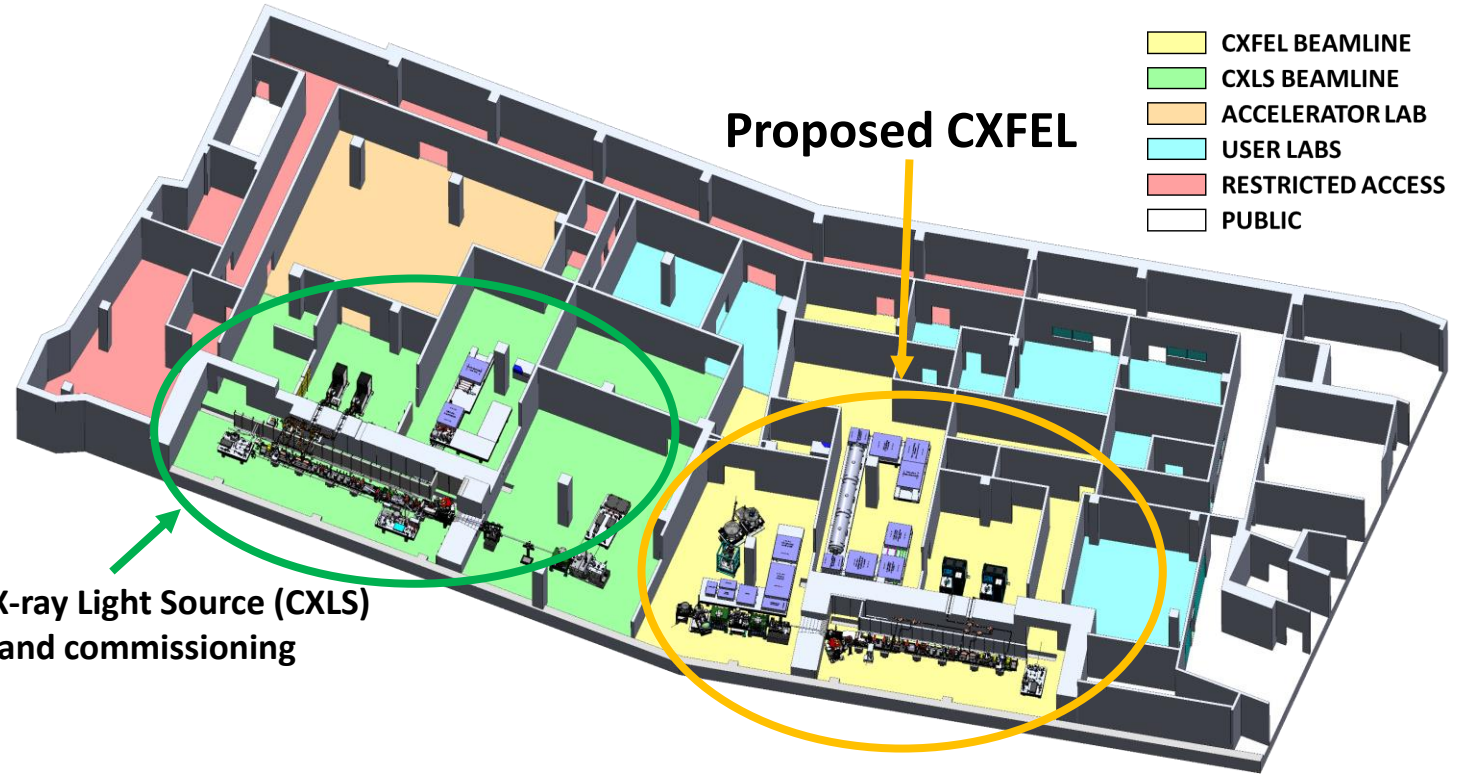
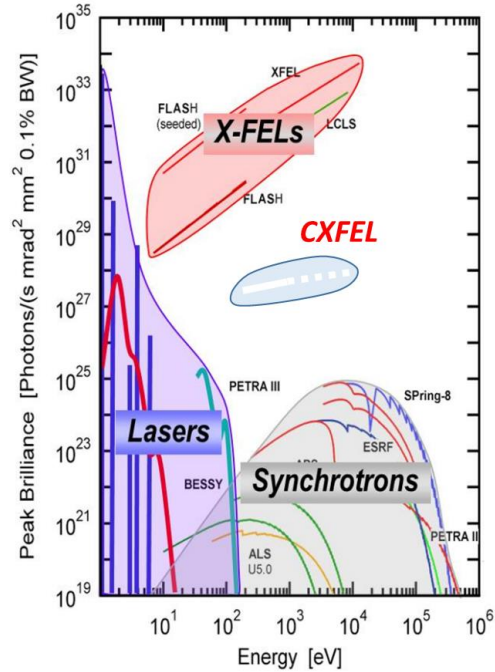


