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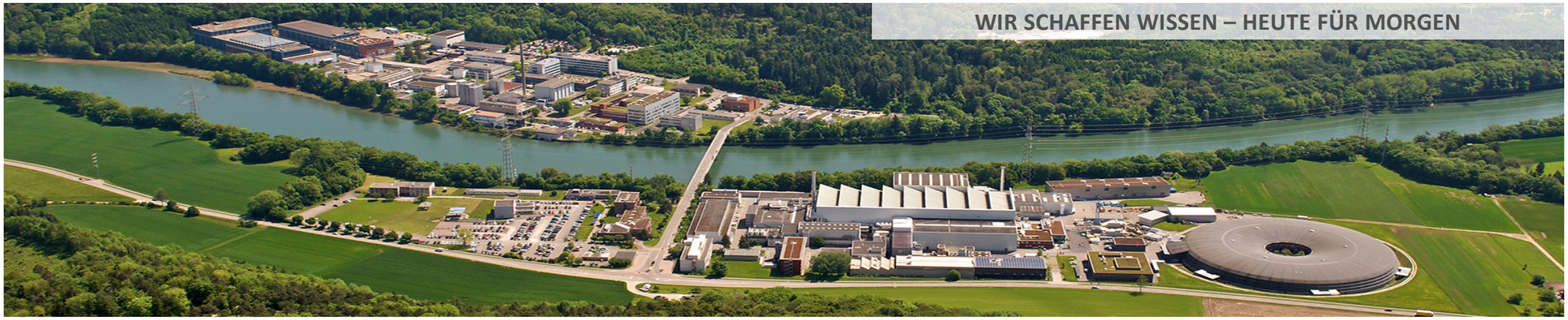
PSI



WIR SCHAFFEN WISSEN – HEUTE FÜR MORGEN

Stefan Müller :: Science Coordinator:: Photon Science Division, Paul Scherrer Institut

Industrial Collaboration: How to make it happen at the Swiss Light Source?

This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement No 730872.

CALIPSOplus

European Commission

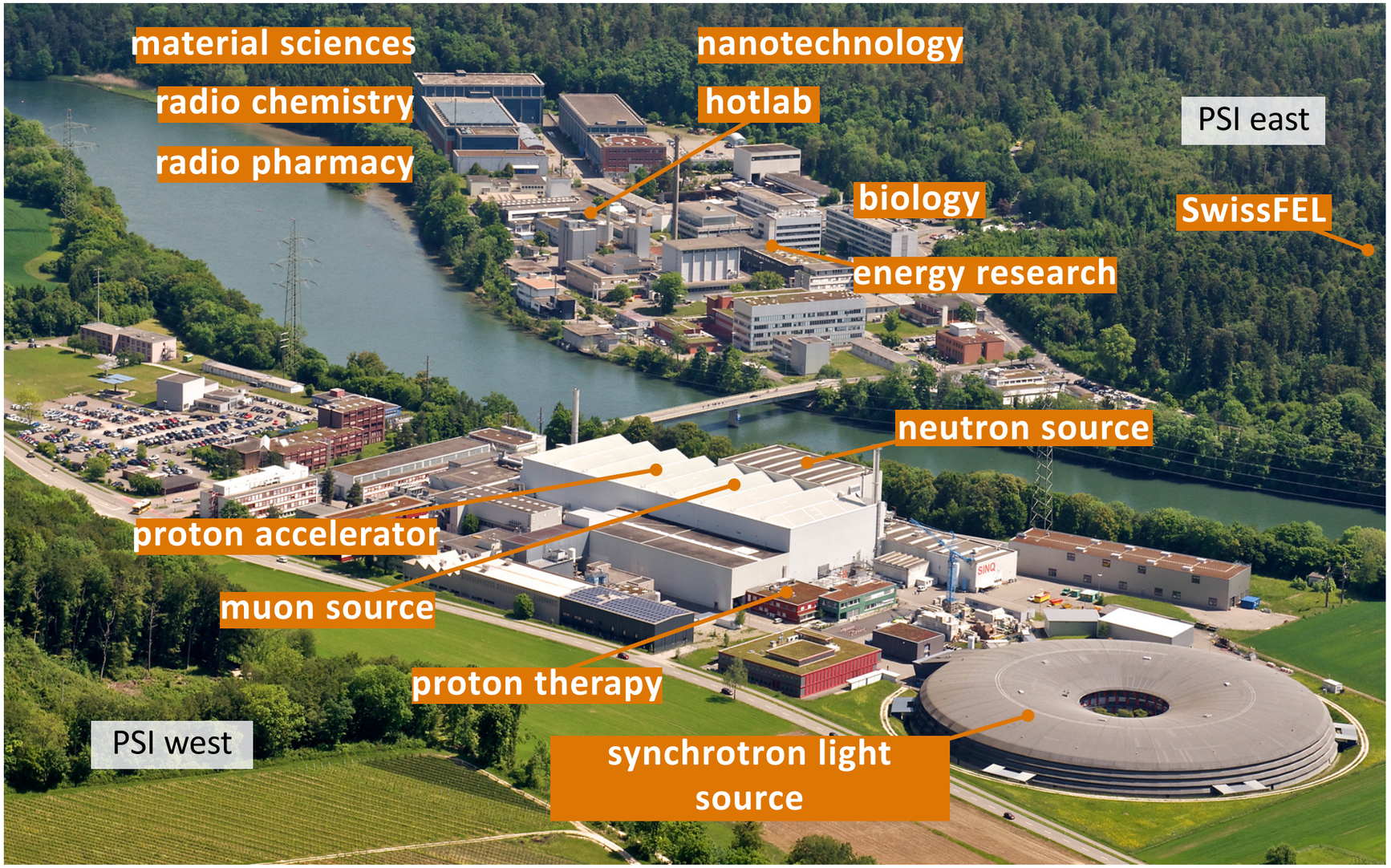
SLS Techno Trans AG

Content

- PSI in a nutshell
- Industrial collaborations – contact points
- Ecosystem
- Academic and industry usage of the facilities
- Industry revenues through SLS Techno Trans AG

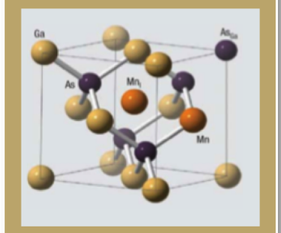
Overview

← Basel Germany ↑ Aarau/Bern ↓ Zürich →

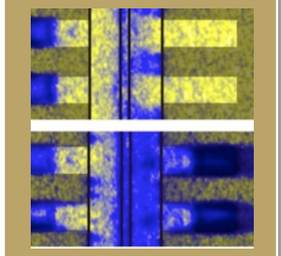


Our Mission

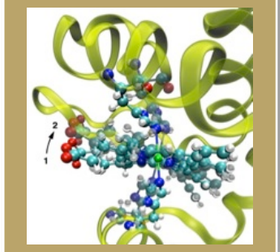
Matter and materials



Energy and environment



Human health



Development
Construction
Operation

Large research facilities

Swiss and foreign users from academia and industry

more that 2400 external users/year (39 beamports)

