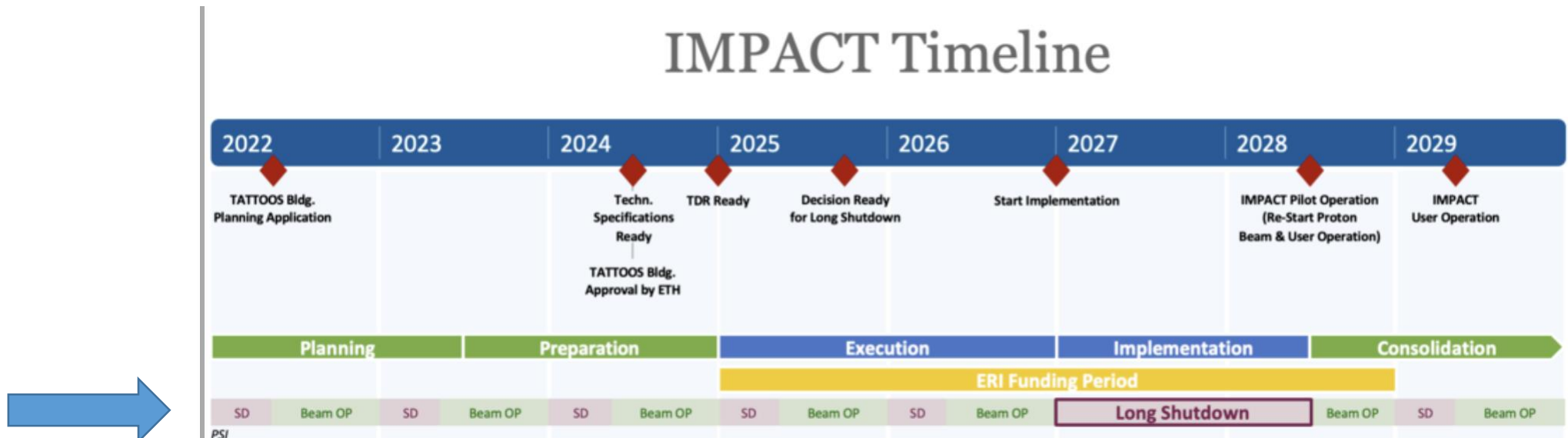


Pioneer next 4-5 years ...

- Basic calendar at PSI to remind us.
 - Beam available in 23, 24, 25 and 26. Shutdown in 27; perhaps beam in 28
 - MEG II “3 year run” would be 23, 24, 25 (part year, each year)
 - Mu3e aims to have a physics early phase run “before the shutdown”
- Milestone: “Phase 0.5” experiment in 2025 or 2026?



Global PIONEER Timeline

- 2022 PSI Proposal approved; 1st beam test
- 2023
 - R&D requests to funding agencies (US, Japan, Europe, Canada, others)
 - 2nd test beam time? Should [we consider piE1](#)?
 - Next in-person Collaboration meeting? Spring? Summer at PSI?
 - Lab tests of prototype devices
 - Detailed simulations and finalization of the experiment design
 - Beam/separator design completed
- 2024
 - Detector prototype development and test beam measurements
 - → [Technical design report](#)
- 2025-26 **PHASE 0.5** ATAR, Calo Prototype, Tracker, electronics
- 2026–28: Full-scale production of detectors, electronics, DAQ sub-systems; short physics integration runs of available subsystems.
- 2028: PIONEER engineering run and first physics production.
- 2029: Full-scale physics measurement program.

What “is” a Phase 0.5 and what must be done to mount it?

- Establish the tail correction technique using the ATAR
 - Acquire data set to run through offline
 - Establish pileup routines with ATAR, tracker, and timing cuts
-
- Beam must be “ideal” for testing the experiment, not for acquiring the statistics
 - **Rate > 150 k/s (half goal)**; μ / e removed. Spot < ATAR dimensions; **dP/P < 1.5%**
 - Geometry might not be ideal in all directions
 - ATAR must stop beam and do tracking and E, **BUT** might have sides blocked for convenient readout of cables.
 - Calorimetry aligned with the unblocked sides of ATAR
 - PIENU NaI, or segments of new xtal calos if existing, or even PEN alone
 - Electronics: Should be what ATAR and Calo will intend to use;
 - DAQ: same; should be essentially final concept architecture
 - Triggers: critical to have be able to test these

Physics Goals includes learning how to analyze pi e nu events