

ELI-ALPS Research Institute
TOWARDS THE SHARP END OF ATTOSCIENCE



ELI-ALPS

Lóránt Lehrner

Managing Director, ELI-HU Non-Profit Ltd.
11 September 2017, Brussels

JASPERS Networking Platform,
2nd ELI pillars workshop



European Union
European Regional
Development Fund



INVESTING IN YOUR FUTURE



ELI will be

- the world's **first international laser user facility**, providing unique research opportunities for the future
“The CERN of laser research”
- a **distributed research infrastructure** based initially on 3 facilities in the Czech Republic, Hungary and Romania
- the first ESFRI project to be **implemented in the new EU Member States**
- **pioneering a novel funding model** combining structural funds (ERDF) for the implementation and contributions to an ERIC for the operation

Schedule overview

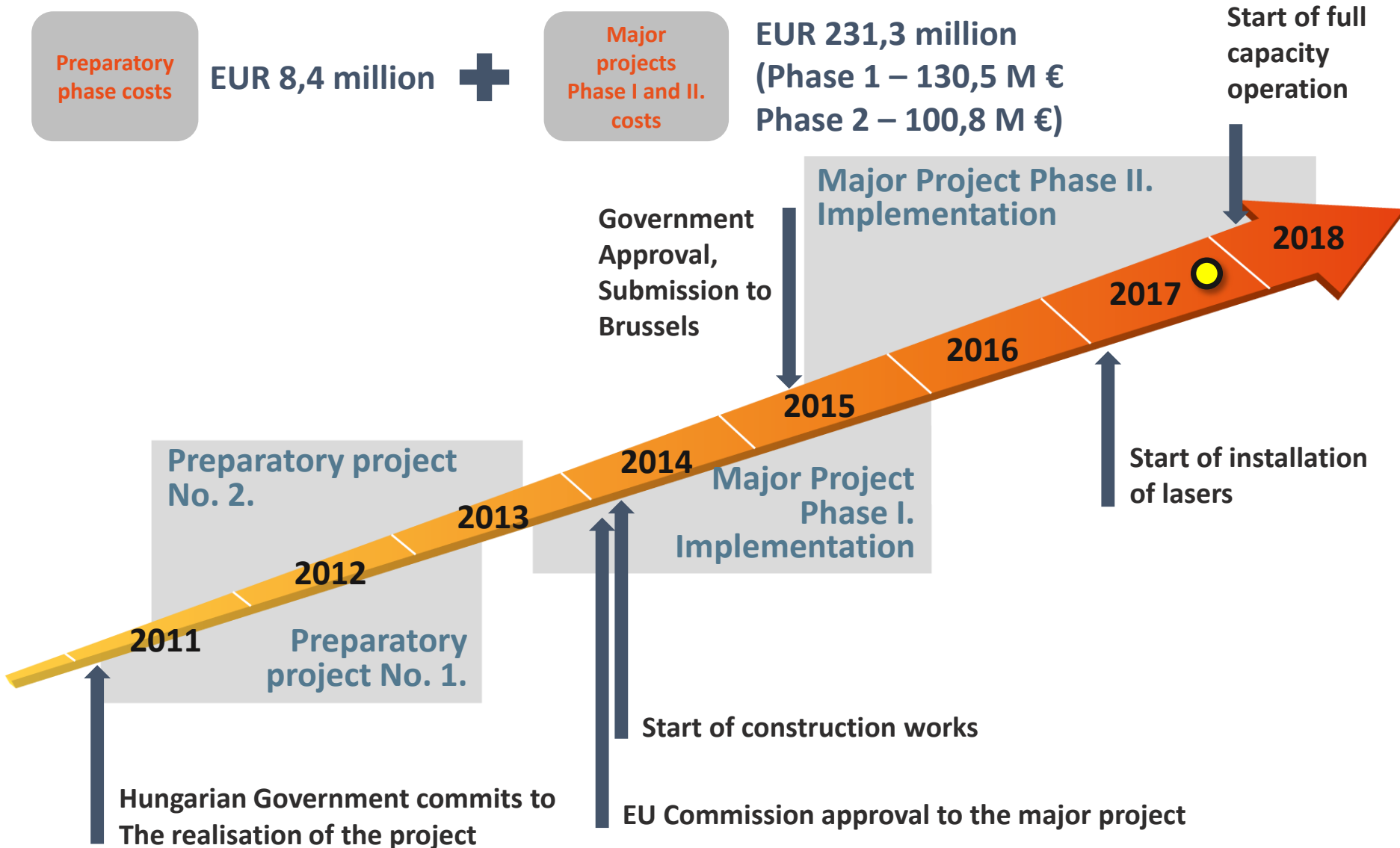
Preparatory phase costs

EUR 8,4 million +

Major projects Phase I and II. costs

EUR 231,3 million
(Phase 1 – 130,5 M €
Phase 2 – 100,8 M €)