Knowledge & expertise

Education

Technology transfer

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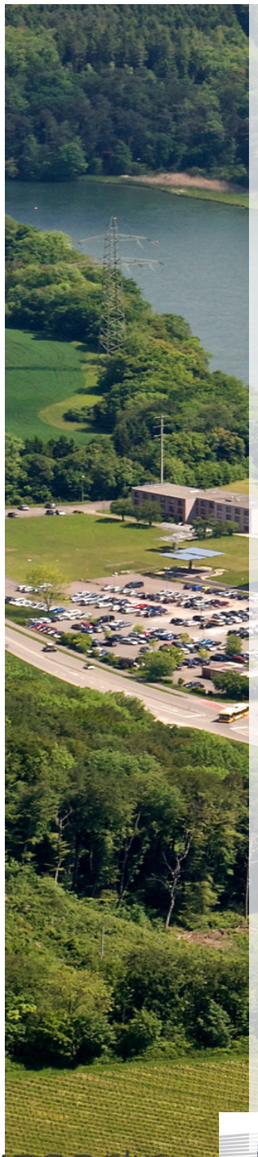
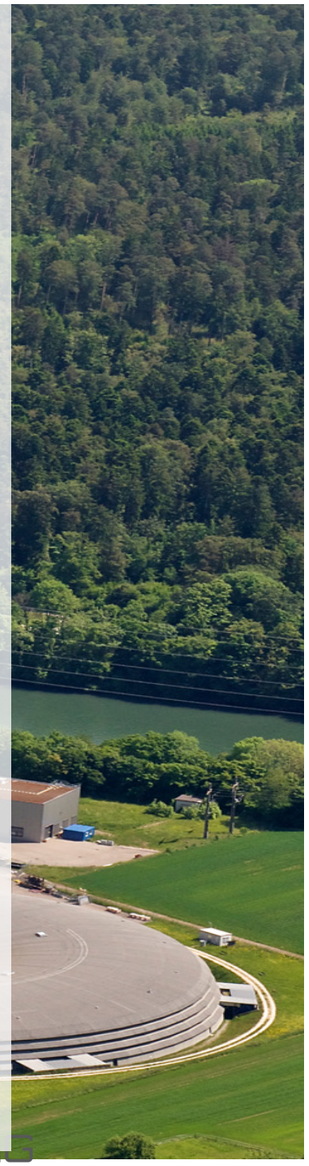
Wir schaffen Wissen – heute für morgen





