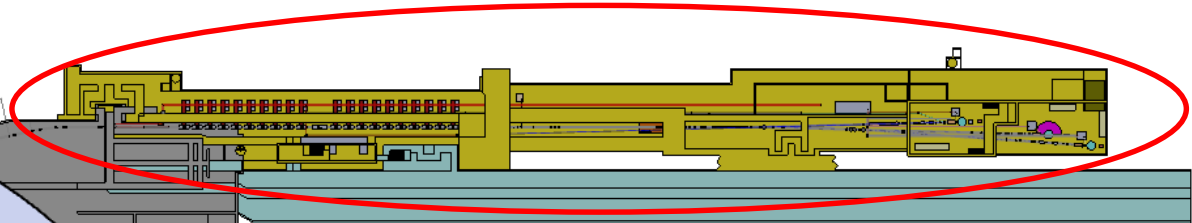


Design study of the Soft X-ray Laser (SXL) @ MAX IV

Peter Salén & Vitaliy Goryashko

SXL @ MAX IV

Linac



SXL Free Electron Laser

Synchrotron

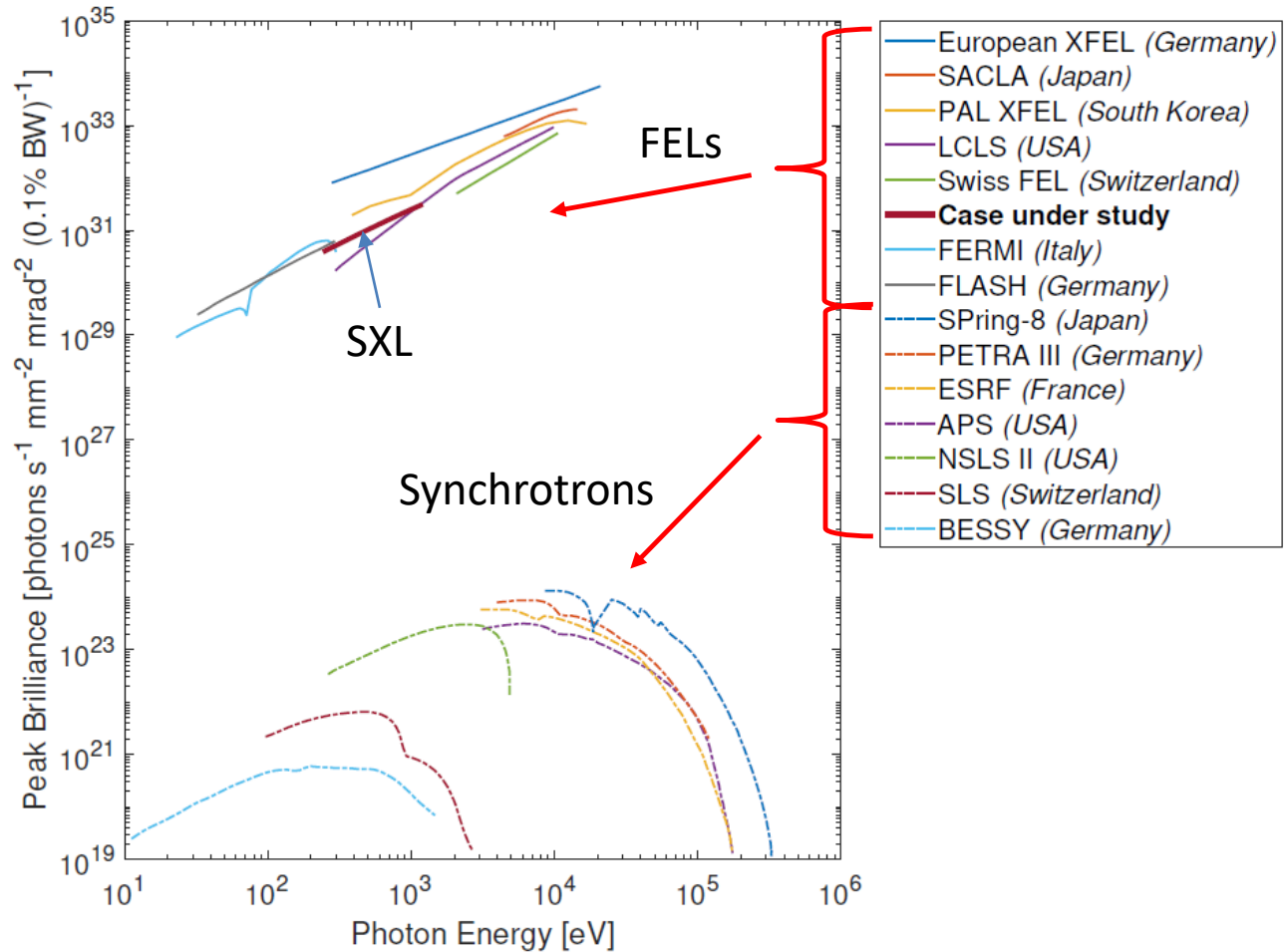
Concept:

