

HENP Projects and Community: Panel Discussion

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Preamble

How can the HENP community use lessons learned from existing experiments and ongoing projects, the technical demands of future projects, and shared R&D capabilities to build a more coordinated and sustainable instrumentation program?

Questions

- On lessons learned
 - What have the HEP and NP operating experiments taught us about developing reliable instrumentation, and what should future projects do differently?
- On shared challenges
 - Which technical challenges across the HENP experimental portfolio offer the strongest opportunities for coordinated R&D and technology transfer?
- On lab–university collaboration
 - How can we best leverage the complementary expertise and resources of national laboratories and universities, while ensuring continued support for innovative, exploratory instrumentation R&D across both?
- On shared capabilities and strategic action
 - Which facilities, technical capabilities, and instrumentation platforms should HENP maintain as shared community resources, and what steps should we take to improve coordination, reduce unnecessary duplication, and strengthen the instrumentation workforce?

Lesson Learned

- Which challenges were underestimated during experiment design or construction?
- What did we learn about integration, maintenance, and long-term operations?
- Which successful approaches should become standard practice across future projects?

Shared Challenges

- Which instrumentation challenges are sufficiently common across HEP projects and NP projects to justify coordinated R&D?
- Where could technologies developed for extreme environments benefit experiments with very different operating requirements?
- How can HENP encourage technology transfer without forcing a common solution on experiments whose scientific and operating requirements differ substantially?

Lab–university Collaboration

- How can national laboratories and universities effectively share expertise, facilities, and technical resources to advance instrumentation R&D?
- What funding mechanisms and institutional policies can sustain innovative, high-risk, exploratory instrumentation R&D across both national laboratories and universities?
- How can partnerships between national laboratories and universities support workforce development, knowledge transfer, and the transition of promising instrumentation concepts into operational capabilities?

Shared Facilities and Technical Expertise

- Which R&D facilities and technical capabilities should HENP support as shared resources rather than develop separately for individual experiments?
- What lessons from the flagship HEP and NP experiments can help HENP improve access to facilities, preserve technical expertise, and avoid duplicated R&D investments?
- How early should shared instrumentation teams become involved in experiment planning to reduce technical risk, improve technology readiness, and avoid costly redesigns?

Strategic Priorities for HENP Community

- With such a broad experimental portfolio, how should HENP decide which instrumentation capabilities deserve coordinated investment and which should remain experiment-specific?
- If HENP could prioritize three instrumentation R&D initiatives over the next few years, what would deliver the greatest scientific and technical benefit across the program?
- What changes in funding, collaboration structures, facility access, or workforce development would help HENP build a more sustainable instrumentation ecosystem?