European Laser Research Infrastructures serving Science and Industry

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WP 2

D2.8: Industry-oriented User Meeting

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About Lasers4EU

Lasers4EU is incorporating the major laser research infrastructures, in a large number of European member states, into a comprehensive virtual distributed laser research infrastructure that is offering to a broad user community, from academia and industry, access to an exceptional portfolio of technical and scientific capabilities. This unique set of instruments together with the specific scientific expertise at the host facilities allows Lasers4EU users to carry out high-level research in an extremely wide range of high-impact topics in life sciences, materials nano-processing, etc.

Laser technology has experienced remarkable advances and breakthroughs during the last 60 years and is now a key innovation driver for highly diversified societal applications and products, thereby substantially contributing to economic growth and to solving challenges in the areas of health, environment and energy. Through its strategic approach, Lasers4EU aims to strengthen Europe's leading position and competitiveness. It facilitates long-term coordination of the laser research activities within the European Research Area and provides concerted and efficient services to scientific, industrial and medical researchers. The main objectives of Lasers4EU are to:

- provide coordinated access to high-quality services based on a coherent and comprehensive consortium of 27 leading European laser installations offering to users from academia as well as from industry cutting-edge performances at the forefront of the laser technologies,
- structure the European landscape of laser Research Infrastructure through enhanced access, extended geographical coverage, novel science diplomacy activities, improved synergies with other European networks and projects,
- increase European human resources in the field of laser science by implementing training activities towards researchers from new domains of science and technology and from geographical regions where laser communities are still less developed.

1 Introduction and Objectives

This deliverable is produced under WP2 (Communication and Outreach), Task 2.2 – Science Diplomacy and Outreach, and reports on the first industry-oriented user meeting organised under Lasers4EU. It documents a concerted effort by the Consortium to coordinate and tailor its services to industrial users and to bridge the gap between research facilities and industry, including medical centres.

The objectives of the industry-oriented user meeting were to:

- bring together past and prospective users, whilst placing a special emphasis on those from industry, with the Consortium's access providers representatives and the Industrial Advisory Committee (IAC) members, to understand their general and industry-specific needs, adapting the services offered by the Access Providing Infrastructures (APIs) accordingly.
- present the industry route through which industrial users can access Lasers4EU facilities, and brainstorm with participants to feed their feedback into the further development of the industry search tool, the access models, and the training offer.
- position the Lasers4EU project and the Laserlab-Europe network as leading providers of cutting-edge laser technology, demonstrating how these advanced capabilities can help industrial users solve technical problems, test the feasibility of new ideas, and develop innovative technologies.

2 Industry-oriented user meeting background

The organisation of the first industry-oriented user meeting marks a significant milestone in the evolution of the Lasers4EU project and the broader Laserlab-Europe network. Historically rooted in academic and fundamental research[1], the network has progressively matured to address the innovation demands of European industry, healthcare, and high-tech sectors.

To effectively engage this target group, the meeting was strategically hosted at the **HiLASE Centre** and **ELI Beamlines** in the Czech Republic, institutions renowned for their robust partnerships with the industry sector and advanced laser infrastructures. This setting provided an optimal environment for aligning academic capabilities with commercial needs.

[1] History | Laserlab-Europe AISBL

The framework of the meeting was built upon three core pillars:

Strategic Governance: Collocating the IAC meeting with the industry-oriented user meeting, enabling IAC members to review key structural elements such as the two-model industry access route, commercial data confidentiality (embargo periods), and the upcoming Laser Technology Roadmap.

Industrial Showcase & Collaboration: Offering dedicated exhibition spaces and technical presentations from industrial partners (representing sectors from space exploration to cultural heritage diagnostics and health) to demonstrate real-world applications of laser technology.

Community Integration & Feedback: Uniting past and prospective users, APIs and industry representatives through topical plenary sessions, a competitive Poster Slam for early-stage researchers, and a roundtable discussion to improve the services offered by the Lasers4EU project to users.

3 Industrial Advisory Committee Meeting

The Lasers4EU IAC convened during the Industry-Oriented User Meeting to discuss the implementation of the Lasers4EU industry access route, the improvement of the industry search tool, the development of strategic outreach measures to attract industrial users, and reviewing progress on the Laser Technology Roadmap.

Overall, the committee strongly endorsed the proposed industry access route, confirming that its two-model structure aligns with recommendations established in prior meetings.

- **Model 1 - Collaborative Research Access:** Companies that lack the in-house expertise or staff to conduct independent experiments can participate by partnering with an academic collaborator.
- **Model 2 - Industry-Tailored Proposal Management System:** Industrial users with projects requiring absolute confidentiality, rapid turnaround times, and exclusive control over their intellectual property can participate through this model designated specially to meet their requirements.

To facilitate the practical implementation of these models the IAC addressed how best to balance the Consortium's open science mandate with commercial confidentiality. The IAC proposed a standard embargo period of two to three years, subject to direct agreement with the host facility. This

period of time is considered a practical benchmark for large corporate partners.