Use existing 3 GeV linac and infrastructure at MAX IV to build FEL at low cost (few 100 MSEK)

SXL characteristics

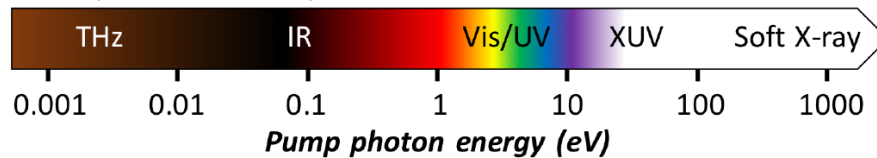
- intense pulses
- ultra short (fs) pulses
- soft x-rays, 1-5 nm

SXL into context

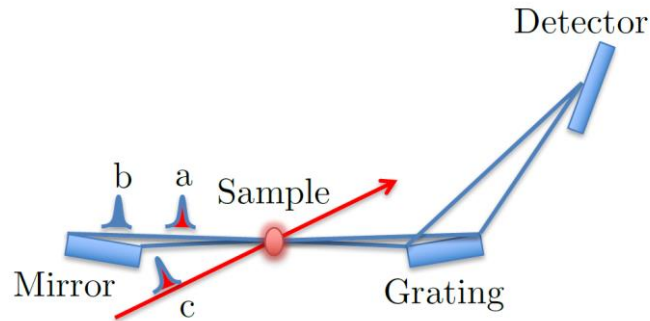


Uniqueness SXL

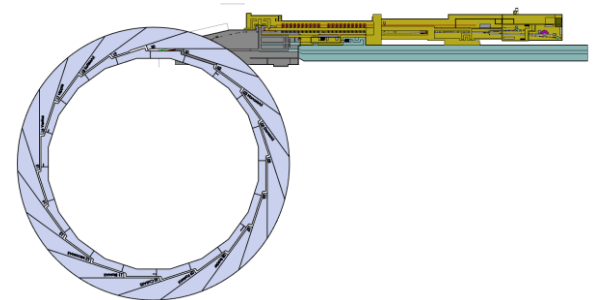
- A spectrally broad pumping range (THz to X-rays)



- Unique detection schemes exploiting nonlinear effects



- Proximity to other beamlines at MAX IV (share experimental setups, ideas...)



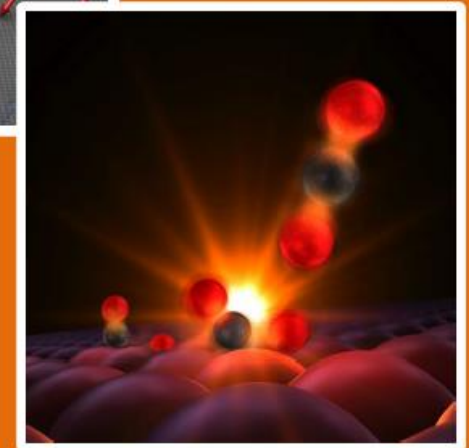
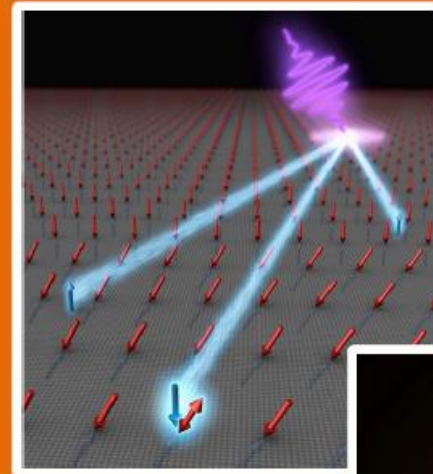
Motivation for SXL – Science Case

