



Advancing the Frontiers of Extreme Light

ELI-Beamlines

2025





Femtosecond Laser Pulse

*ELI Beamlines, Dolní Břežany, Czechia
~10km from Prague center*

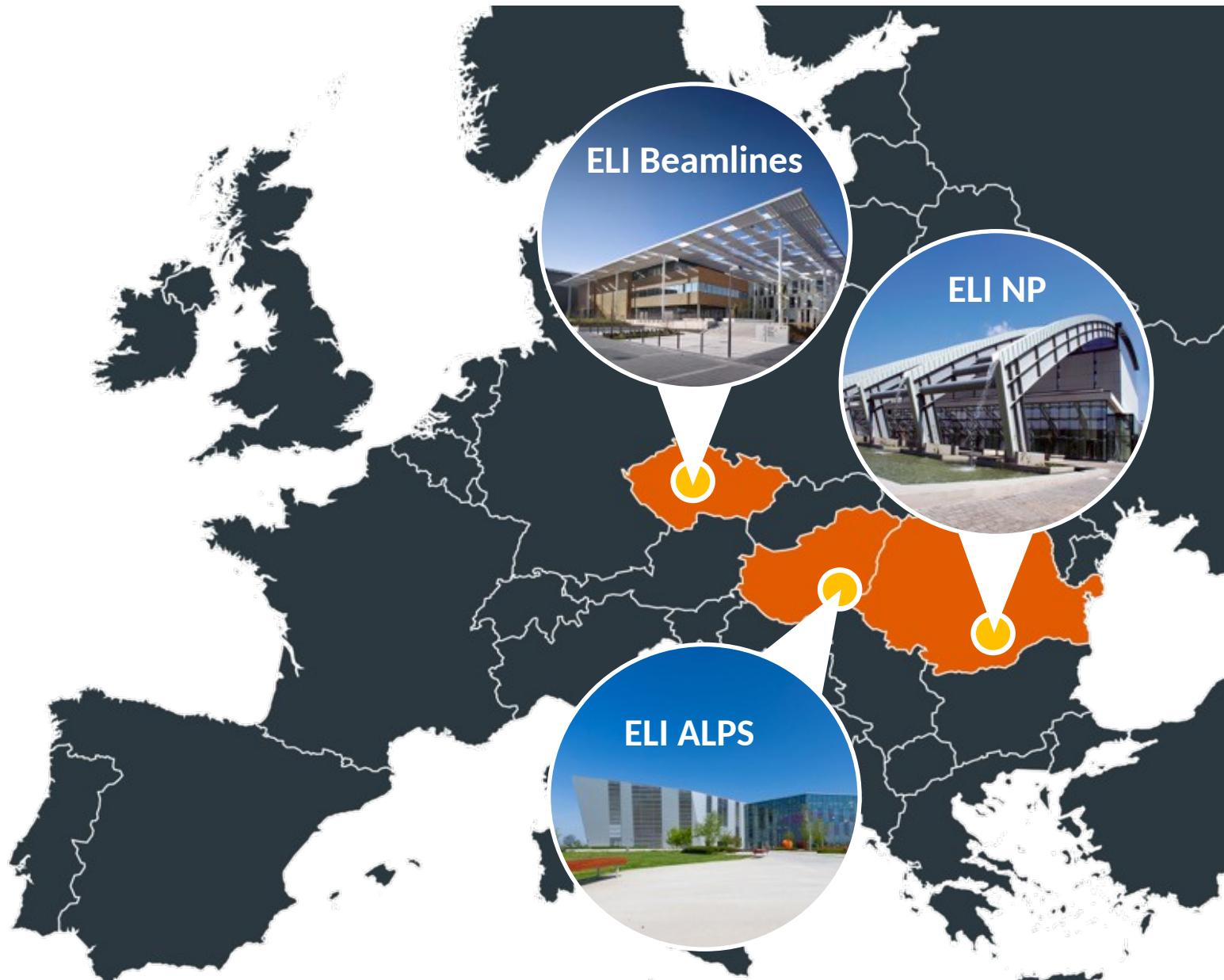
Attosecond Laser Pulse

ELI ALPS, Szeged, Hungary

Nuclear Science

ELI NP, Magurele, Romania

Extreme Light for Europe



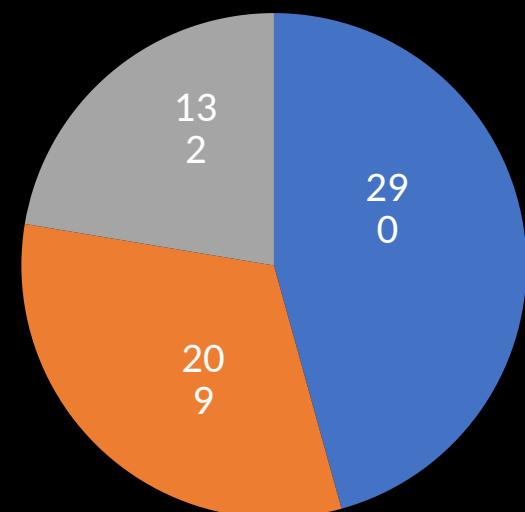


