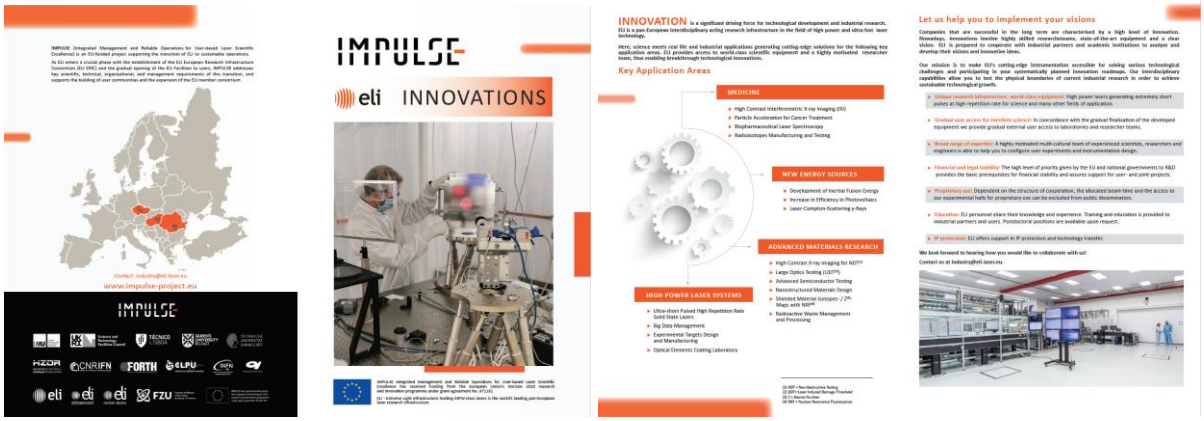

4.2 Presentations for industrial partners

ELI Facilities reported four events aimed directly on presentation of ELI's potential for industry. In the reported period, outreach events were either focused on companies in selected industrial sectors and also indirectly focused on industry through chambers of commerce or commercial sections of embassies. Further, there were individual visits and consultations throughout the reported period with both large enterprises (Rigaku, Aero) and SMEs (Crytur, ELLA CS, Cardam).

Visit of the commercial attachés to diplomatic missions in Romania for partnering with ELI, January 2022

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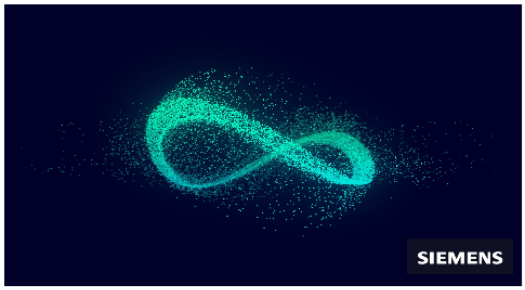
Industry day at ELI Beamlines, May 2022

Siemens Innovation Tour at ELI ALPS, June 2022



2022. május 17.	Miskolc	Calimbra Hotel
2022. május 19.	Kecskemét	Four Points by Sheraton
2022. június 2.	Budapest	Park Inn by Radisson
2022. június 8.	Győr	Hotel Farmulus

Innovation Tour 2022.

Időtartam	Előadások	Előadó
09:20 - 09:50	Megnyitó	Jeránek Tamás/ Magyar István
09:50 - 10:20	TIA V17 - sokrétű szerszámosláda	Brechler Attila / Magyar István
10:20 - 10:50	WinCC - a többarcú megjelenítő	Barabás Zsolt / Móczó Vilmos
10:50 - 11:10	*Szünet*	
11:10 - 11:40	A precíz és hatékony mozgásvezérlés új eszközei	Győri Ernő/ Farkas Szabolcs
11:40 - 11:50	Evosoft - digitalizációs megoldások	Kurucz Balázs - evosoft
11:50 - 12:00	Mendix	
12:00 - 12:15	Melyik Workshopra menjek délután?	
12:15 - 13:10	*Ebéd*	
13:10 - 16:00	Workshopok 12 témában	
16:00 - 16:10	Összefoglaló beszélgetés, zárás	Magyar István

Időtartam	Workshopok
13:00-16:00	S7 1500 R/H redundáns rendszerek
	TIA V17 szoftverek
	Unified - View of Things megjelenítés
	Scalance újdonságok
	OPC UA megoldások
	SINAMICS G115D, G120X hajtások
	Microdrive rendszerek
	Evosoft - digitalizációs megoldások
	Mendix
	Kapcsolástechnika wokshop - lágyindítók, SIMOCODE
	Energiamérés, energiahatékonyság a gyakorlatban
	SITRAIN tanfolyamok és SIMATIC szervizszolgáltatások

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Visit of the Skoda car company to ELI Beamlines, June 2022

Meeting with chambers of commerce and economic sections of embassies at ELI Beamlines, September 2022

4.3 Presence at relevant industrial/scientific events

In the reported period, WP6 organised participation in events aimed at contacting industrial and business partners to raise awareness about innovation-oriented opportunities at ELI Facilities.

TechConnect Europe, Malmö, Sweden, November 2021

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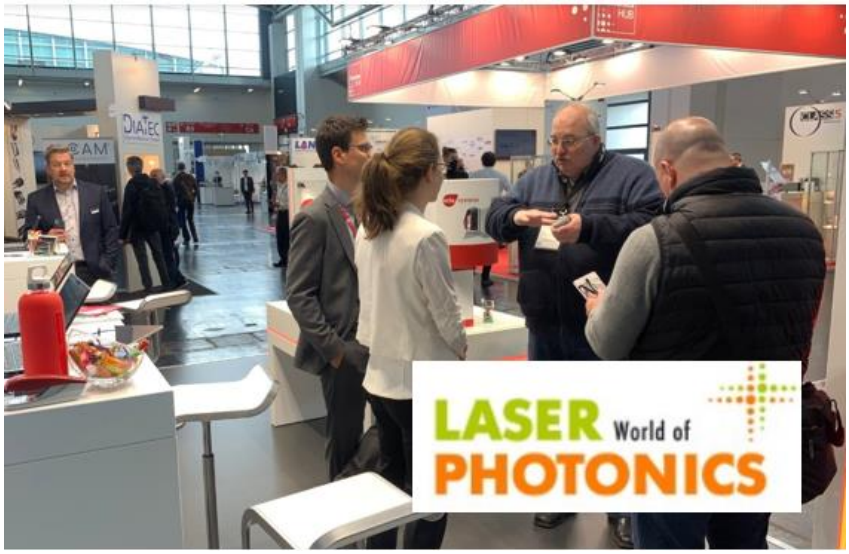
ELI presented its innovative potential in the laser-driven high-energy accelerated electron oncology.

Laser World of Photonics, Munich, Germany, April 2022

ELI presented its capacities and opportunities in design and building of high-power high-rep rate laser sources.



Industrial Technologies IndTech2022, Grenoble, France, June 2022

ELI presented its innovative potential in laser-driven cancer treatment (both accelerated proton and electron therapy) and laser-driven plasma fusion experiments (zero emission energy sources).

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Big Science Business Forum – BSBF 2022, Granada, Spain, September 2022

ELI presented together with the company od Streicher (supplier of cutting-edge vacuum components to ELI) opprotunities to build partnerships with European ILOs and instrumentation suppliers.

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