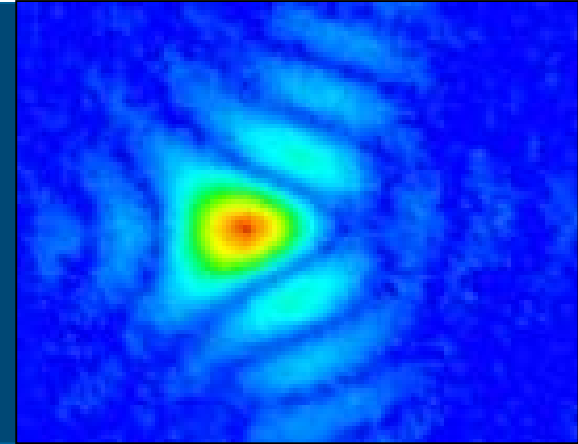


APS Upgrade Project Status



Jim Kerby

Interim Director, Advanced Photon Source Upgrade

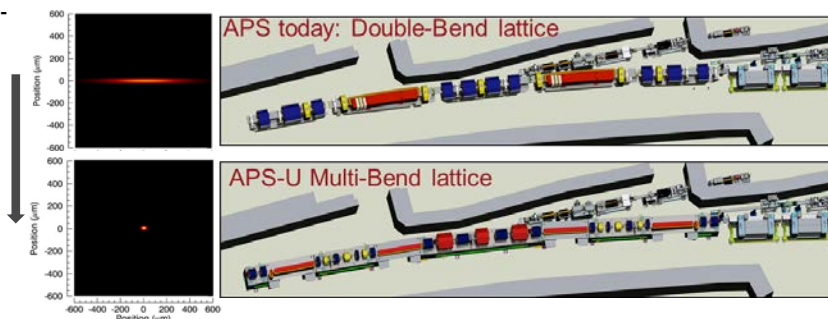
APS All Hands Meeting

October 18, 2017

The APS Upgrade: Building a World Leading Hard X-ray Synchrotron Facility

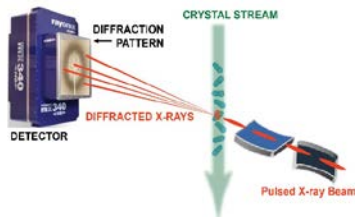
Project Developments:

- Design optimized to provide penetrating high-energy x-rays
- MBA lattice incorporating reverse bends optimized to reduce emittance from 67 pm to 42 pm
- Beamline proposal selection and preliminary roadmap complete
- Technical prototypes well along; Preliminary Design Report done; initial procurements placed



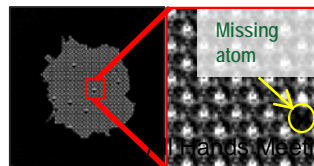
Small-Beam Scattering & Spectroscopy

- Nanometer imaging with chemical and structural contrast; few-atom sensitivity
- Room-temperature, serial, single-pulse pink beam macromolecular crystallography



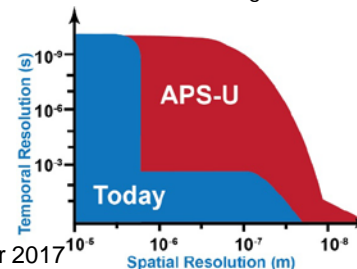
Coherent Scattering & Imaging

- Highest possible spatial resolution: 3D visualization; imaging of defects, disordered heterogeneous materials
- XPCS to probe continuous processes from nsec onward, opening up 5 orders of magnitude in time inaccessible today