PSI funds (global budget) 280 MCHF

External funding 110 MCHF

320
PhD students

2100
Employees

150
Postdocs

5900
Patient visits @ Proton Therapy

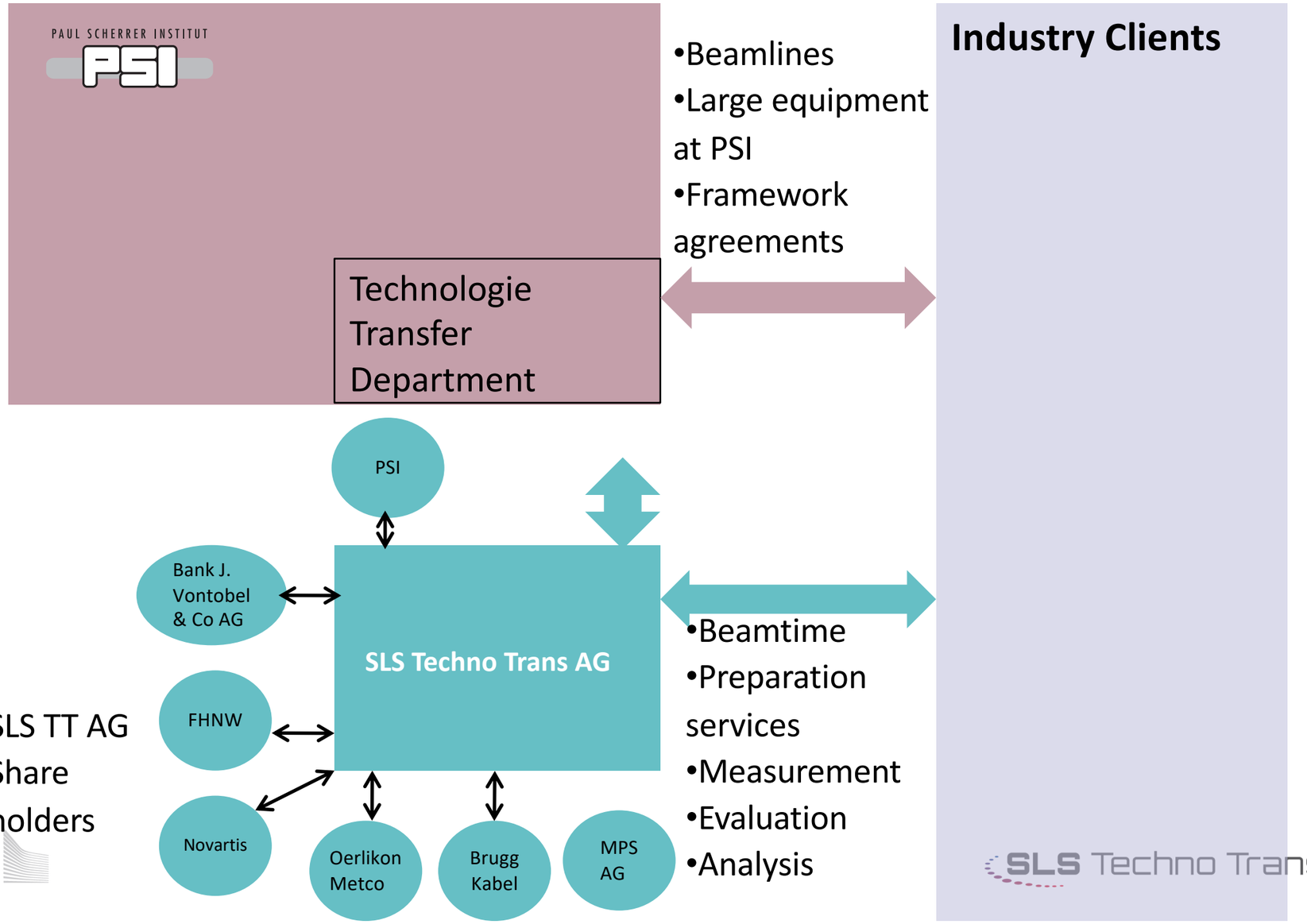
100
Apprentices

100
Teaching @ ETH/EPFL/Univ.

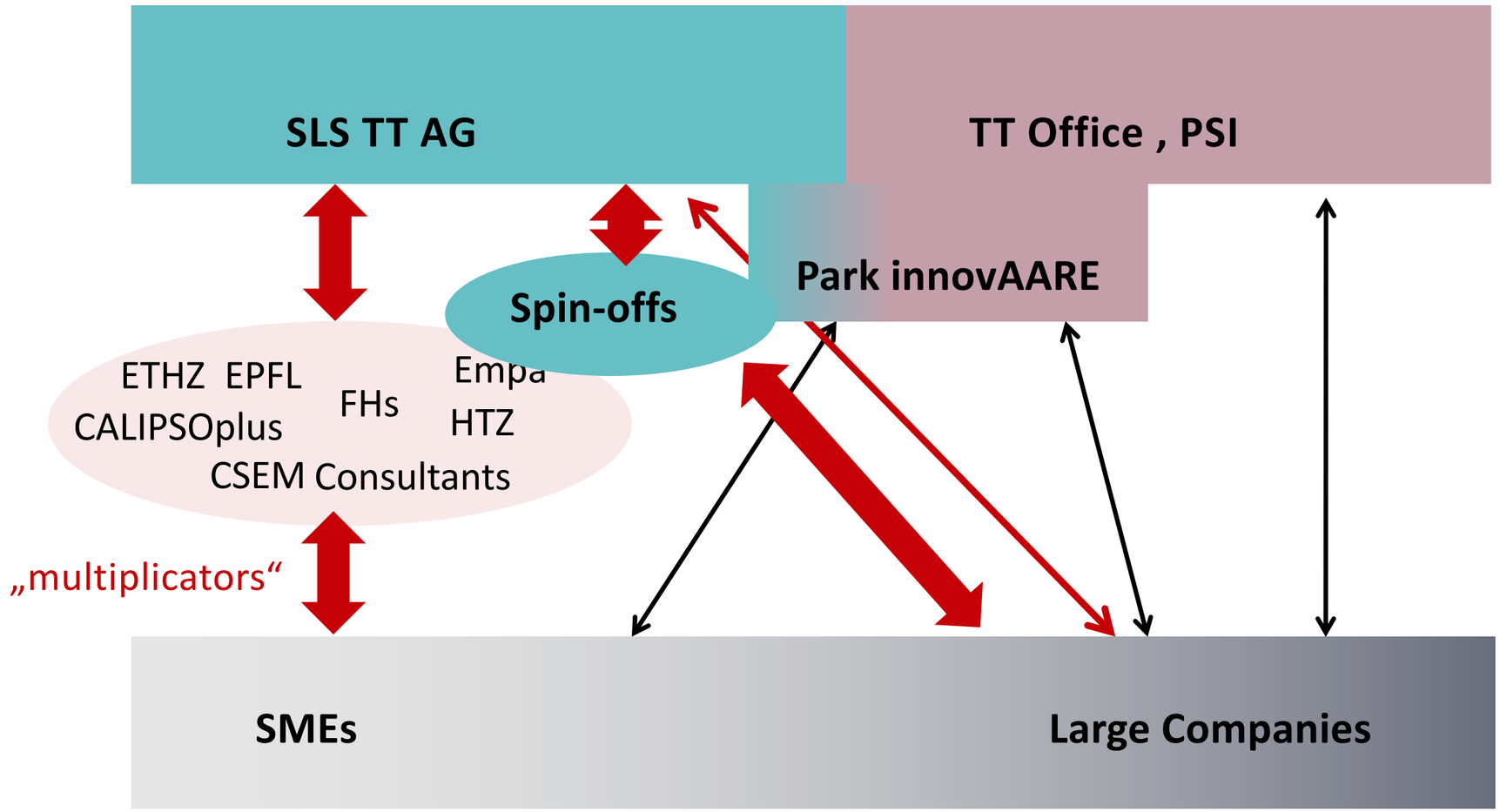
2400/4800
External users: people / visits

1400 publications (13% of which with high impact)

Contacts points at PSI and SLS



Market Structure



Spin off companies are key players in the acquisition of proprietary users

EXCELSUS STRUCTURAL SOLUTIONS

XRPD Characterization – qualitative and quantitative analysis of organic structures with privileged access to state-of-the-art Synchrotron-based techniques that allow an enhanced selection, precise identification, quality-by-design development and the highest attainable purity in the manufacturing of biotech, pharmaceutical, chemical and food products.

Contact: Dr. Fabia Gozzo, fabia.gozzo@excels.us

EXPOSE GmbH

Expose provides services on all aspects of protein crystallography to companies and organizations in the pharmaceutical and biotechnological sector. The company organizes measurement shifts at the Swiss Light Source (SLS) and carries out the corresponding analyses. Providing support for evaluations completes the range of services.

Contact: Dr. Joachim Diez, diez@expose-crystals.com

Convenient Access to Lightsources Open to Innovation, Science and to the World

- HZB
- ULUND
- Aarhus Universitet
- Diamond
- SOLEIL
- ESRF
- CELLS
- SESAME
- KIT
- Uniwersytet Jagiellonski

- HZDR
- European XFEL
- Radboud University
- CNRS
- Ankara Universitesi

- DESY
- SLS/SWISSFEL
- ELETTRA
- DAFNE/SPARC

CALIPSOplus Activities

CALIPSOplus is a European project aimed at removing the barriers that prevent access to world-class, accelerator-based light sources. It includes dedicated networking to support bringing industry and light sources together.

Networking Activities

- User tools for access and data management
- Dissemination & Training (e.g. Twinning programme)
- **European Light Sources for Industrial Innovation plus**
- Striving for Sustainability of Photon Sources in Europe (e.g. ESUO and the wayforlight.eu portal)

Trans-national Access Activities

- Trans-national Access of the respective facility (e.g. TNA funding)
- **Tailor-made for SMEs Trans-national Access (TamaTA)**

Joint-Research Activities

- Metrology on One-Nanometer-Precise Optics
- Demonstrator for a Photon Science Analysis Service

CALIPSOplus Access for SMEs

"Tailor-made for SMEs Trans-national Access (TamaTA)" allows **SMEs (Small and Medium Enterprises)** to carry out a full experiment or set of experiments in **unique research infrastructures** facilities such as the light source facilities.

To provide a framework for promoting this access scheme to SMEs, those experiments and works will be carried out **free of charge** for the SME and a "voucher scheme" for a pre-defined amount of beamtime and of data analysis respectively is introduced.

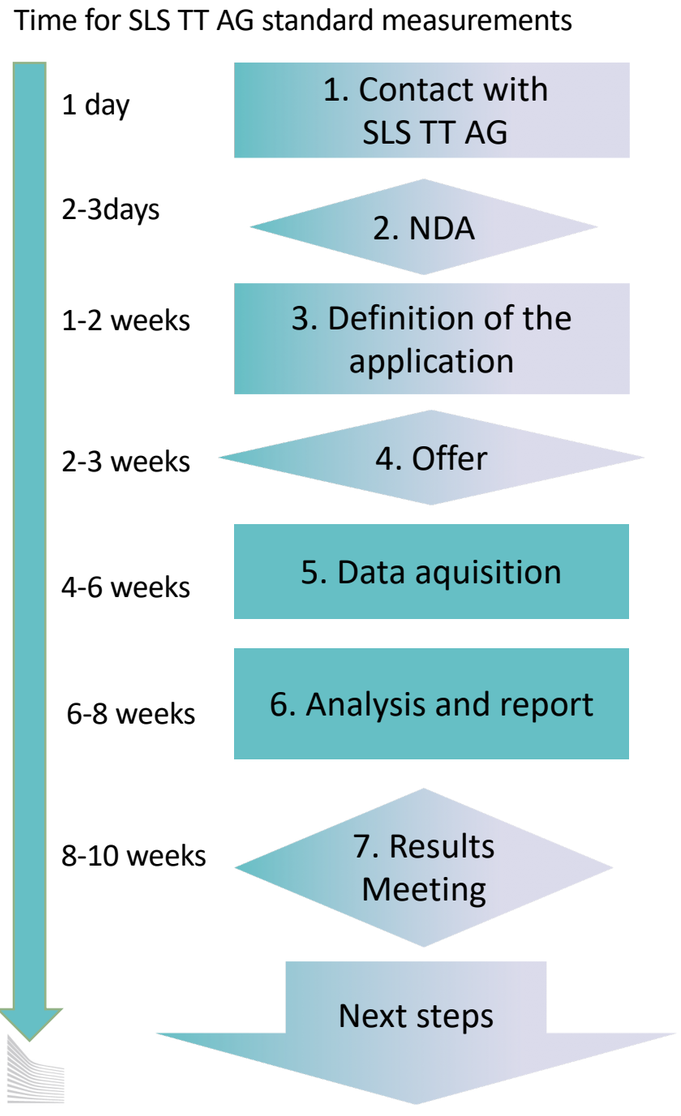
Access can be requested by industrial researchers working for companies based on EU or associated countries considered as SMEs.