Start of full capacity operation



Missions of ELI-ALPS



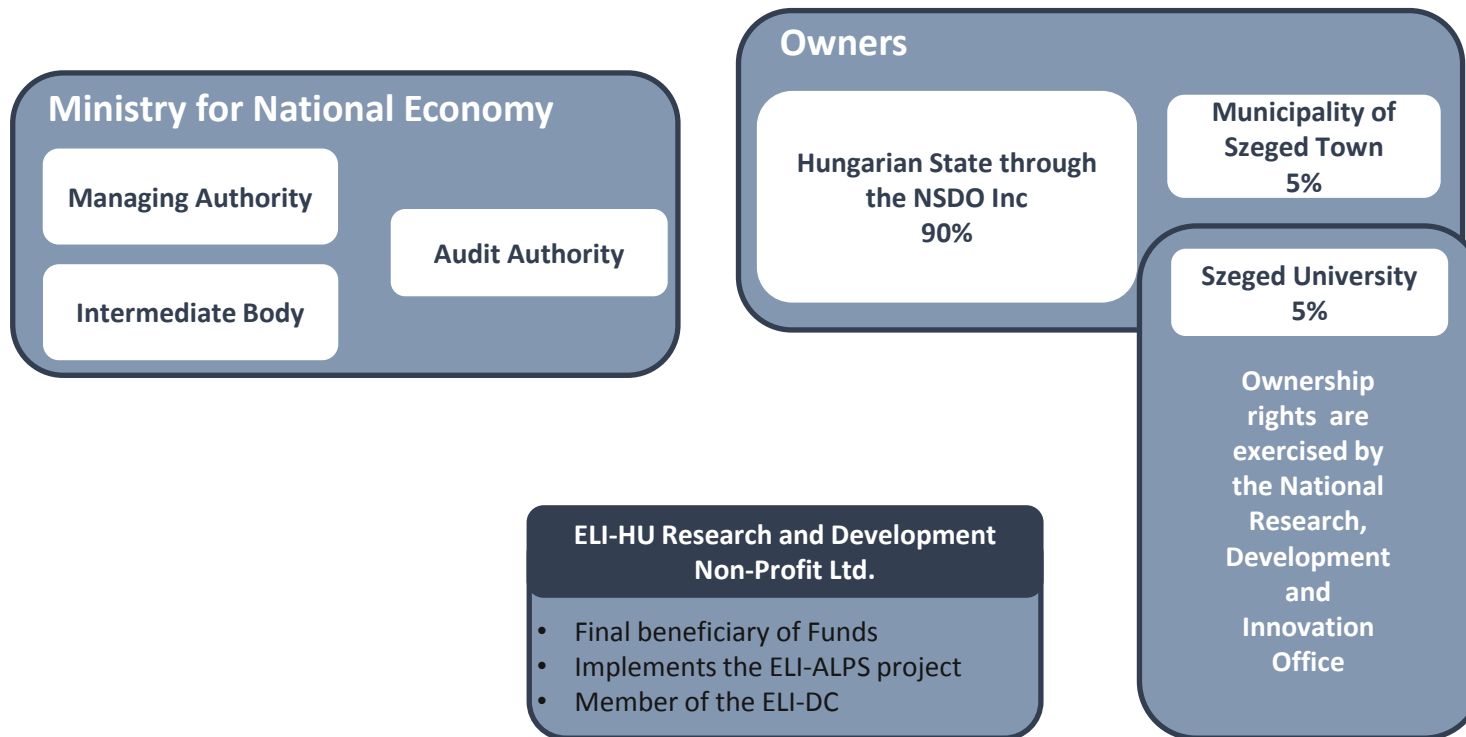
- To generate X-UV and X-ray **femtosecond and attosecond pulses**, for temporal investigation at the attosecond scale of electron dynamics in atoms, molecules, plasmas and solids.



- To contribute to the technological development towards **high average power, high peak intensity** lasers.