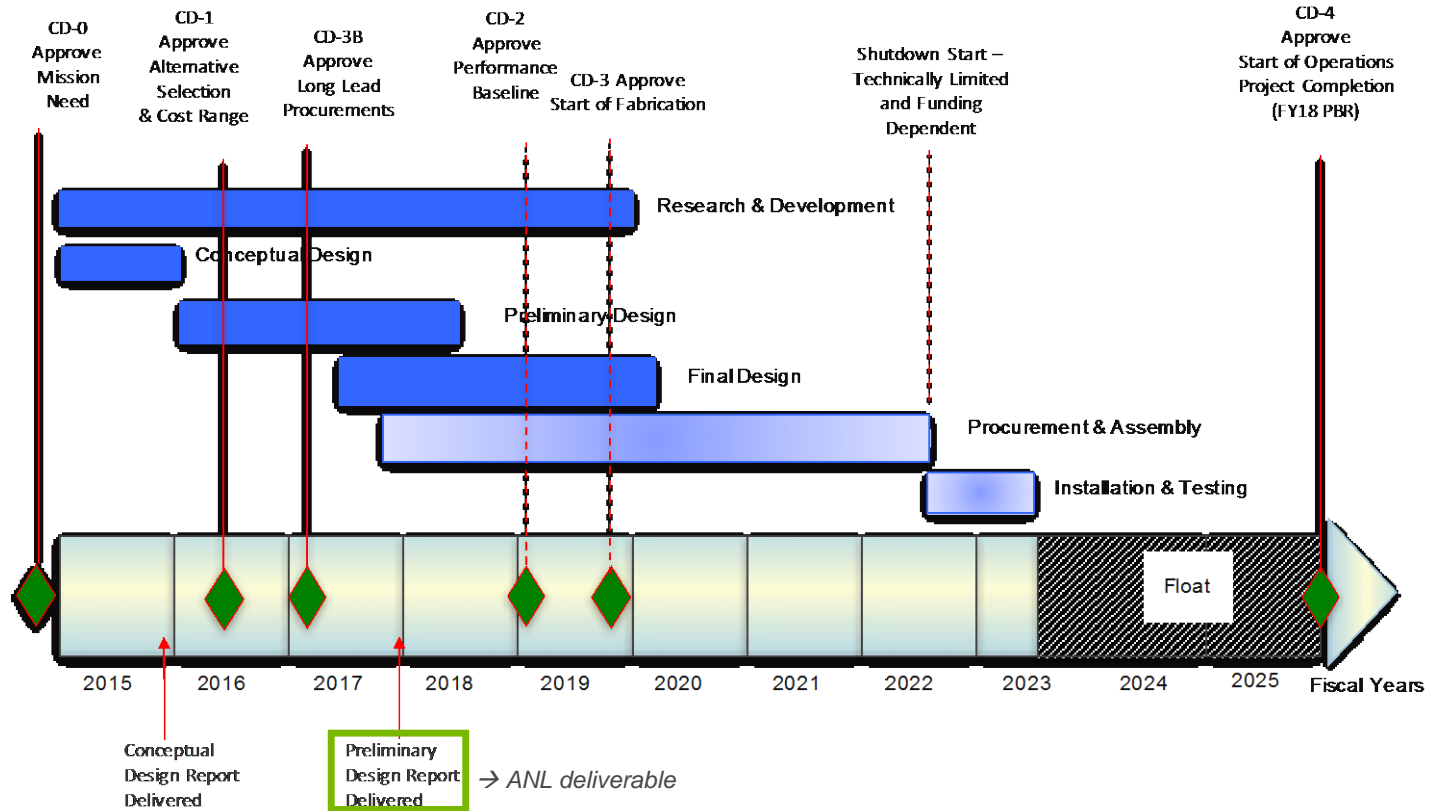


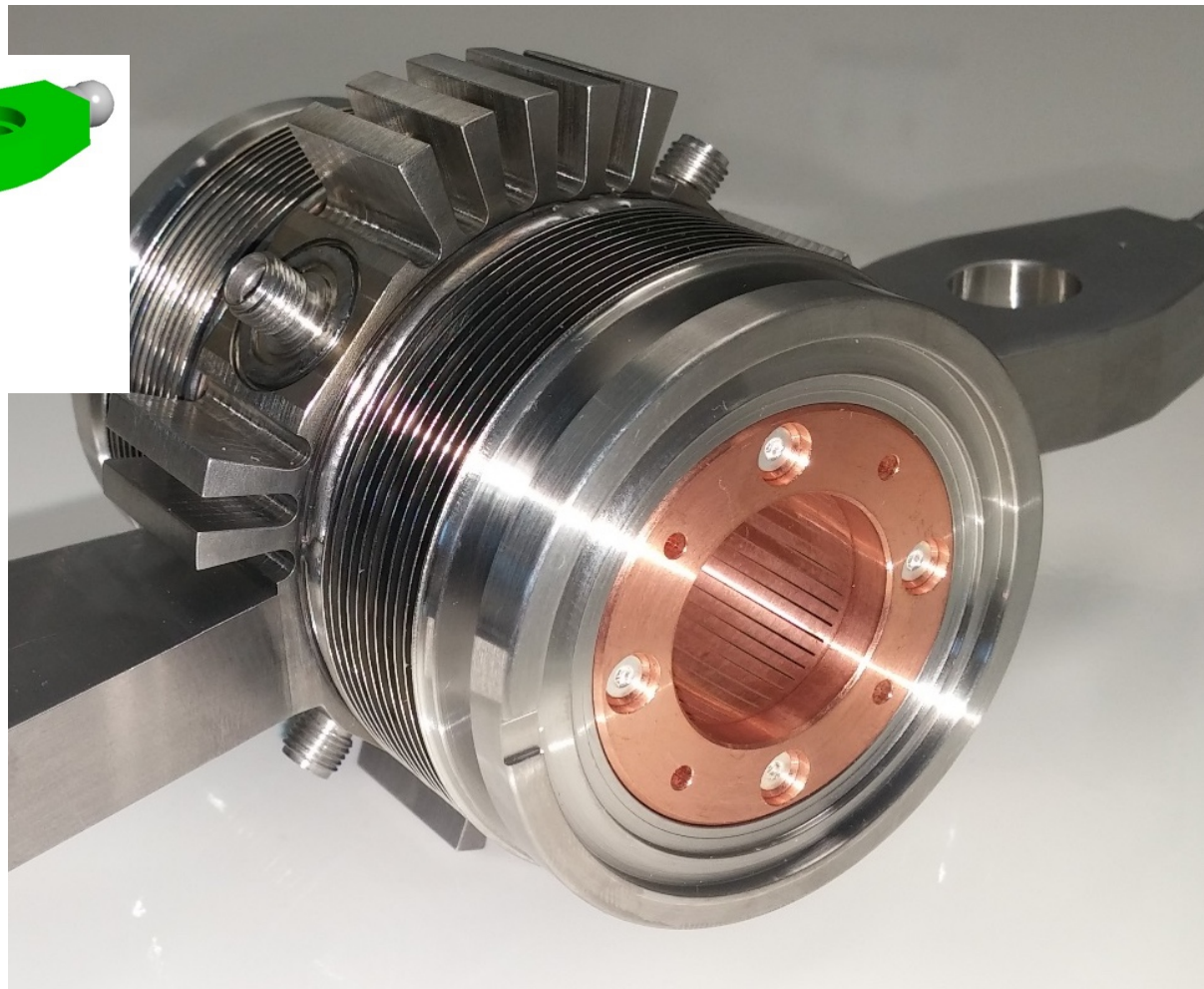
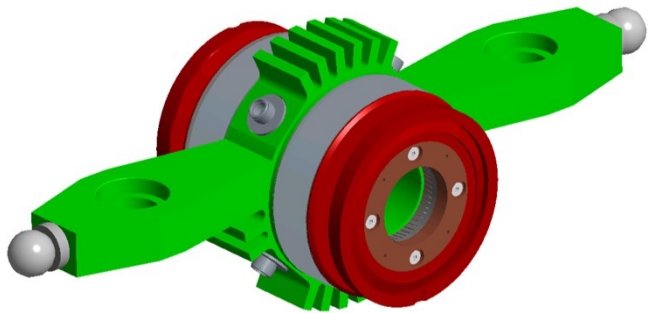
Resolution @ Speed