Alongside data protection, the IAC discussed administrative and financial rules governing these industry partnerships. In scenarios involving mixed user groups (such as large enterprises collaborating with SMEs), the Lasers4EU scientific coordinator confirmed that the Principal Investigator's primary affiliation will dictate the terms governing the entire group. Furthermore, it was reiterated that access under bilateral agreements remains cost-free for users, provided they meet standard open-access publication requirements.

Looking ahead to a possible reallocation of access hours in 2027, the IAC recommended rewarding active facilities. Specifically, APIs that successfully host industrial users should be awarded supplementary access days during the reallocation process. While the IAC recommended this performance-linked incentive, no concrete threshold for additional access days has yet been fixed.

Regarding the industry search tool, the IAC noted that the facility descriptions require enhancement, specifically through the inclusion of a designated contact person for each participating infrastructure. As a longer-term upgrade, the IAC recommended integrating an AI agent into the tool, a feature recognised as a valuable asset for demonstrating technical expertise and streamlining engagement with prospective industrial users.

The IAC reviewed the progression of the Laser Technological Roadmap. It was noted that the roadmap fundamentally acts as a strategic instrument for lobbying purposes for the Laserlab-Europe community. It is intended to steer development in a targeted direction whilst remaining freely available to any partner wishing to draw upon it to support their own initiatives.

To support these strategic aims and clearly demonstrate the real-world impact of the laser-based technologies, the roadmap is structured around specific societal domains. This approach directly echoes the broader landscape analysis released in 2023. For each of the defined domains, the framework identifies key challenges, assigns TRLs, and sets concrete milestones for the years 2030 and 2035. Additionally, the document provides an outlook that underlines the synergies between these domains across key technological areas, namely sources, diagnostics, manufacturing, and integrated systems.

4 Industry Participation

As part of the Laserlab-Europe & Lasers4EU Annual & Users Meeting 2026, dedicated exhibition space was provided to enable industrial partners to showcase their latest technological

developments and innovations. The exhibition featured active involvement from several regional companies as well as international representatives from France, Italy, and the UK, including

- ADVACAM (CZ)
- Agilent Technologies (UK)
- Amplitude (FR)
- Aukelos (IT)
- Celestia Energy (CZ)
- CRYTUR (CZ)
- TopTec (CZ)

The option to contribute to the programme with a company's perspective was essential and the following talks from industrial representatives were given:

The Role of Lasers in the Future of Space Development

- From Space-Proven Optics to Spaceborne Laser Systems, Vít Lédl, Toptec
- Satellite Laser Communication - A System Engineers (re-)View, Torsten Voegel, S.A.B Aerospace

Unlocking Stories from the past: Laser-based Technology for Cultural Heritage

- Non-destructive analysis of historical samples using SORS on the Agilent Handheld Spectrometer, Sam Walker, Agilent Technology
- Exploring a novel Fourier transform-based technology for wide-field and microscopy hyperspectral imaging of Cultural Heritage, Marta Ghirardello, NIREOS

New high-intensity Laser Applications in Health

- Towards the translation of VHEE laser-plasma acceleration technology into radiotherapy, Gabriele Bandini, Aukelos

5 Users meeting and poster slam

All users of the Lasers4EU and Laserlab-Europe V transnational access programmes were invited to attend the Industry-Oriented User Meeting. To foster a comprehensive dialogue across the

community, the topical sessions brought together presentations from access users, industry representatives, and scientific experts, integrating thereby academic research outcomes with commercial perspectives and research infrastructure insights.

- **The Role of Lasers in the Future of Space Development:** Séverine Boyer (CNRS/MINES-Paris/PSL) presented on laser ablation propulsion, focusing on high-power pulsed laser irradiation and advanced experimental investigation.
- **Unlocking Stories from the Past – Laser-Based Technology for Cultural Heritage:** Antonina Chaban (CNR) detailed new diagnostic directions in wall painting resulting from user access at IESL-FORTH.
- **Unlocking Stories from the Past – Laser-Based Technology for Cultural Heritage:** Victor Gonzalez (ENS Paris Saclay) presented luminescence studies of historical pigments, connecting heritage science with photochemistry and photophysics.
- **New High-Intensity Laser Applications in Health:** Marco Borghesi (Queen's University Belfast) delivered a talk on laser-driven carbon ion beams for radiobiology at ultra-high dose rates.

Complementing these talks delivered by Users, a dedicated Poster Slam was held to spotlight cutting-edge research from across the broader laser community. The session welcomed contributions from young scientists who had conducted experiments supported by Laserlab-Europe or Lasers4EU, young researchers utilising laser-based techniques in their work, and representatives of access-providing infrastructures. This session allowed sixteen early-stage researchers to introduce their latest scientific advancements. The poster area was specifically designed to give these emerging talents greater visibility among European experts, whilst offering a valuable opportunity to network with laboratory directors and explore career pathways. A notable highlight of the event was the recognition of Tomáš Thor (HiLASE Centre), who was awarded the poster prize for his innovative research on the real-time detection of micrometre-scale dust contamination on optical surfaces.

6 Roundtable Discussion

The roundtable discussion brought together APIs representatives, a representative of the Access Selection Panel, past and prospective users (academic and industrial), and the Lasers4EU Scientific Coordinator. The exchange focused on refining application procedures, improving communication,

and developing targeted support for new and industrial users.