The Soft X-ray Laser @ MAX IV

A Science Case for SXL

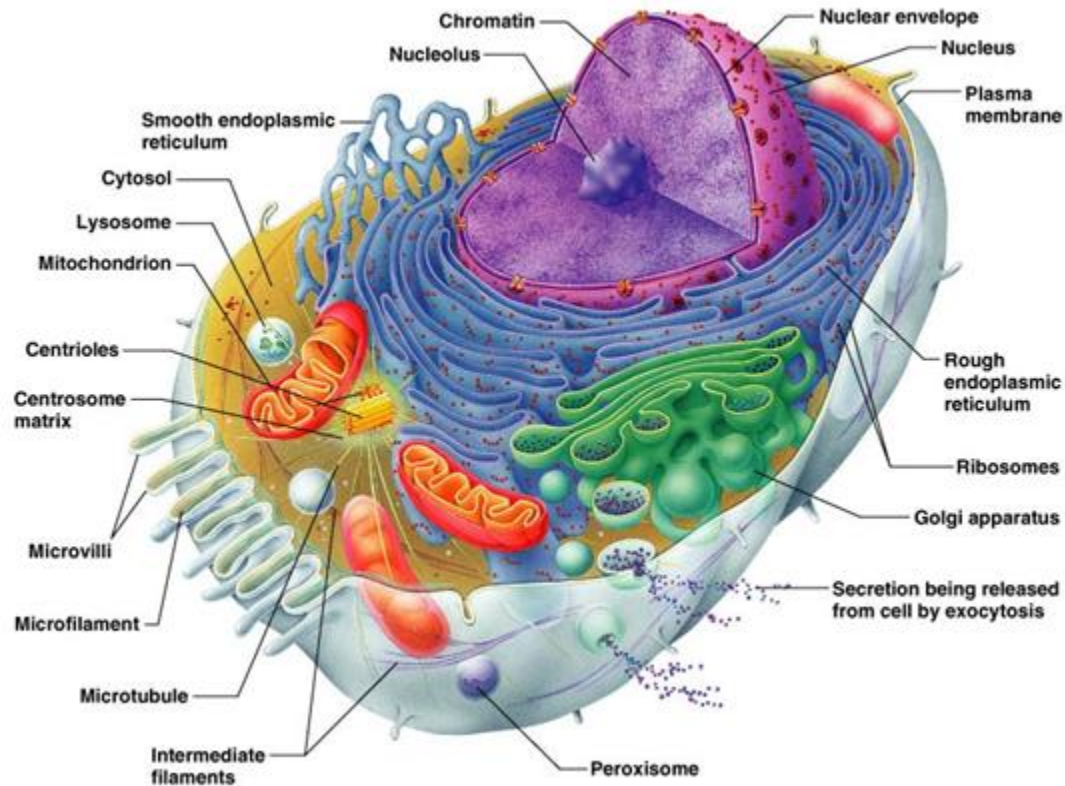
Workshop March 2016

-> Science Case document



Science Case – Life Science

Imaging living cells



“Human Anatomy & Physiology” E. N. Marieb,
Pearson Education (2004)

Conceptual Design Study

Funding for CDS

KAW: 10 MSEK

Co-funding: 20 MSEK (UU, SU, MAX IV, LU, KTH)

Human resources (linac, undulators, beamlines design)

Hardware

(low emittance gun, transverse deflecting cavity)