- Mapping all of the critical atoms in a cubic millimeter
- Detecting and following rare events
- Multiscale imaging: enormous fields of view with high resolution;

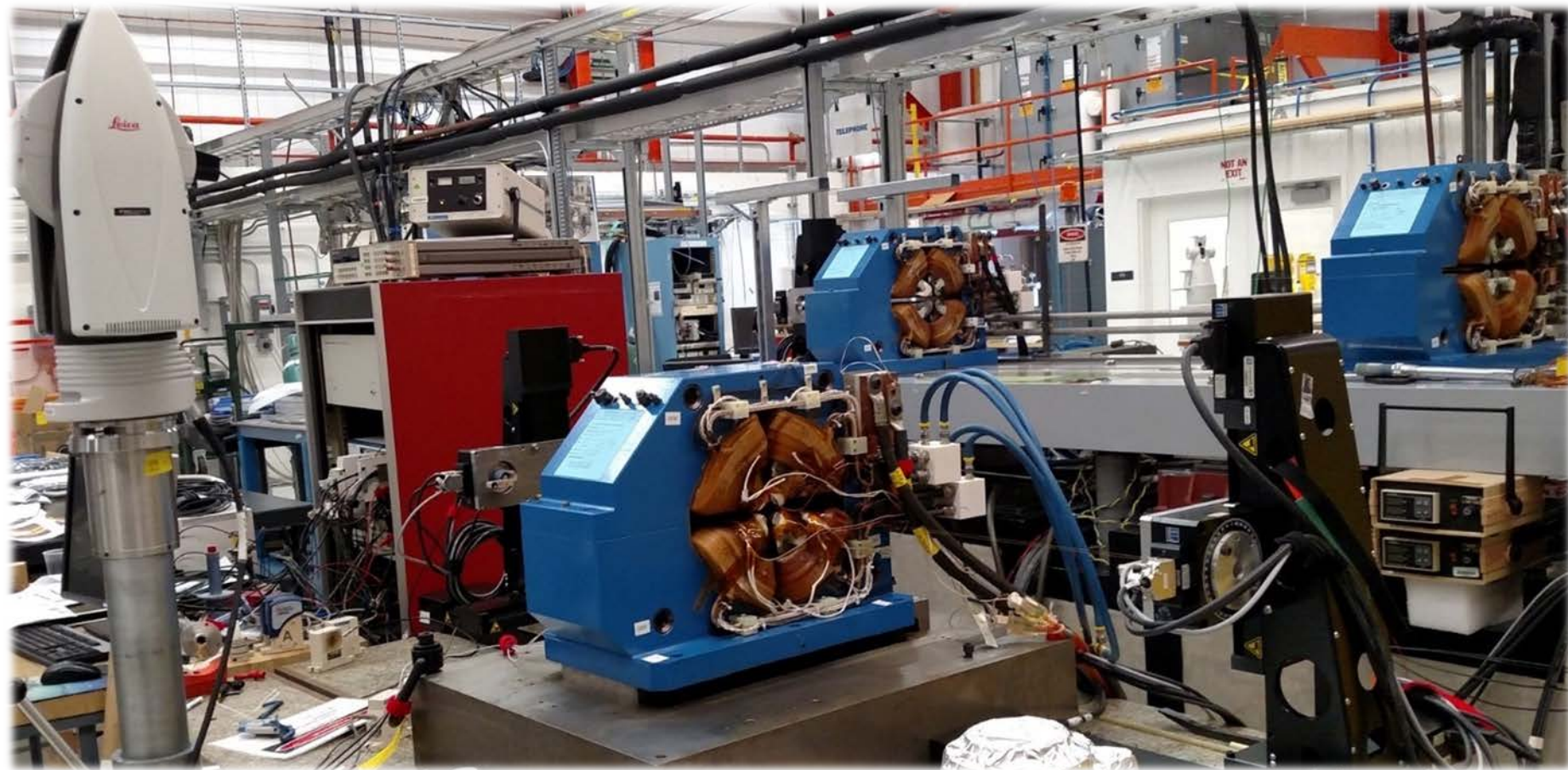


Project Schedule



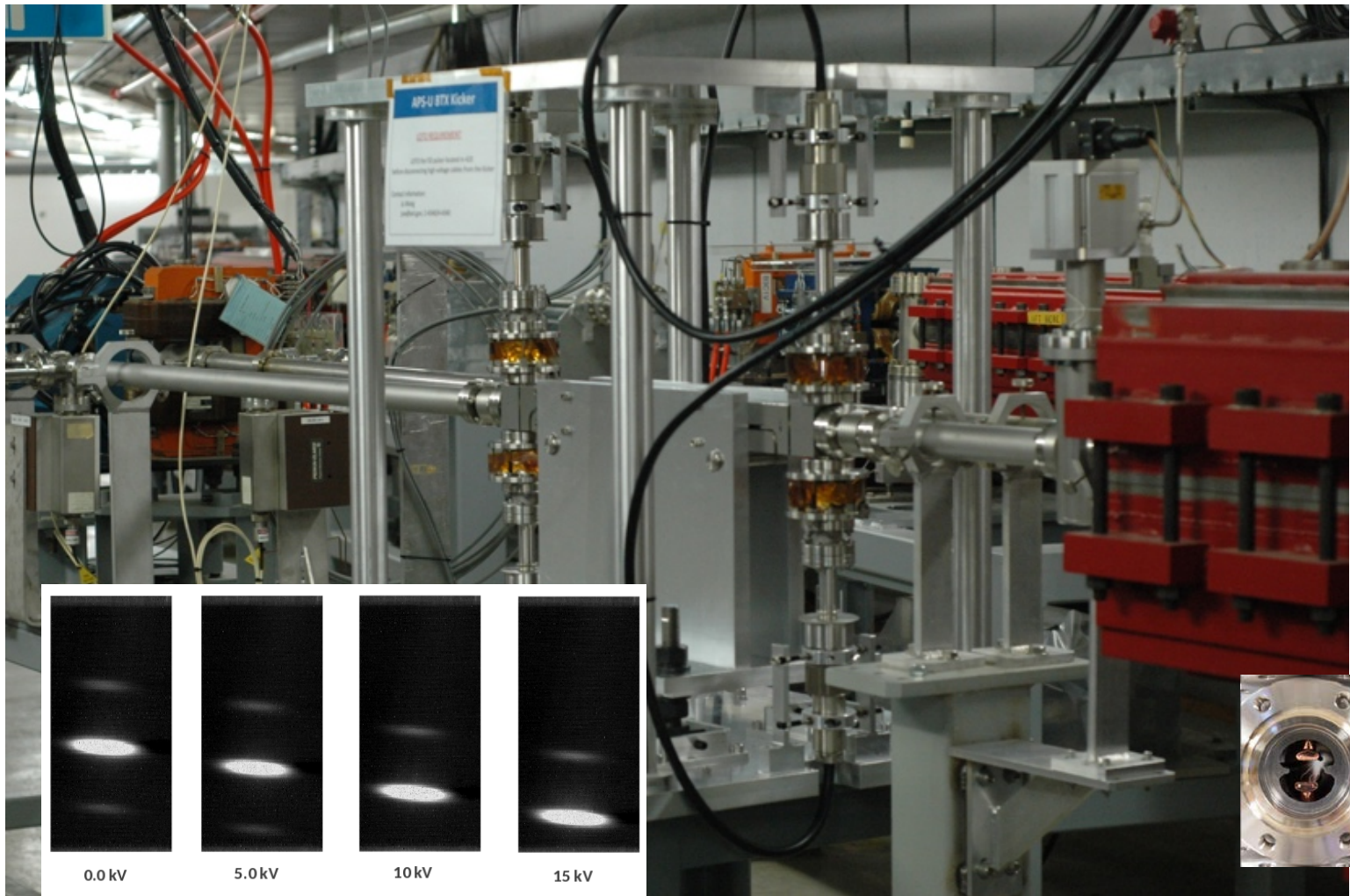


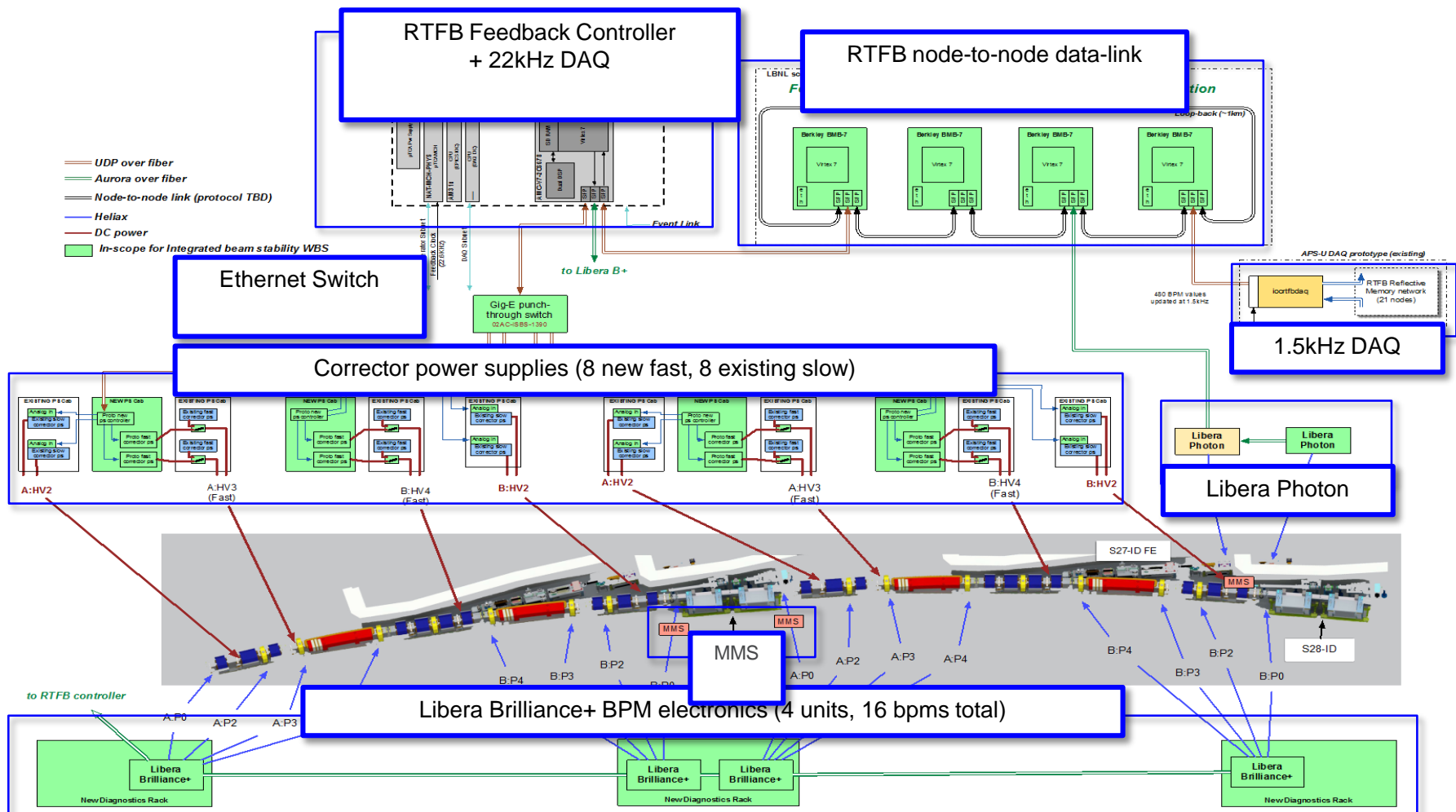


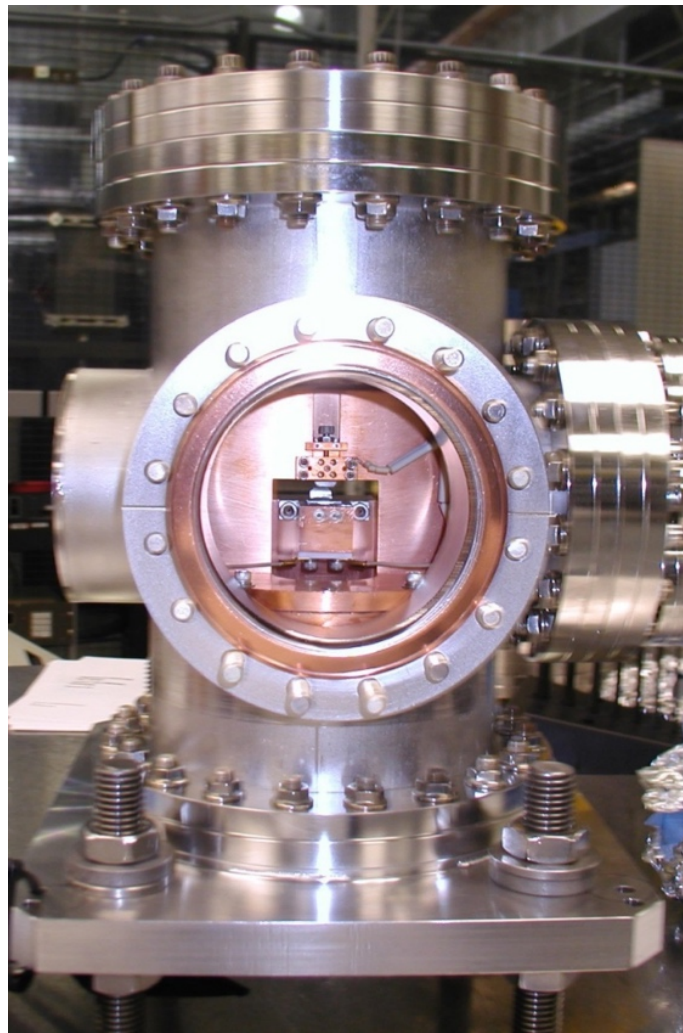












Budget News

- FY17 \$42.5M
- FY18 PBR: \$20M; Line Item Construction
- FY18 House Energy & Water: \$67M; Line Item Construction
- FY18 Senate: \$93M; Line Item Construction