Relevant stakeholders of the Hungarian ELI-ALPS major project



European Union funds (ERDF): main source

- Overall ELI-ALPS budget: 231,3 million €
- Value of Phase I: 130,5 million € (source: EDOP)
- Value of Phase II: 100,8 million € (source: EIOP)

...according to original Commission approval.

After notification submitted: ratio will be the contrary: 100 million € For Phase I, while 130 million € for Phase II, no change in overall budget.

National contribution

1461/2012 (X.26) Government Resolution: annual contribution to ELI-HU for performing its national and international tasks

	2013.	2014.	2015.	2016.	2017.	2018.	Sum
ELI-ALPS project budget subsidy allocation (1.000 HUF)	81 052	93 926	163 694	335 667	423 170	263 220	1 360 728

- Amount used for company's operational costs and non-eligible expenditures (eg. due contribution, own resource for calls)
- Amount used for company's operational costs and non-eligible expenditures (eg. due contribution, own resource for calls)

Direct Brussels calls

- Horizon 2020 calls: ELITRANS, EUCALL
- INTERREG calls: TRINNO
- Danube Programme calls: D-STIR, RI2Integrate
- ERASMUS+ calls: IT-ELLI



Bird's eye view



Inauguration – 23 May 2017

eti





Inauguration – 23 May

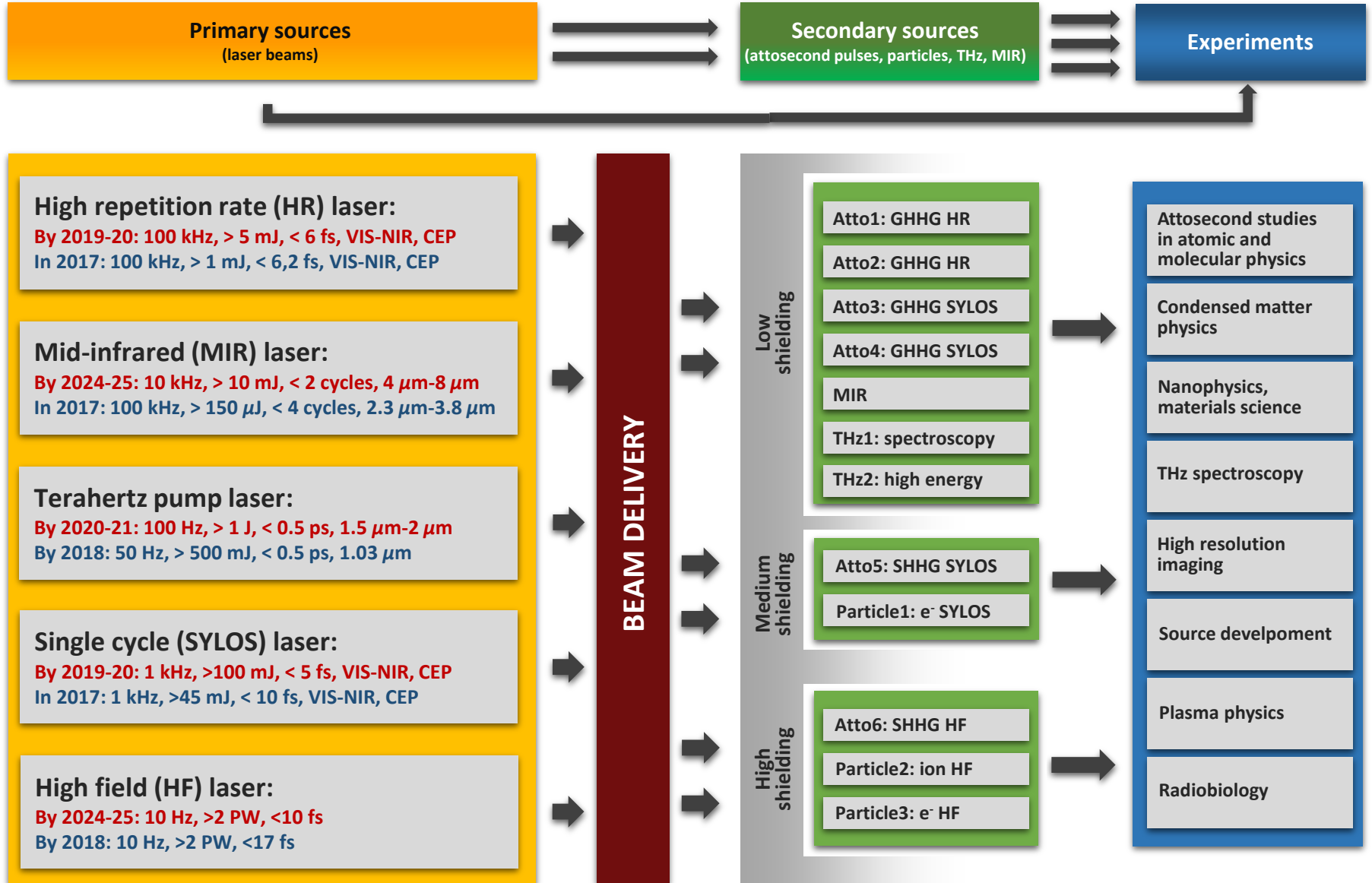




Moving in – 12 June 2017



Schematics of ELI-ALPS



Assembly and Commissioning in 2017-2018

HR1 laser

By October 2017

MIR laser

By September 2017

THz spectroscopy laboratory

By October 2017

HR1 driven GHHG beamline

By November 2018

THz pump laser driven THz nonlinear laboratory

By November 2018

SYLOS1

Fully completed, including 6-month trial period

HR2 laser

By March 2019

PW laser

By November 2019

HR2 driven GHHG beamlines

By May 2019

SYLOS 2A driven GHHG beamlines

By June 2020

Operation principles for user ready beamlines

Number of hours / days / week:

12 hours a day, 5 days a week

Number of months:

11 months operation, 1 month maintenance

Daily operation:

2 hours warm-up time

9 hours operation

1 hour cool-down time

Buildings are accessible:

Weekdays 6:00-22:00

Extend the operation beyond 5 days a week, 12 hours a day

Upon request

Extra personnel

Number of peer reviewed papers:

119 (22 in 2017)

Conference presentations:

312 (46 in 2017)

The first review paper on the facility:

The ELI-ALPS facility: the next generation of attosecond sources
J. Phys. B, 50, 132002, 2017