ELI ERIC as an Employer

37 | 631
Nationalities | Employees



- Scientific personnel
- Technicians/Engineers
- Administrative personnel

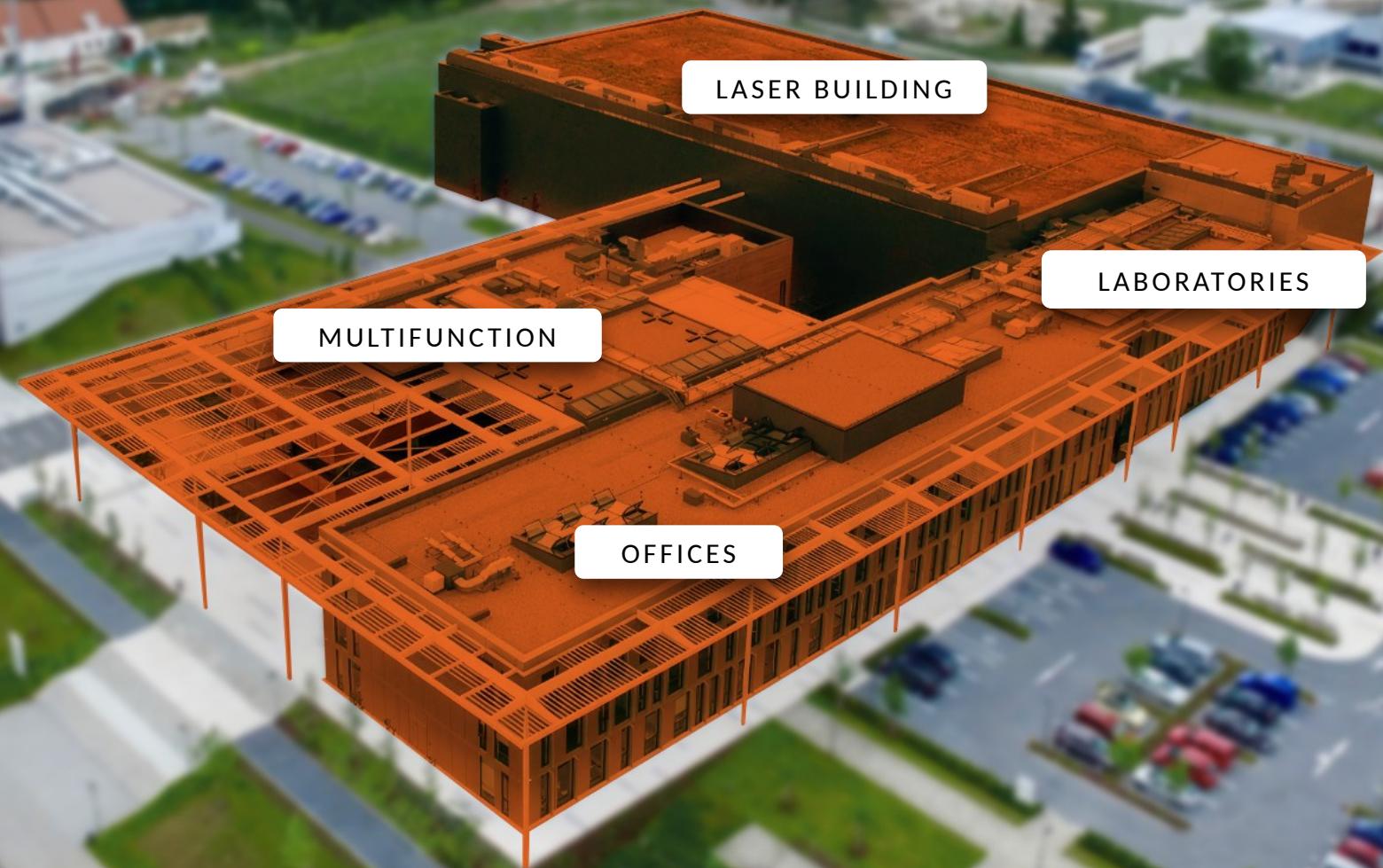


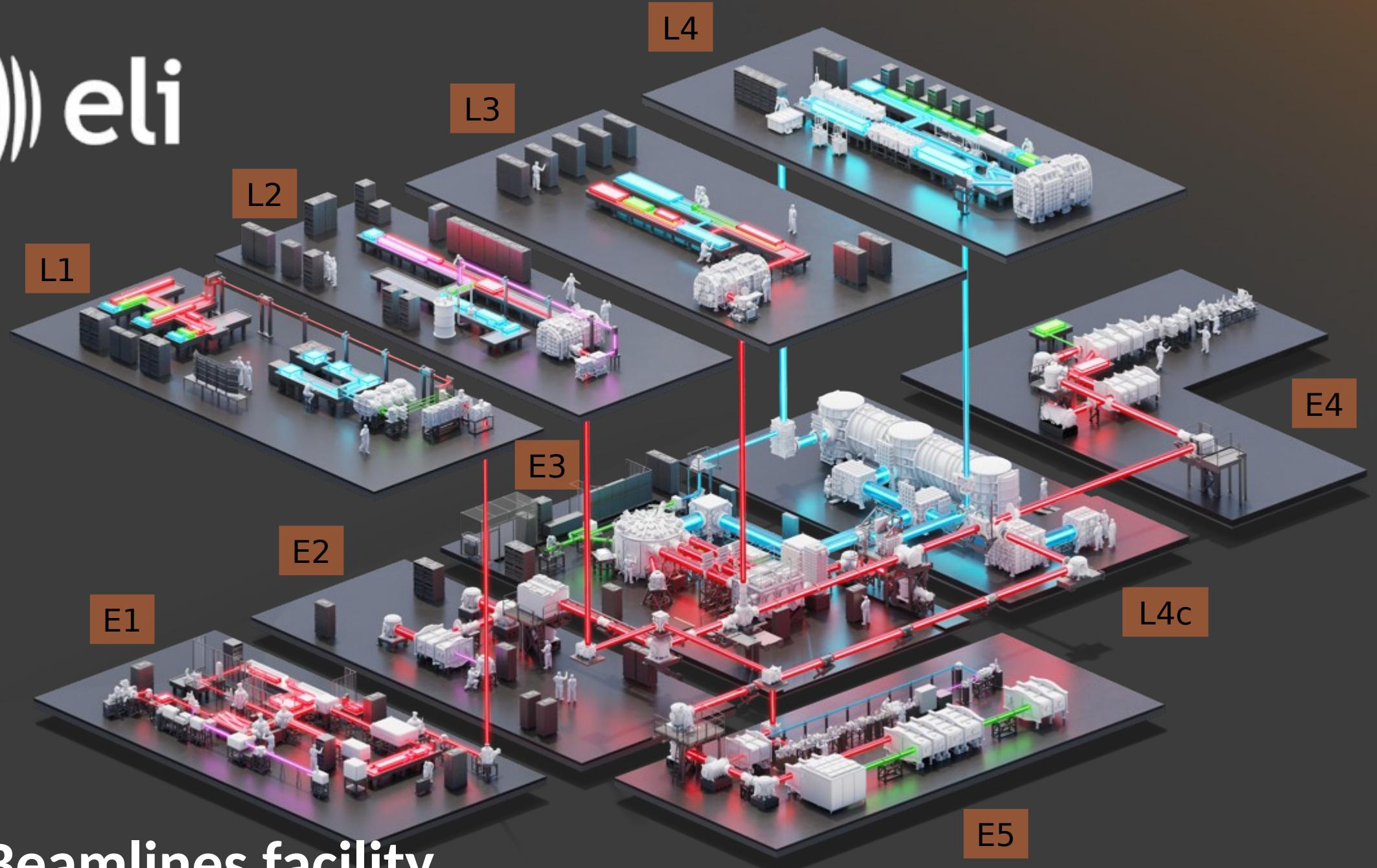
ELI Brief Building Introduction

BASIC CONSTRUCTION TIMELINE

2005-08	first aims to develop powerful lasers in EU initial conceptual brief – lead by Gérard Mourou, Georg Korn, Bedrich Rus