- FY18 House & Senate...
- FY18 Congress and Administration...

Based on FY17 funding, the Project executed production contracts for

- Q1 and Q2 magnets,
- Bunch lengthening system vacuum vessel and associated
- Cryo-cooled horizontally diffracting double crystal monochromator

FY18 Plans

The FY18 ANL PEMP Goal for the APS-U is

“Execute the assigned APS-U project scope in compliance with the technical performance specifications and within the established DOE performance goals for cost and schedule. Performance will be assessed based on the work planned and accomplished during FY2018, not on the cumulative performance of the project.”

Our interpretation of these goals for FY18 are:

- Complete Readiness for CD-2 (and beyond)
 - Push designs towards completion / be ready to be baselined
 - Advance the R&D beamline
 - Start development of (some) acceptance facilities
- Execute LLPs depending on funding level
 - Targeted lists of items depending on FY18 funding (20/42.5/67/93)

In conclusion...

Thank you to everyone who contributed this past year. The success of the Project is due to it's people.

Although planning in this budget environment is challenging, we have a path forward, and support. We continue to aim to advance the Upgrade to the best extent possible.

Our goal remains to create, with your help, the best hard x-ray facility in the world. We endeavor to do this in the safest way possible...and ask your help in doing that.

PLEASE...look out for yourself, and your co-workers. Take a moment to think, evaluate, question, and prepare before starting any work.

And remember....

42!