Industrial proposals will be submitted by the SME researchers through the electronic application system implemented as a single entry point for all light sources at this page.

THE CURRENT CALL IS OPEN FROM JANUARY 23, 2019 TO JULY 23, 2019

http://wayforlight.eu/en/tamata-infopage/

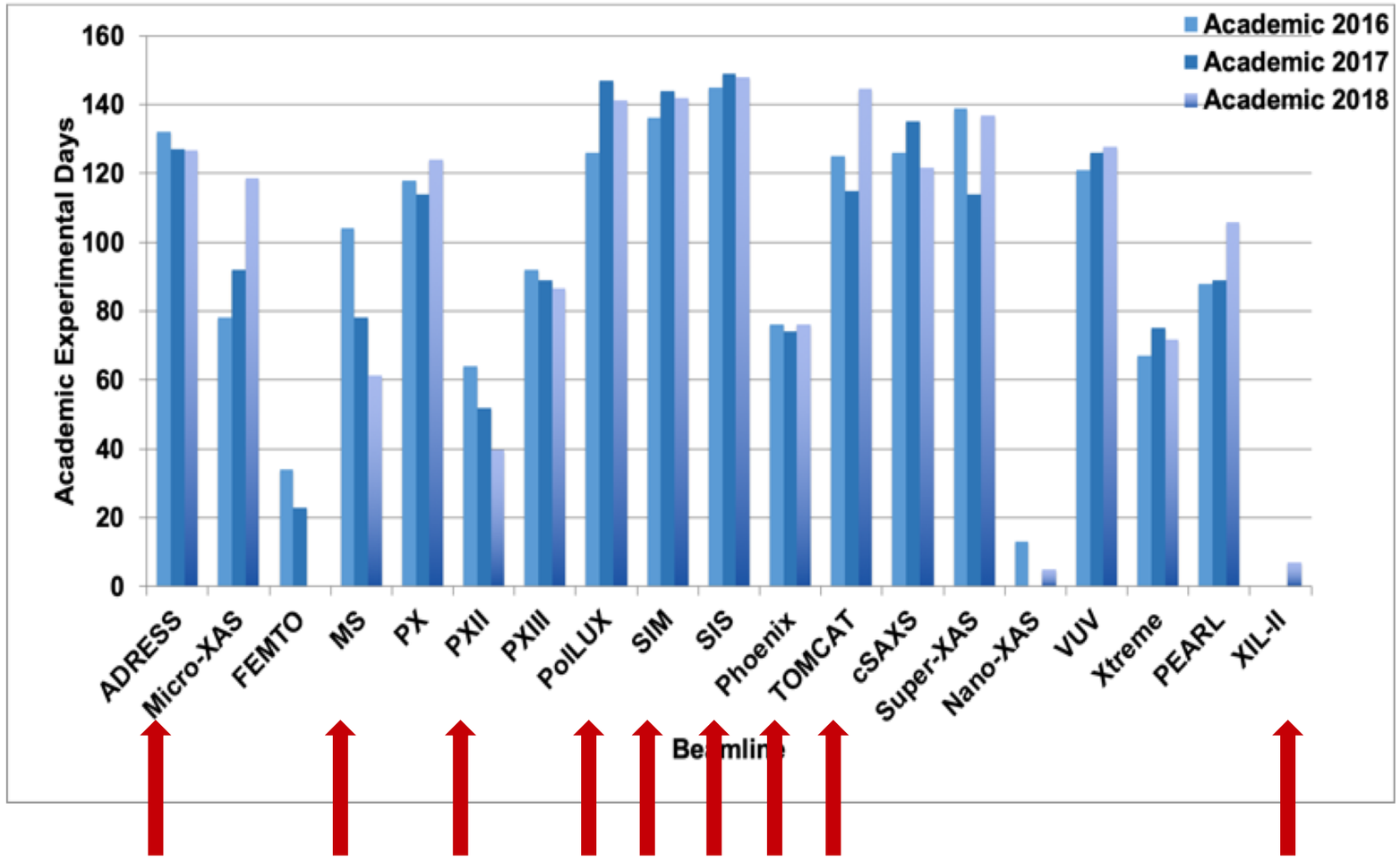
Typical process for industry: Simple



Process

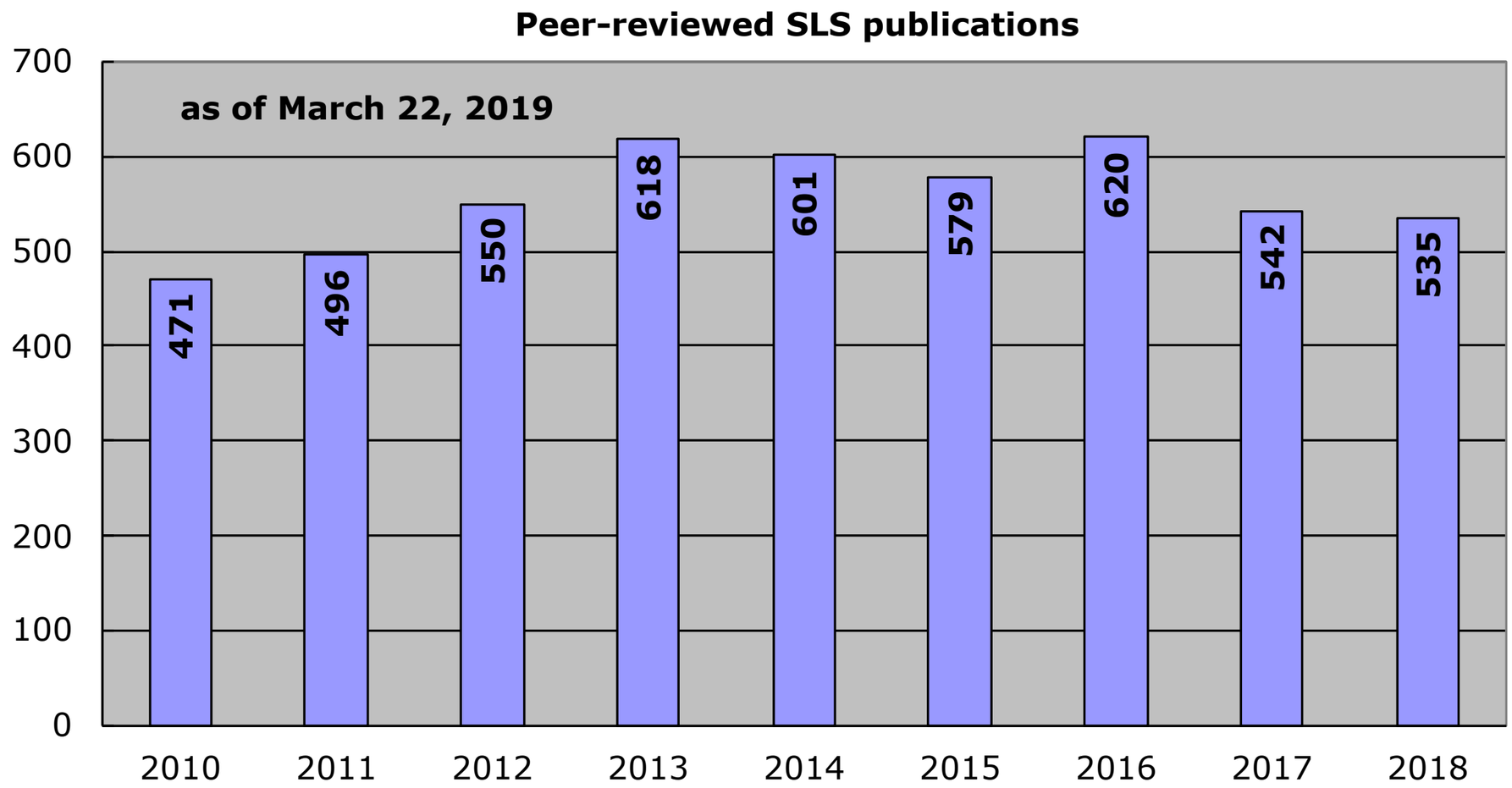
1. First contact with SLS TT AG: First information exchange regarding the application
2. NDA upon request
3. In depth information exchange between SLS experts and industry experts. Visit to SLS. Choice of SLS analysis tools, definition of experiment
4. Offer from SLS TT AG, incl. planning of measurements
5. Data acquisition
6. Analysis and report by SLS experts
7. SLS TT AG, SLS Expert, Client meeting
   - Discuss results
   - Plan next steps