2009	International architectural competition winning concept by Hamiltons UK ltd. (later transferred to Bogle Architects)
2010	EIA + Planning Permit Documentation - valid permission
2011-12	Building approval documentation – valid permission
2012-13	Execution Project – TENDER documentation
2013	PREPARATORY phase – demolition and excavation works contractor – STRABAG- raphly 100mio CZK
2014-16	MAIN phase – construction works, Permit of use general contractor – consortium MVO (Metrostav, VCES. OHL-ŽS), 1500 mio CZK
2017-19	Installation + commissioning works
2020-22	Lasers in use
2023-24	Scientific experiments – Users coming







ELI Beamlines facility



ELI-Beamlines Lasers

- **L1**

- 1 kHz
- 15 fs
- 30 mJ

- **L2**

- 20 Hz
- 25 fs
- 2 J

- **L3**

- 3.3 Hz
- 27.3 fs
- 13.3 J

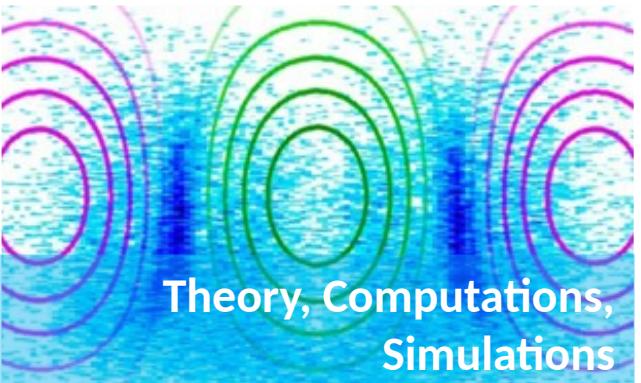
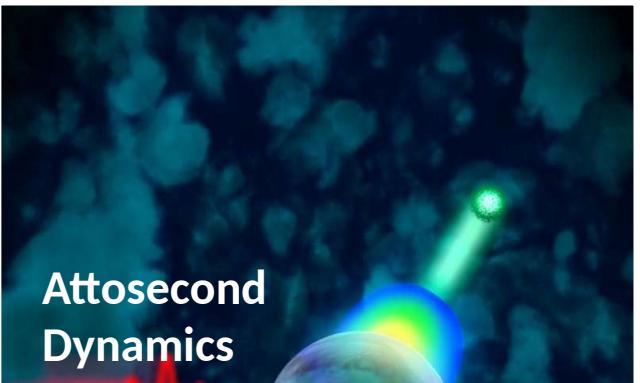
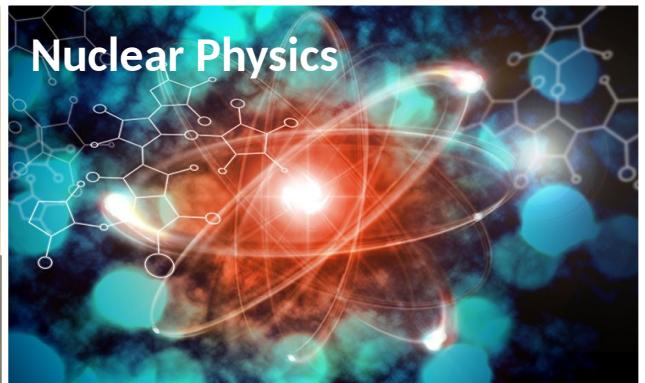
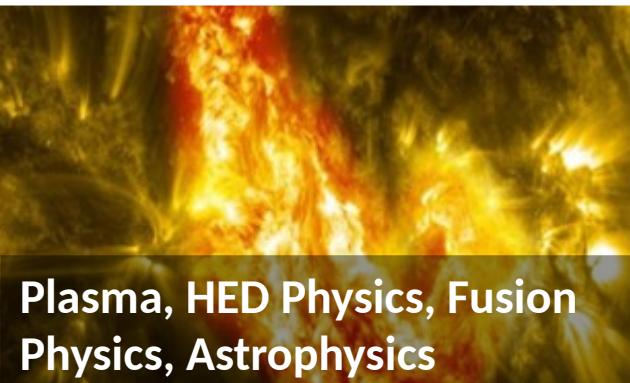
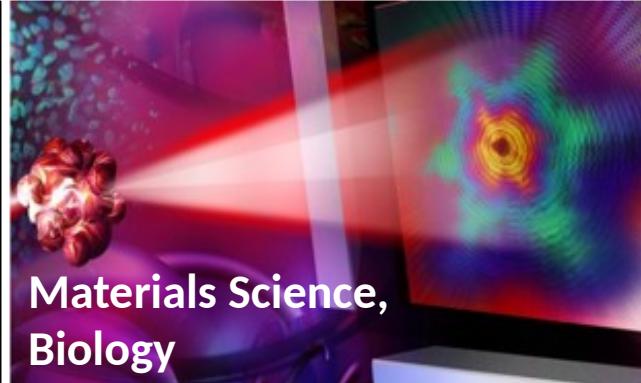
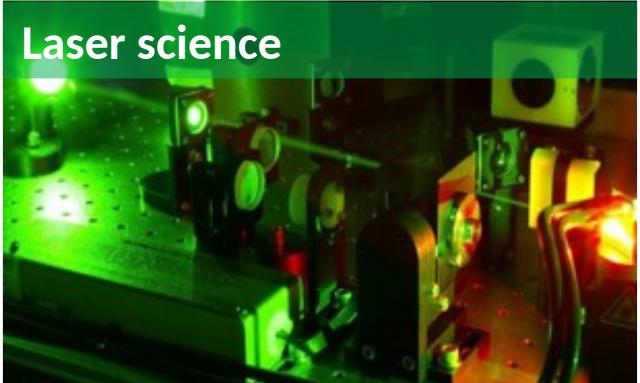
- **L4**