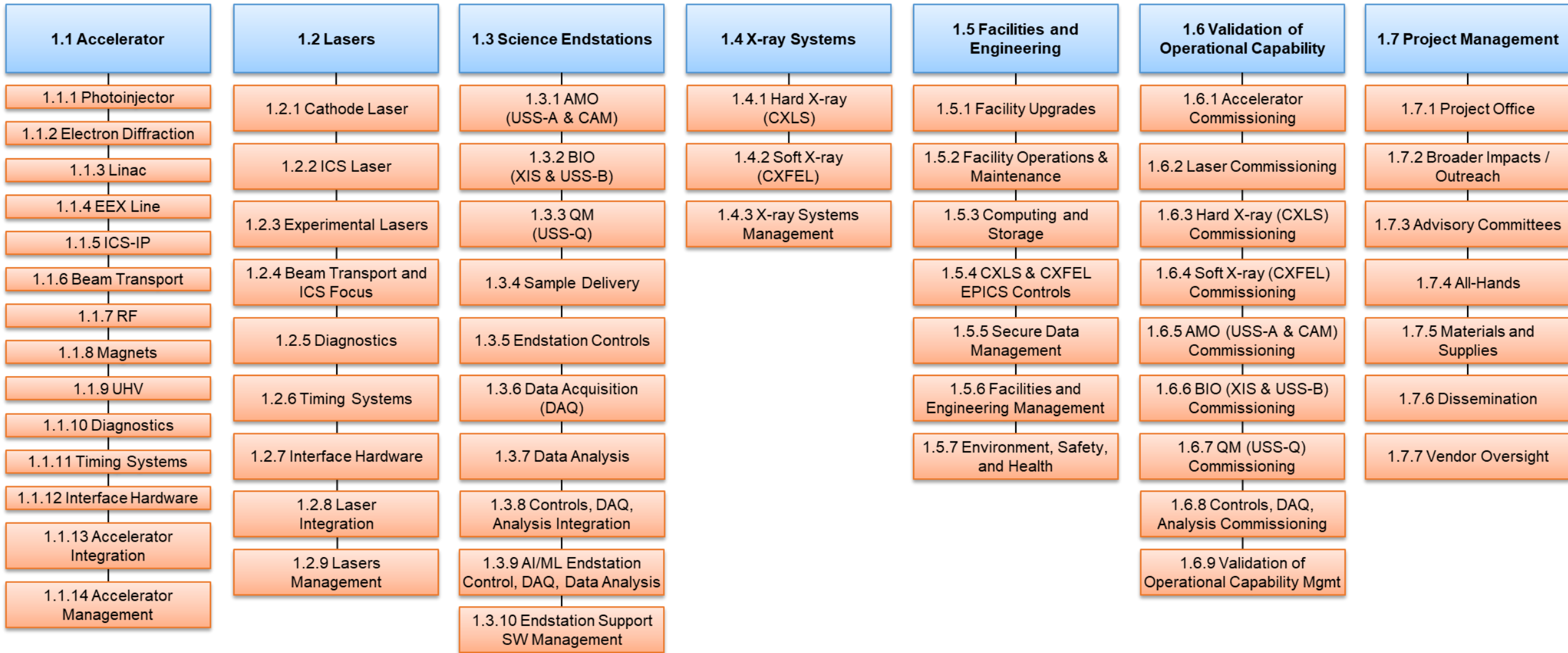
CXFEL Project: Compact X-ray Free Electron Laser



- ✓ CXFEL is a **unique x-ray laser**
- ✓ First-of-its-kind instrument to **study biomolecules, quantum materials, and atoms** at ultrashort time and length scales