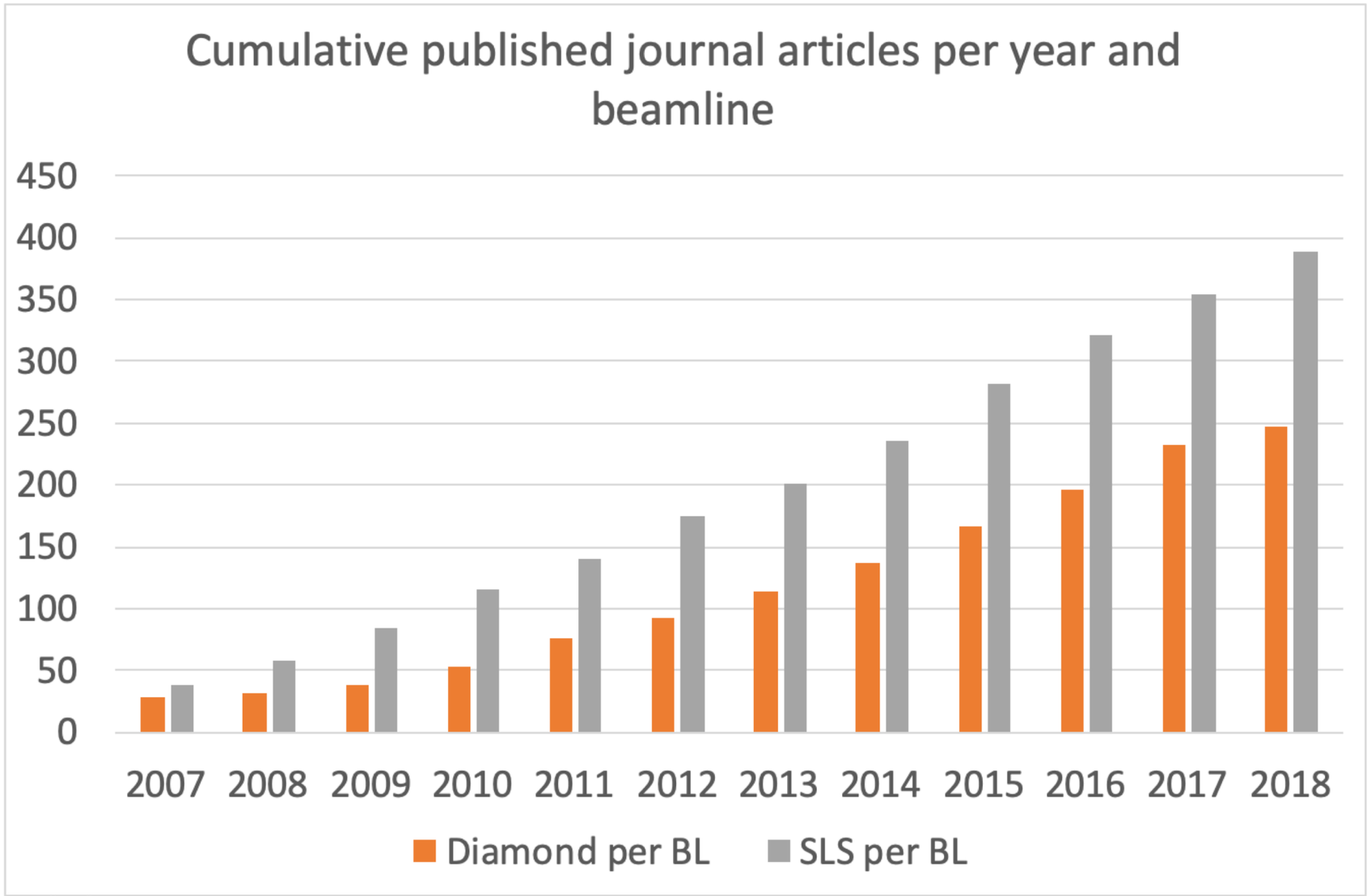
Academic use of the SLS



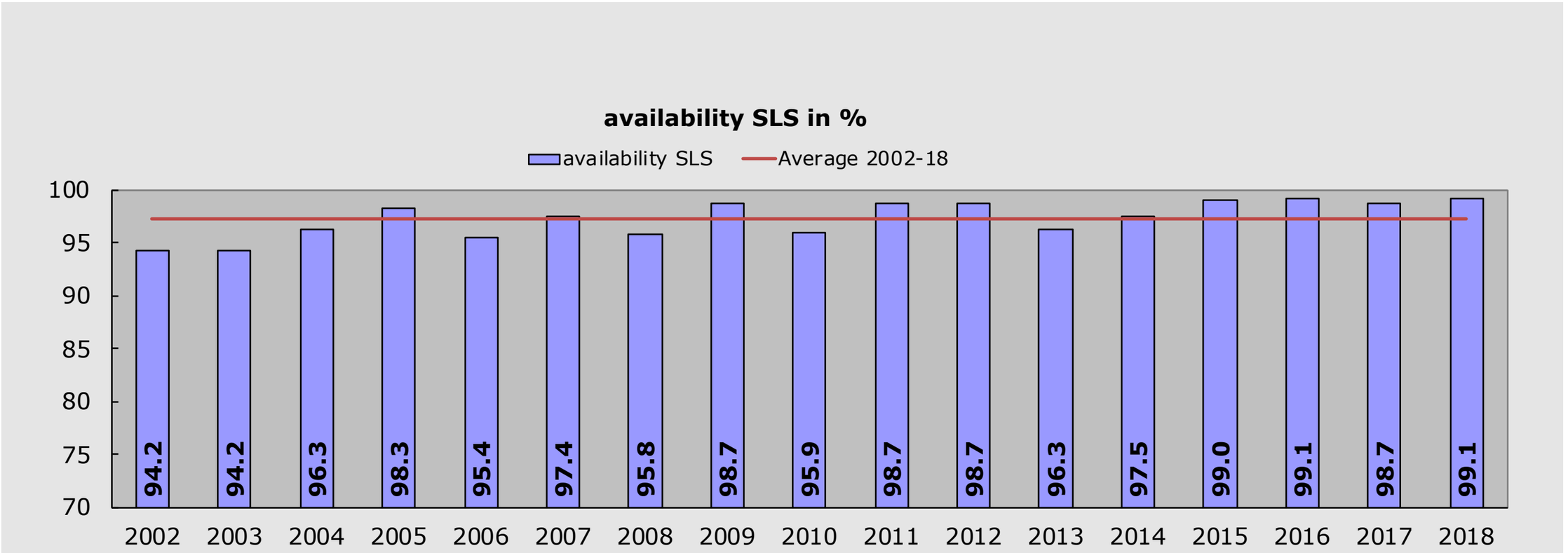
Beamlines with proprietary use in 2018

Publications resulting from work at SLS

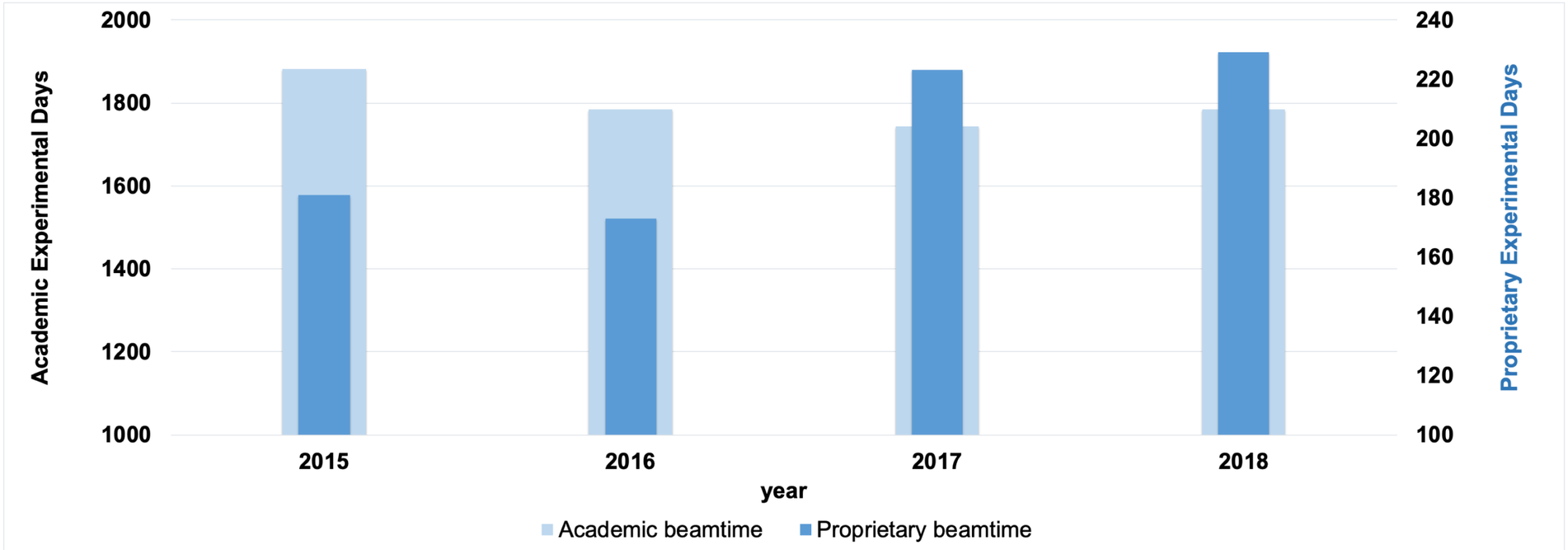