Ongoing 2018 -

Deliverable: CDR, March 2021

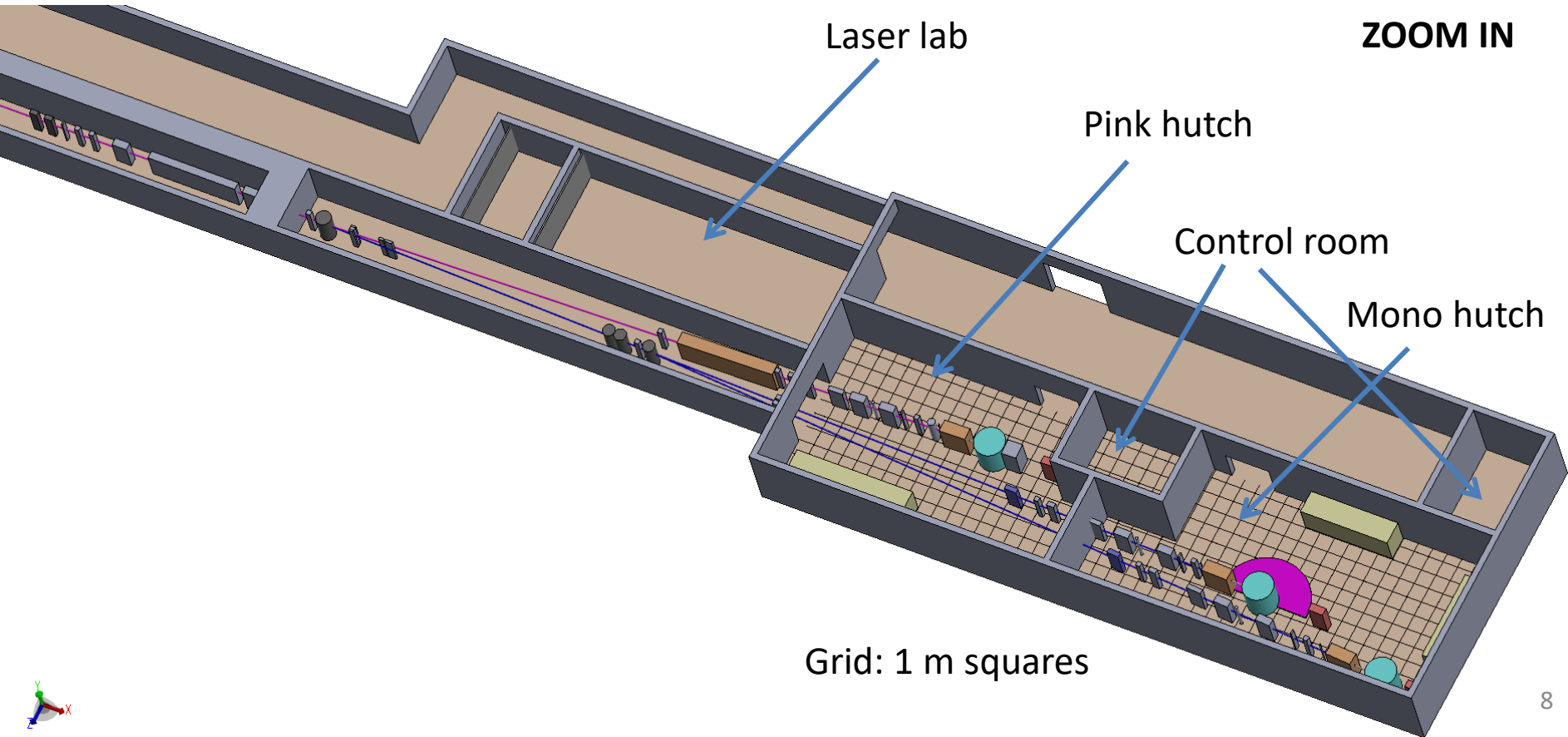
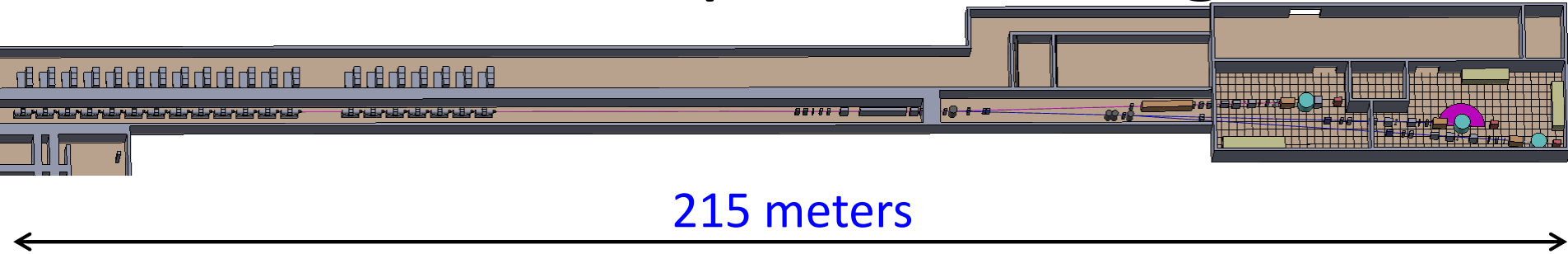
The Soft X-ray Laser @ MAX IV

Funding Application for a
Conceptual Design Study

MAX IV/Lund University
Stockholm University
Uppsala University
KTH, Royal Institute of Technology

March, 2017

Overview present design



The x-ray beamlines

Horizontal plane (top view)