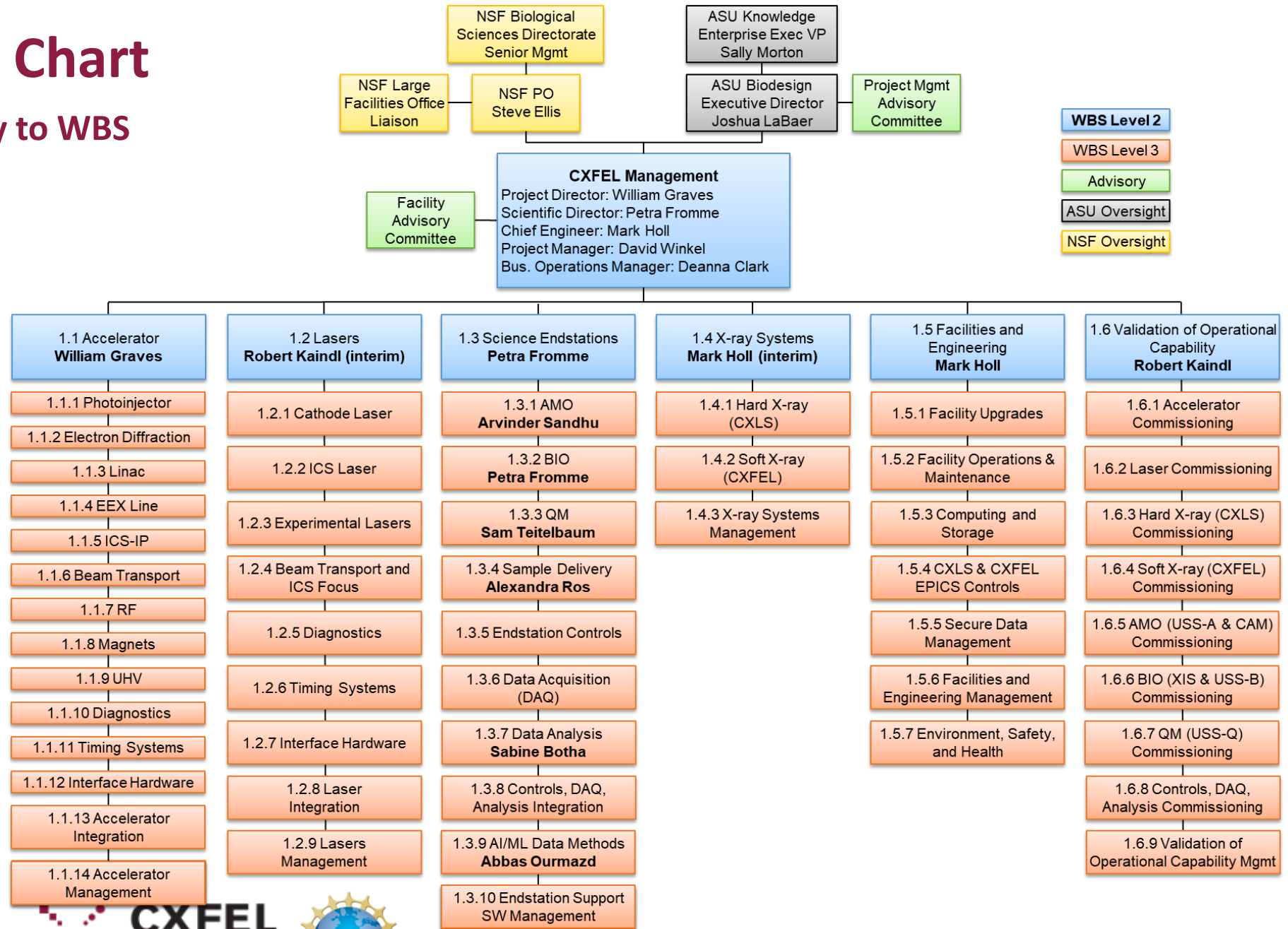
- Purpose-built labs ready
- Equipment prototyped by CXLS
- 2019 MSRI-1 Design Award
77 collaborators in 16 institutions
- Full-time Project Manager and expert consultant in place