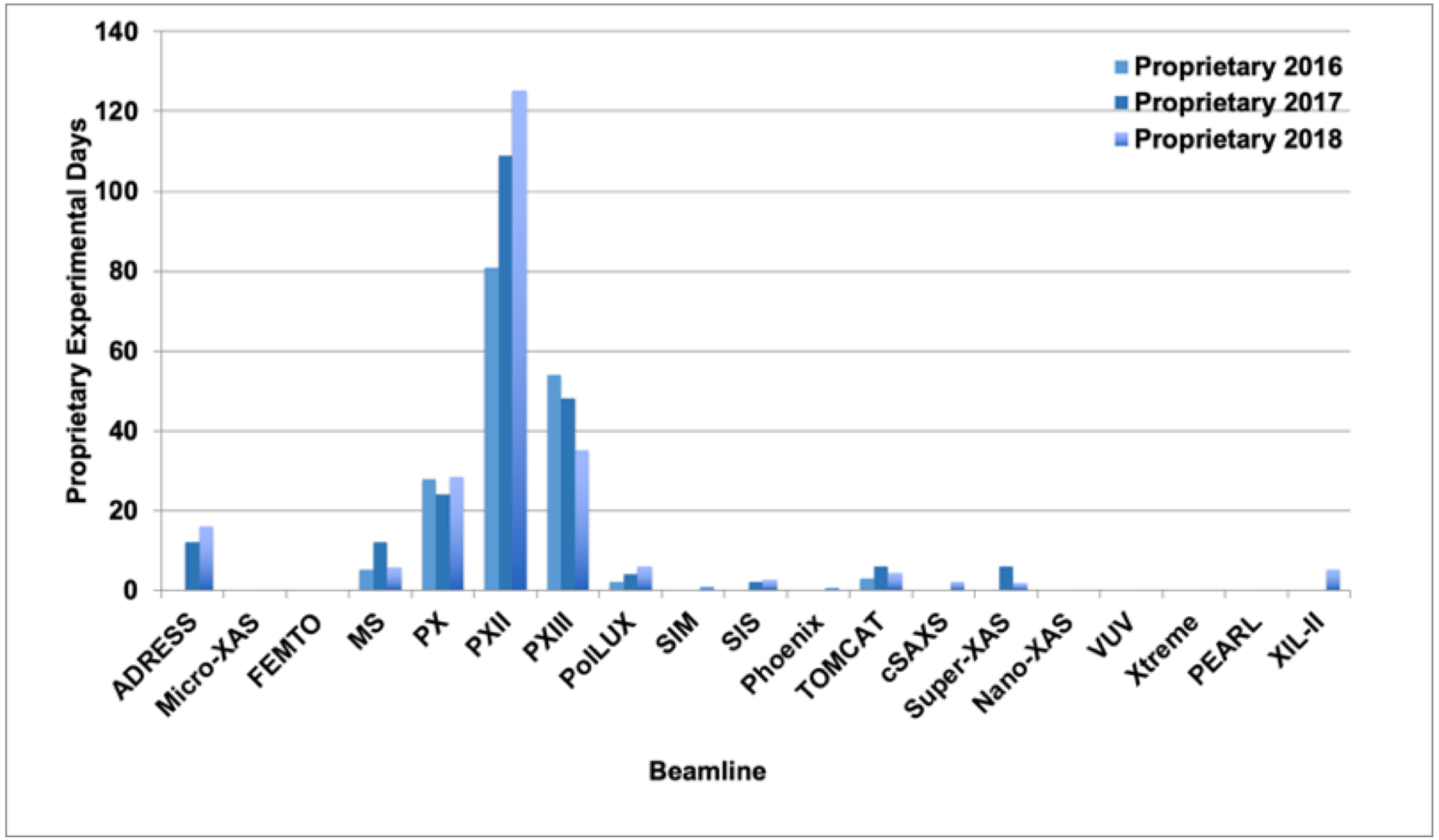

Cumulative published journal articles per year and beamline
450
400
350
300
250
200
150
100
50
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Diamond per BL
SLS per BL