Lorant Lehrner
Managing Director



Dimitris Charalambidis
Chief Scientific Advisor



Giuseppe Sansone
Scientific Advisor



Karoly Osvay
Research Technology Director

**Attosecond and
Strong Field Science
Division**



Franck Lepine
Division Head

Sandor Varro
Deputy Division Head

**Laser Plasma Theory
Group**

Alexander Andreev

**Strong Field and
Quantum Optics
Theory Group**

Sandor Varro

**Computational and
Applied Materials
Science Group**

Mousumi
Upadhyay Kahaly

**Theoretical
and Computational
Group of Molecular
Structure
and Dynamics
Group**

Agnes Vibok

**Attosecond and
Strong Field
Processes in Few-
body
Systems Group**

**Charge Dynamics in
(Bio)materials
Group**

Sophie Canton

**Scientific
Application
Division**



Peter Dombi
Division Head

**Biomedical
Application
Group**

Katalin Hideghety

**Ultrafast 4D Imaging
Group**

Laszlo Ovari

**Ultrafast
Nanoscience
Group**

Peter Dombi

**Ultrafast Dynamics
in Semiconductors
Group**

Csaba Janaky

**THz Reaction
Control
Group**

Viktor Chikan

**Service Diagnostics
Laboratories**

**Particle and
Terahertz Sources
Division**



Patrizio Antici
Division Head

Ervin Racz
Deputy Division Head

**Ion Acceleration
Group**

Patrizio Antici

**Electron
Acceleration Group**

Christos
Kamperidis

**Terahertz Source
and Applications
Group**

Jozsef Fulop

**Attosecond
Sources
Division**



Katalin Varju
Division Head

**HR Attosource
Group**

Miklos Fule

**SYLOS Gas
Attosource Group**

Sergei Kuehn

**Surface Plasma
Attosource Group**

Subhendu Kahaly

**Diagnostics
of Attosources**

Paraskevas Tzallas

**Attosources R&D
Group**

Katalin Varju