CXFEL Work Breakdown Structure



CXFEL Org Chart

Maps directly to WBS

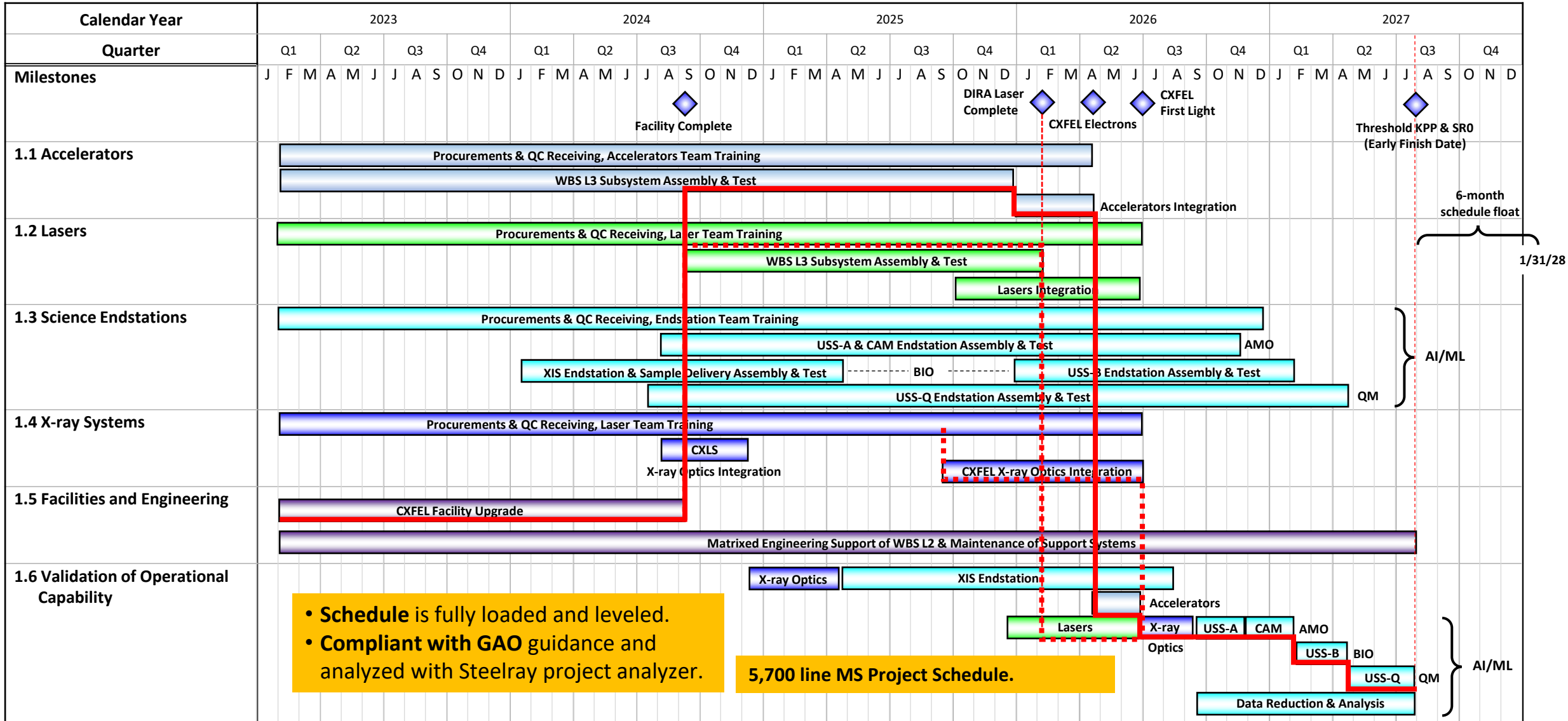


Low-Schedule-Float Paths

Updated, fully loaded, and resource leveled project file and equipment acquisition plan files available on request.

Critical Path

Additional Low-float Convergent paths



• Schedule is fully loaded and leveled.
 • Compliant with GAO guidance and analyzed with Steelray project analyzer.

5,700 line MS Project Schedule.