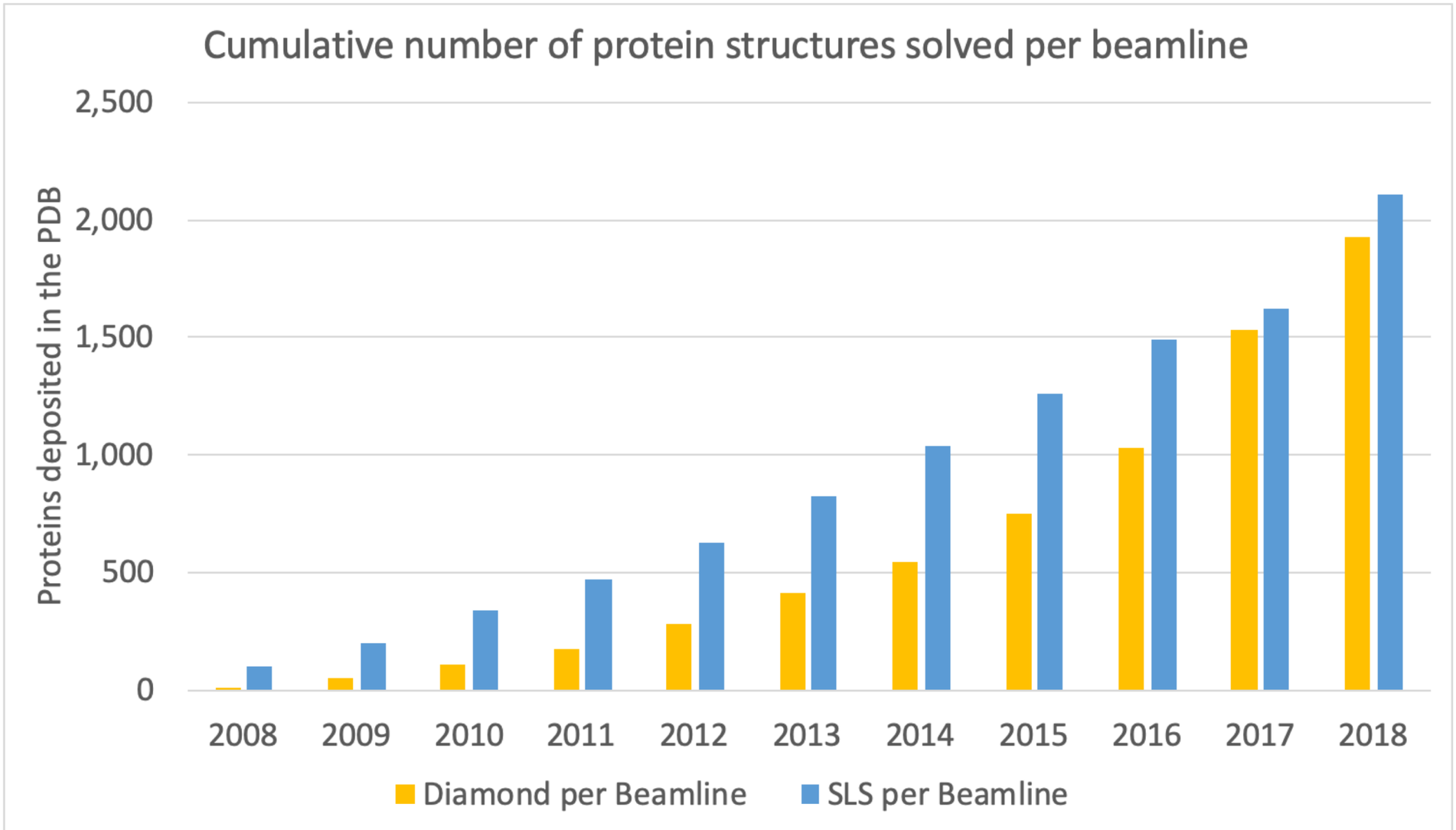
Performance PSI accelerators



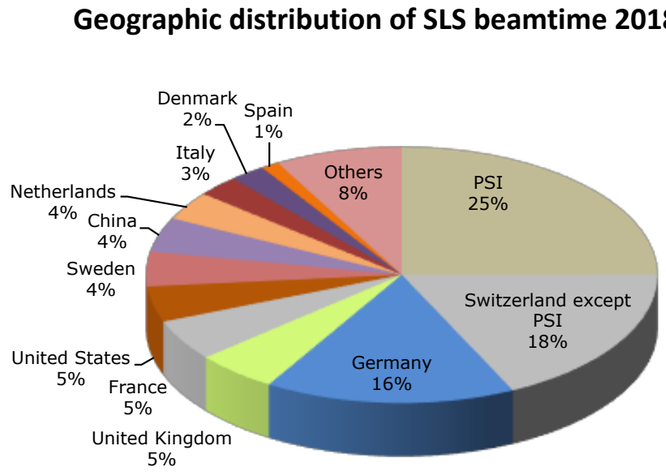
Proprietäre & Academic Experimental Days 2015-2018



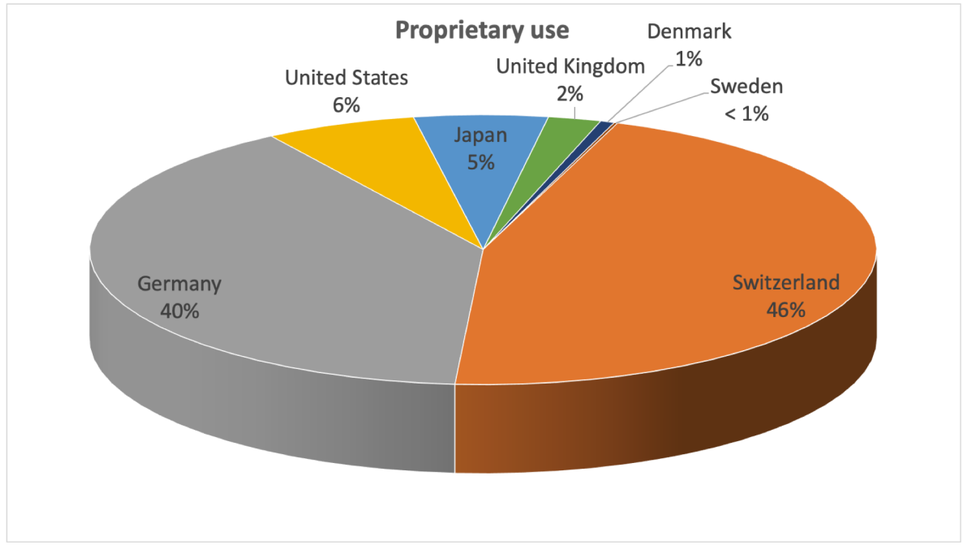

Proprietary Experimental Days
140
120
100
80
60
40
20
0
Proprietary 2016
Proprietary 2017
Proprietary 2018
ADRESS
Micro-XAS
FEMTO
MS
PX
PXII
PXIII
PolLUX
SIM
SIS
Phoenix
TOMCAT
cSAXS
Super-XAS
Nano-XAS
VUV
Xtreme
PEARL
XIL-II
Beamline


Cumulative number of protein structures solved per beamline
Proteins deposited in the PDB
2,500
2,000
1,500
1,000
500
0
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Diamond per Beamline
SLS per Beamline