Regarding the proposal submission process, the selection panel representative emphasised that applications must explicitly articulate the rationale for selecting a specific host facility, clearly detailing why that particular infrastructure is required for the proposed research.

To support user onboarding, the Lasers4EU Scientific Coordinator recommended that APIs actively encourage first-time users to take full advantage of available pre-access training opportunities. Expanding on this topic, user representatives suggested organising dedicated training sessions tailored specifically to the needs of industrial users.

To ensure clearer and more accessible communication across the community, participants agreed on the importance of avoiding excessive acronyms in official correspondence, emails, and presentations. It was also agreed to incorporate a dedicated lecture on the operational guidelines and access tools into the programme of the upcoming user meeting in Marseille. Finally, to further assist prospective industrial users in identifying suitable facilities, the panel recommended enhancing the industry search tool by directly incorporating key technical facility parameters.

7 Conclusions and outlook

The Laserlab-Europe & Lasers4EU Annual & Users Meeting 2026 provided a highly valued platform for the laser community to convene, present their latest findings, and discuss ongoing research across a variety of topics. Participants greatly benefited from the lively debates, which facilitated a dynamic exchange of ideas regarding future research trajectories and emerging sector needs. Feedback from industrial participants has been generally positive, culminating in a strong, collective desire for the organisation of follow-up events.

The dedicated Industry-Oriented User Meeting produced actionable insights for bridging the gap between research facilities and the commercial sector. A pivotal outcome was the endorsement of a tailored, two-model industry access route designed to accommodate both collaborative open science and confidential commercial research by the IAC. To streamline future engagement, the Lasers4EU consortium will also focus on upgrading the industry search tool, refining proposal submission guidelines, and ensuring clear communication across the community.

Looking ahead, skills development remains a central priority. By promoting industry-focused training initiatives, such as the 2025 Hands-On Training on High-Power Lasers for Industrial Applications and aligning with the strategic milestones of the Laser Technology Roadmap, Lasers4EU is well-

equipped to attract wider industrial participation and define a clear, strategic direction for future joint endeavours with the sector.

Figure 1. Poster session: Young researchers and API representatives discussing research outcomes

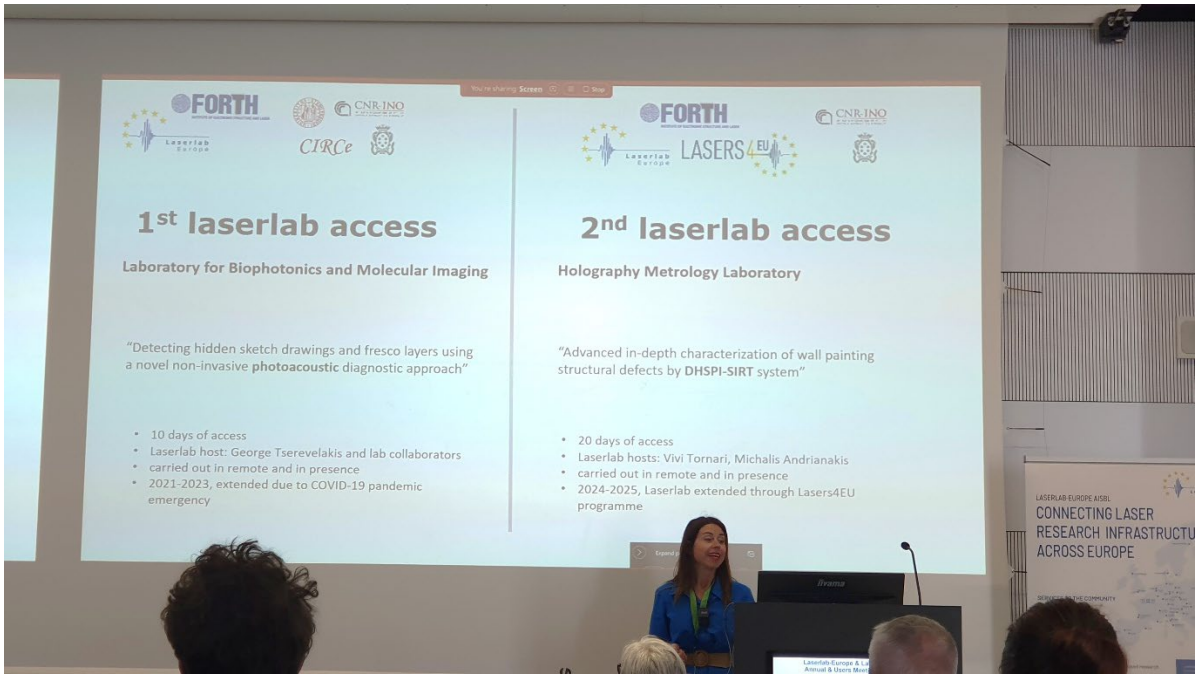

Figure 2. Antonina Chaban (CNR) presenting laser-based diagnostic techniques for wall paintings, developed through user access at IESL-FORTH

Figure 3. Lasers4EU Consortium - group picture