Risk Management Plan Supports Contingency Estimates

Based on NSF RIG (Section 6.2)

CXFEL risk register drives progression through risk management processes

A copy of the risk register file has been provided to the panel

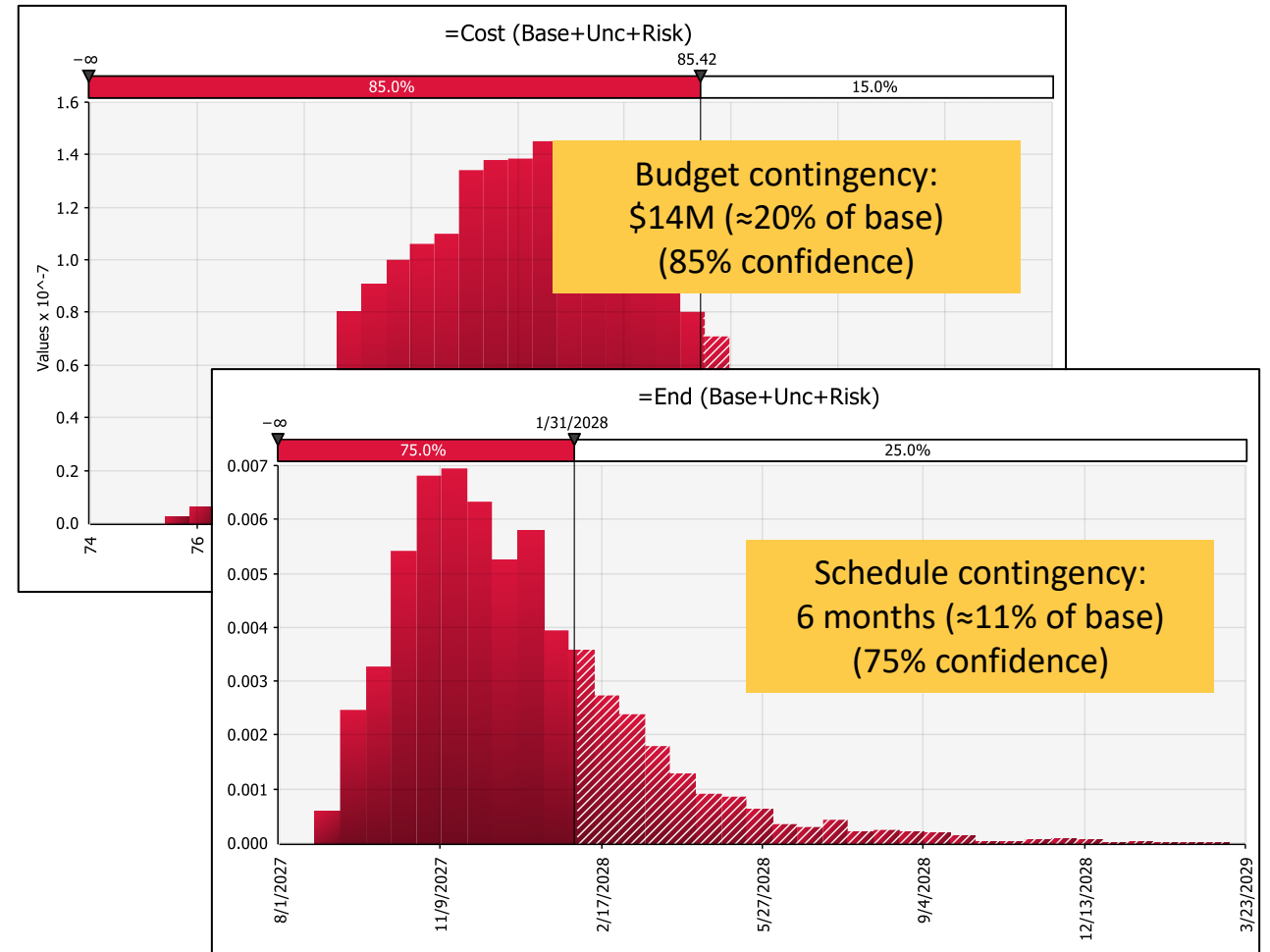
Major CXFEL risks:

- Inflation of equipment costs

- Procurement delays

- Personnel losses

Risks support Monte Carlo analysis – 5,000 simulations of the project cost and schedule using Palisade @RISK



Monte Carlo Analysis of Cost (Top) and Schedule (Bottom)
Performed using Palisade @RISK Software