Geographic Distribution use of SLS 2018



(*) others: 20 countries with less than 1.0%



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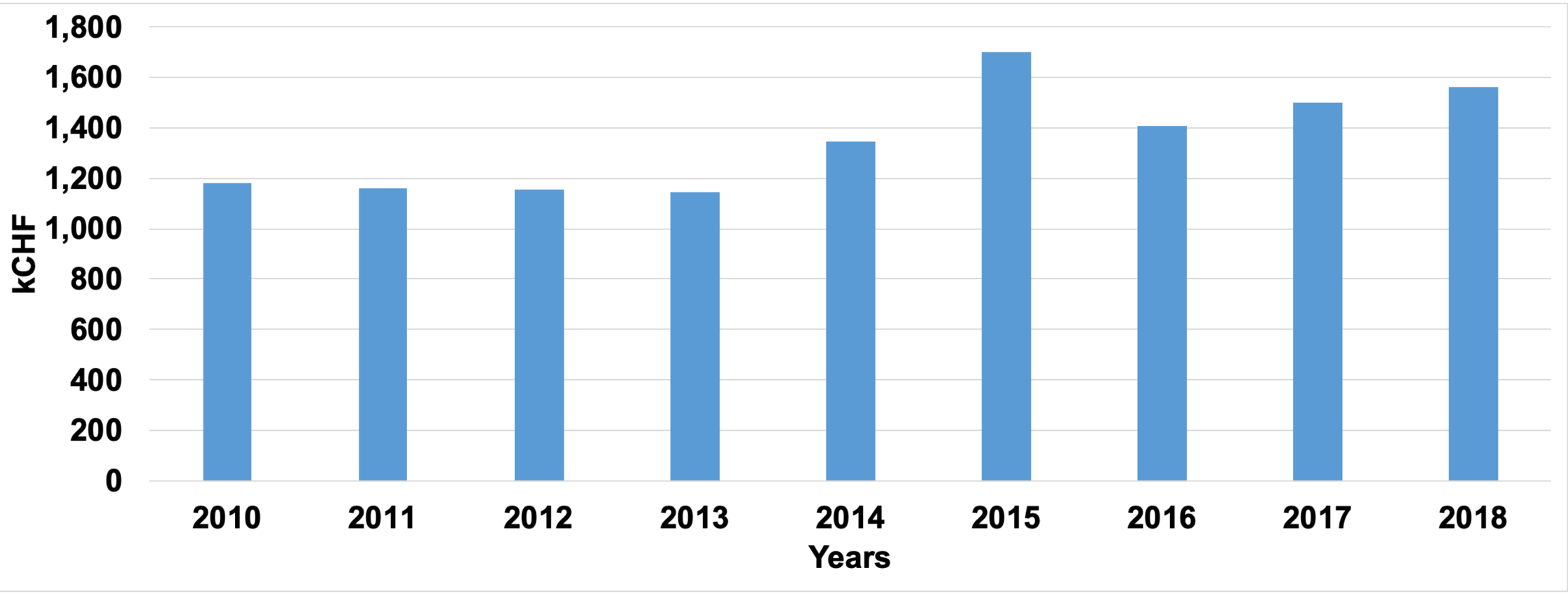
SLS TT AG Revenues
2010 - 2018



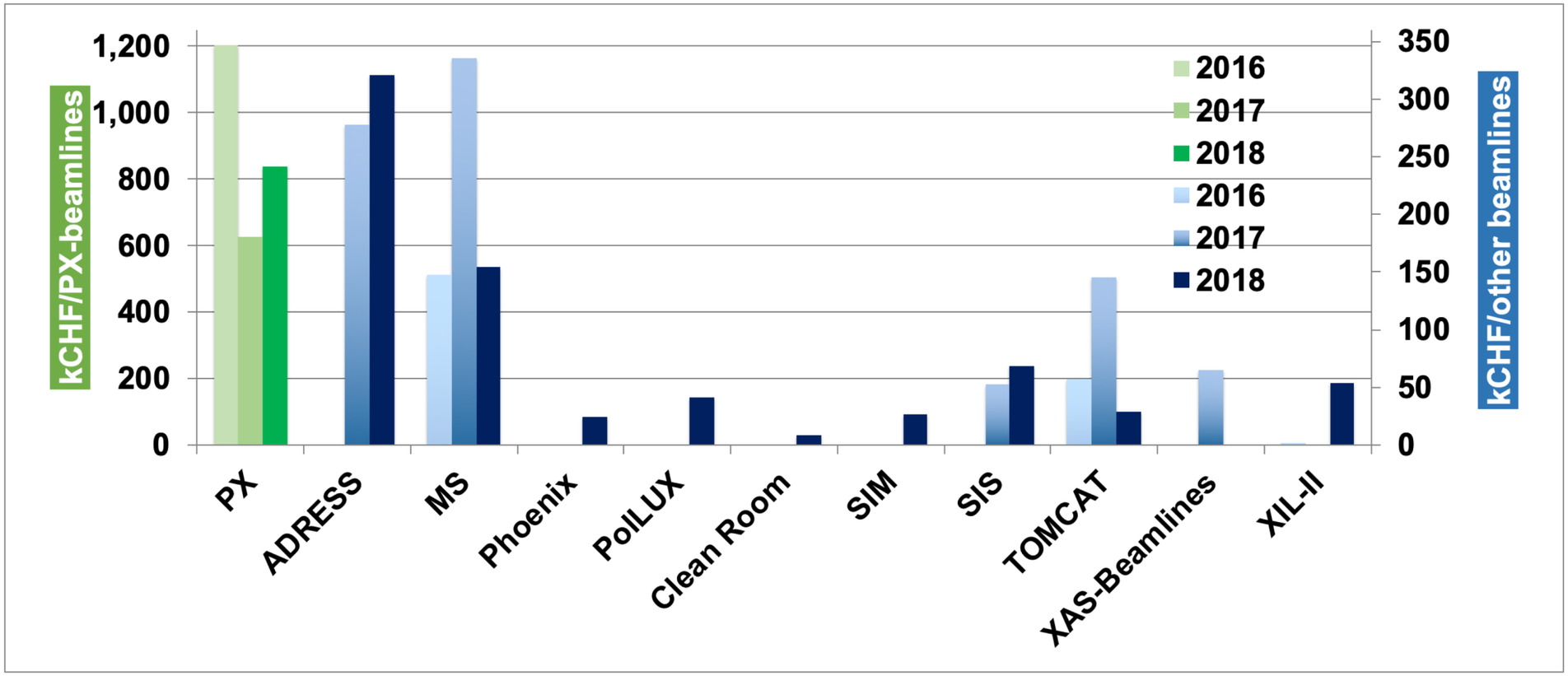
CALIPSOplus

European Commission

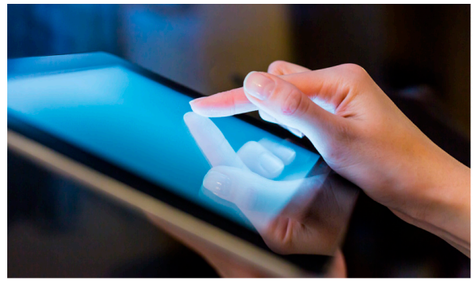
SLS Techno Trans AG

SLS TT AG Revenues
2016 - 2018

46% other beamlines / 54% PX



We bring industry specific solutions



The Swiss light Source is a large microscope that can be used by companies in the X-ray and UV-range with highly focused beams to clarify questions in the fields of :

- Medicine
- Food
- Chemistry
- Energy
- Environment
- …