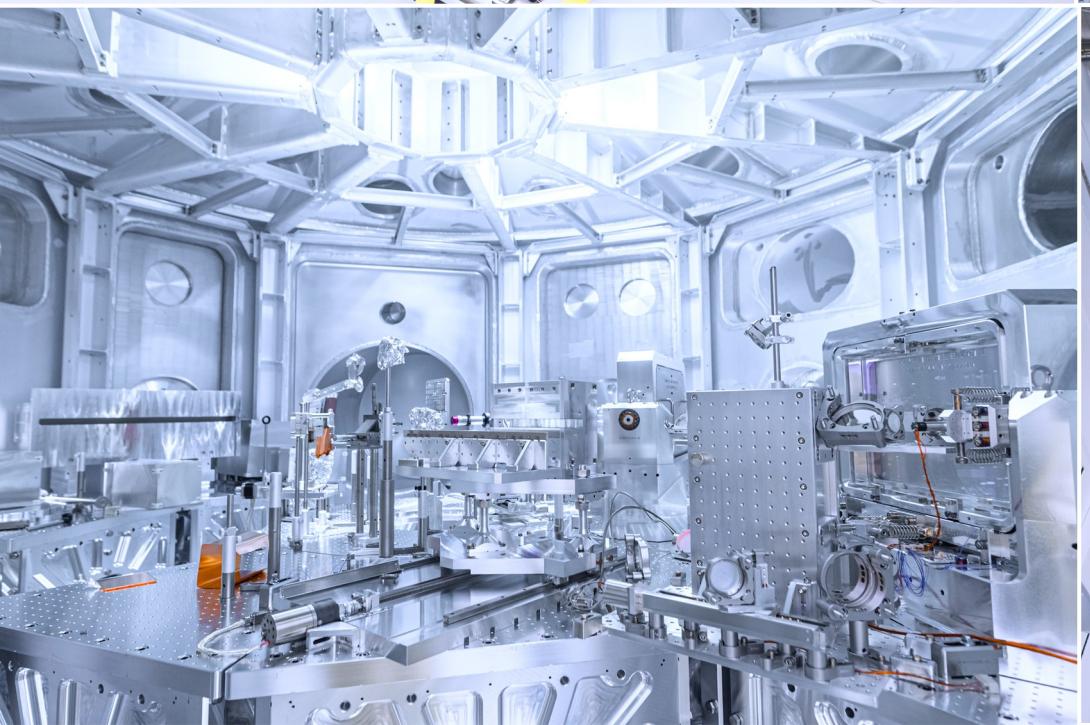
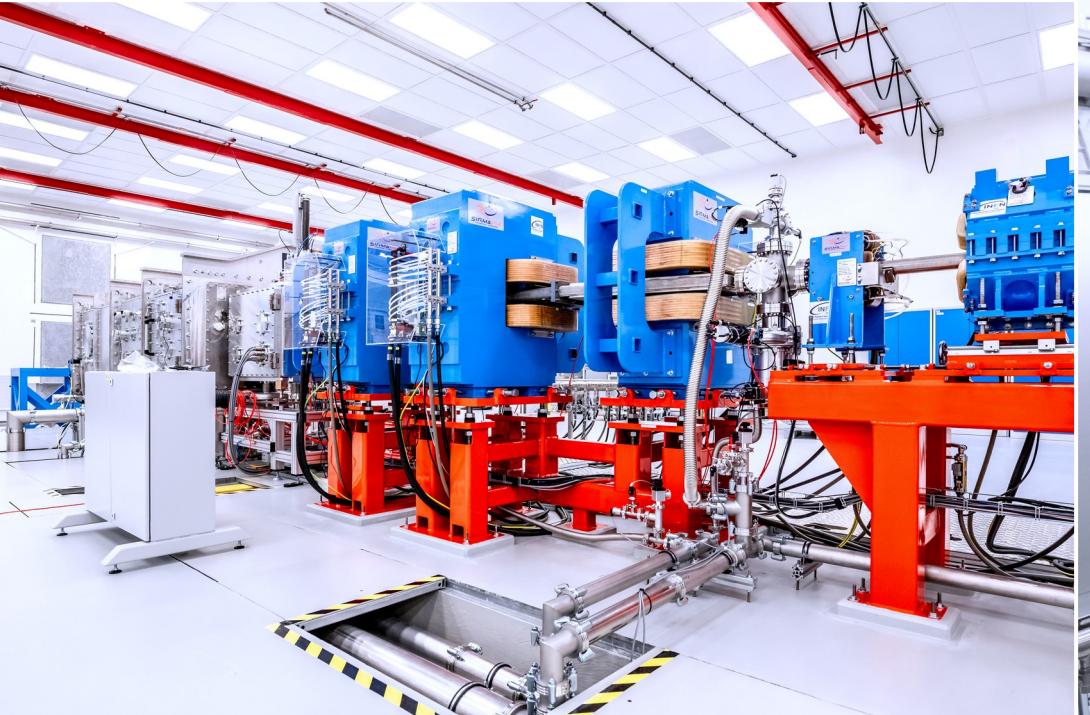
- 1 spm
- 0.5 ns
- 1.2 kJ



