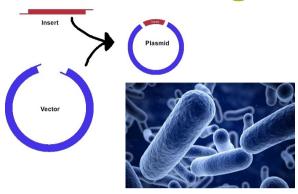
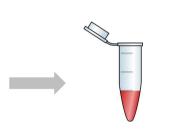


#### What does MAX IV do?

### One thing is: Macromolecular Crystallography

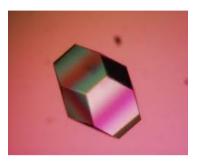


Heterologous expression in host cells (E. coli, insect cells, etc.)

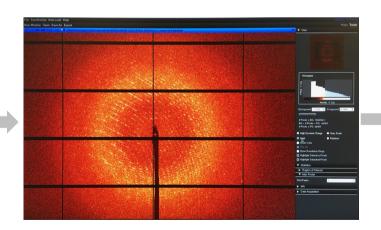


Highly <u>purified</u> protein in mg quantities

#### Protein crystallization

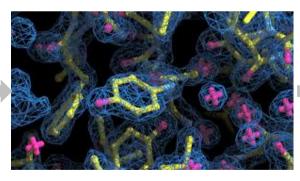


Single, diffracting protein crystal

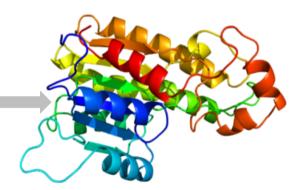


<u>Complete</u> diffraction experimental data-set at high resolution

#### Phase problem



**Interpretable** electron density

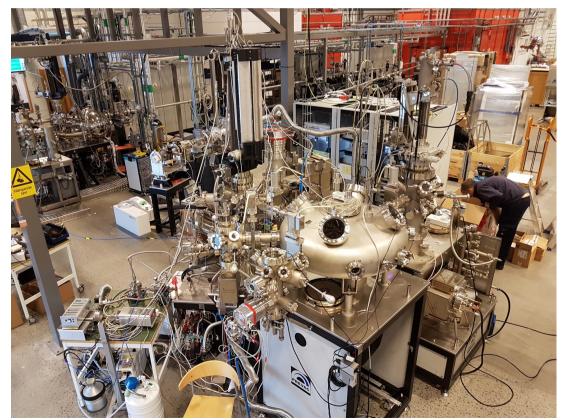


Final structure model

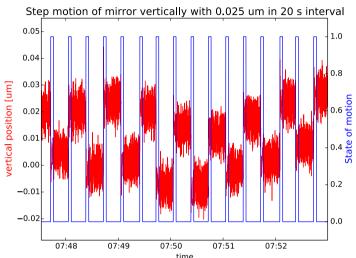


## **Current status: Installation and Commissioning**

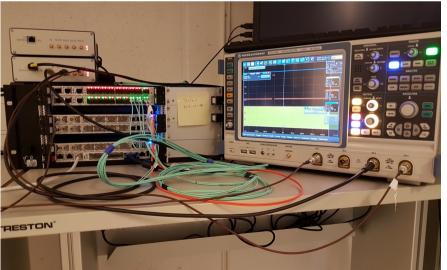
 More endstations, where experiments are conducted, needs to be commissioned.



Bloch beamline second branch end station.



Five axis parallel kinematic mirror unit

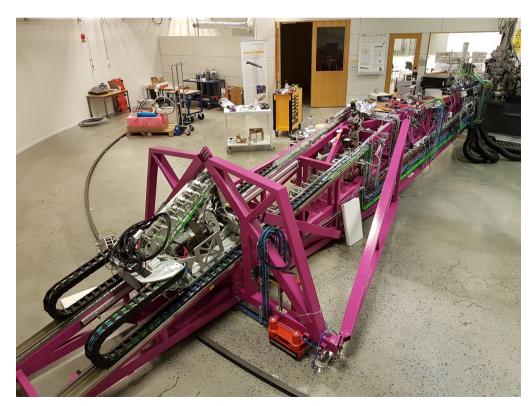


Timing system test bench. SPF bunch length 0.1 ps



# **Upcoming challenges**

- Advance from baseline to state of the art on all commissioned beamlines.
  - Synchronized electronics, timing, triggering
  - Increased data from detectors
  - Added functions in existing FPGA systems
  - Complex motion



Veritas beamline second branch end station.



Motion system



Trigger and acqusition system



Electrometer



# Needed competences and capabilities of suppliers

Hard to predict the future, but topics could be

- FPGA, add functionality to already existing systems
- Circuit design, analog and digital
- Electronics development, complete solution from specification
- Cameras /detectors



## **Upcoming procurements**

- Electronic components, Lund University, just ended, 2019
- Electrometer production, MAX IV, 2019
- Test instruments ?,Lund University, 2020



# **Summary of MAX IV**

- We are by no means ready in any way.
  - Beamlines need to double in numbers before we run out of space.
  - The difficulties are ahead of us as we are rising from a baseline in complexity to state of the art facility.





12 beamlines takes light simultaneously.