**Laser
Infrastructure
Division**



Karoly Osvay
Division Head

**Mid-Infrared Laser
Group**

Balint Kiss

**High Field Laser
Group**

Mikhail Kalashnikov

**Single Cycle Laser
Group**

Adam Borzsonyi

**High Repetition Rate
Laser Group**

Zoltan Varallyay

**Laser Research
and Development
Group**

Mikhail Kalashnikov

**Engineering
and integration
Division**



Lajos Fulop
Division Head

**Infrastructure
Liaison Group**

Imre Kiss

**Beam Transport
Group**

Arpad Mohacsi

**Software
Engineering Group**

Lajos Schrettner

**Electrical
Engineering Group**

Ferenc Horvath

**Mechanical
Engineering Group**

Andras Makai

**Research
Technology
Service Unit**



Gergo Meszaros
Division Head

**Optical Preparatory
Workshops**

Gergo Meszaros

**Mechanical
Workshop**

Zoltan Vajna

Electrical Workshop

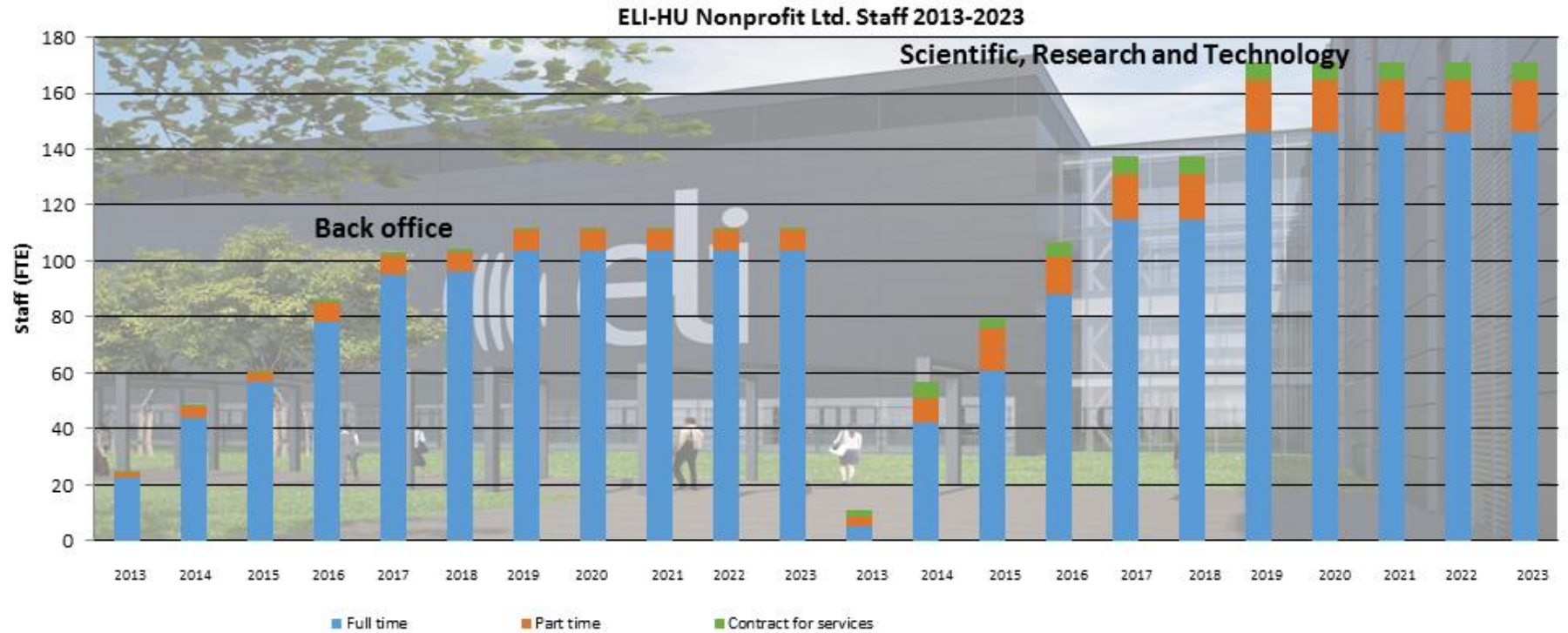
Viktor Varkonyi

Cleanroom Group

**Laser and Radiation
Safety
Group**



Tamara Kecskes
Group Leader



Upcoming events in 2017

ELI Administrative and Finance Committee Meeting

19-20 September, Szeged

International Conference of Multiphoton Processes

24-27 September, Budapest

International Conference on Extreme Light 2017

5-9 November 2017, Szeged

5th User Workshop

9-10 November 2017, Szeged



ELI-ALPS – current photos





THANK YOU FOR
YOUR
ATTENTION!

SZÉCHENYI 2020

2020



HUNGARIAN
GOVERNMENT

European Union
European Regional
Development Fund



INVESTING IN YOUR FUTURE



For info or further questions on this seminar and the activities of the JASPERS Networking Platform, please contact:

JASPERS Networking and Competence Centre

jaspersnetwork@eib.org

www.jaspersnetwork.org