**Lawrence Livermore
National Laboratory**



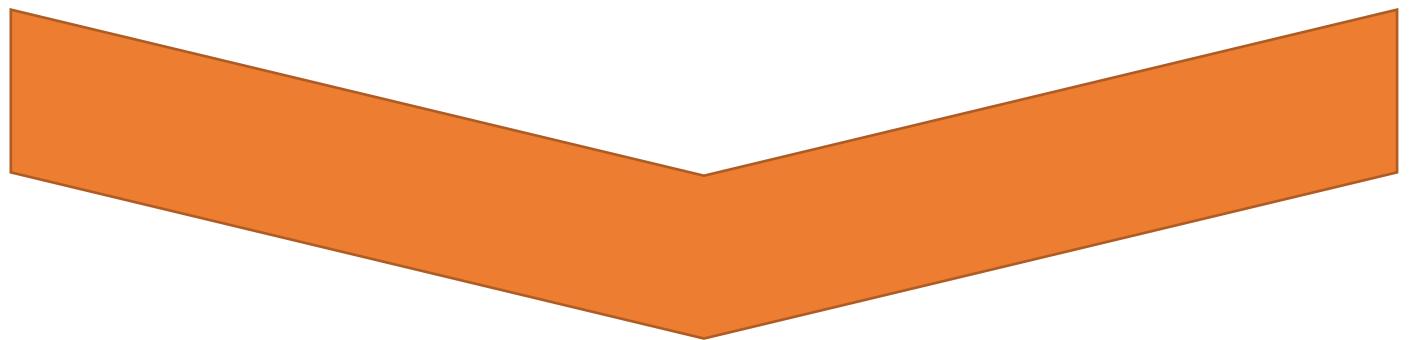






Control System History

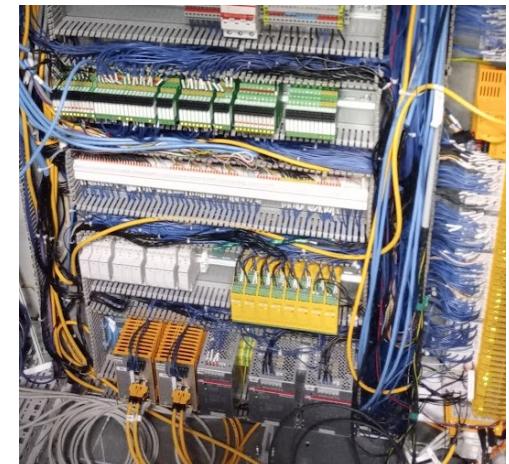
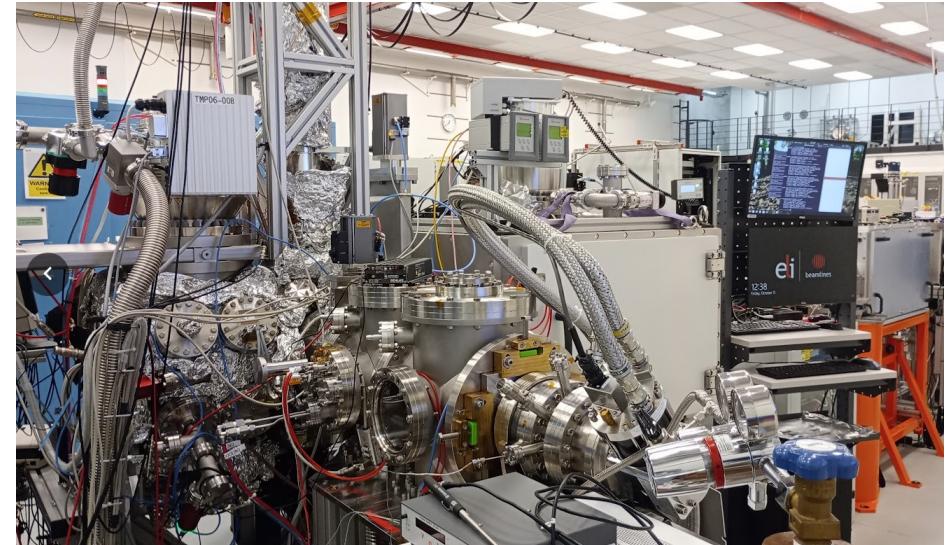
- History
 - CS Laser Team
 - LabView
 - Pilz
 - CodeGenerator
 - Experimental CS Team
 - B&R PLC
 - Tango
 - C++



eli Present ELI Control System Teams

Two Control system Teams

- **Scientific Technology Controls & Data Infrastructure**
 - 9 members, IT infra, LabView Developers
 - Data Acquisition
 - Operation Support
 - Citizen Developer
- **Controls Hardware Integration**
 - 12 members, LabView Developers, Installation technicians, Electrical Design
 - Vacuum Control
 - Motion
 - Machine Safety
 - Personal Safety
- **IT Infrastructure**
 - Shared responsibility from CS and IT





The Future

- **Our Challenges**

- **Unification of CS Vision**

- We are looking for options to settle on an optimal solution for our facility.

- **Switch to Operations**

- Create an operations support team to avoid overwhelming developers with support.
 - Improve the reliability of CS by chasing the root cause of each support case and mitigating core issues.
 - Unify CS to improve maintainability.

- **IT Infrastructure**

- Define responsibilities for IT infrastructure.
 - Separate IT and CS so that IT functions as a service for CS.

- **Cooperation**

- We want to improve our cooperation with other similar facilities to learn from and share our know-how.



Thank you!
Any
questions?
