Status of implementation plan document

Ruth Pordes
Erica Snider
Fermilab

LArSoft Steering Group Meeting
March 11, 2016

Implementation plan document

- Implementation plan
  - Documents high-level plan to meet requirements and goals gathered from the LArTPC community
  - Being developed within the Software and Computing Coordinators group
    - Armir Farbin, Thomas Junk, Tracy Usher, Erica Snider, Herb Greenlee, Wes Ketchum, Brian Rebel, Roxanne Guienette, Andrzej Szelc
  - A follow-on effort to the “Requirements from the LArTPC Community for Offline Software and Computing”
    - Repository for the requirements document
      - http://cdcvs.fnal.gov/projects/lartpc-requirememts
      - See: new-document/lartpc-requirements.pdf (should be v0.4)

Implementation plan document

- The document
  - Current document is in early draft form: v0 draft!!
    - At a summary level only!!
  - Presenting now to seek guidance on how to proceed

Repository for implementation plan document:

ssh://p-lartpc-requirements@cdcvs.fnal.gov/cvs/projects/lartpc-requirements

http://cdcvs.fnal.gov/projects/lartpc-requirements

See: implementation_plan/lartpc-implementation-plan.pdf

Implementation plan document

- Content of the document
  - Experiment goals
    - Collected during half-day meeting in Dec 2015
  - Capabilities
    - Summarizes which requirements are met by existing LArSoft suite
  - Capability gap for summer 2016 physics goals
    - Summarizes gap in minimal requirements needed to meet short term goals relative to existing LArSoft suite capabilities
  - Organizational structures and processes
    - Speaks to how we carry out the work of the collaboration

New since last meeting

Capability gap for summer 2016 goals

- Short term physics goals (< 6 months, as documented in Dec 2015)
  - DUNE 35t
    - March 1: reconstruct straight tracks
  - ProtoDUNE – none
  - DUNE
    - Jan 31: dual-phase simulation
    - June 1: “some” working full chain of reconstruction
    - June 1: interactive visualization that feeds back to LArSoft (Bee was called out)
  - LArIAT
    - Jan 1: GEANT v10
    - March 1: support for pion, K, and lifetime analyses
  - MicroBooNE
    - March 1: cosmic rate, diffusion measurement, purity papers
    - April 1: cosmic tagging for cross section measurement
    - June 1: CCQE, pion production, neutral current pi-zero cross section
      - *since modified to CC inclusive and pi-zero mass peak*
  - SBND
    - June 1: full chain reconstruction

Capability gap for summer 2016 goals

- Capability gap
  - 4.3.2: Shower / track discrimination is not functional in data
  - 5.1.1: Track finding does not perform sufficiently well
  - 5.2.1: Shower reconstruction in data does not perform sufficiently well
  - 5.3.1: Vertex finding may not be adequate
  - 5.4.1: Event t0 determination (flash matching) in data may not be adequate
  - 5.5.3: pi-zero identification does not work at present. Requires working shower identification (track / shower discrimination + shower reconstruction)
  - 5.6.2: Handling of dead and noisy channels in tracking and vertxing algorithms needs to be significantly improved
  - 7.2.10: Noise simulation does not accurately model detector. (Unknown whether this will matter for summer analyses
  - 9.1.1: Dual-phase capability is insufficient to meet short term goals. (ProtoDUNE has elected to continue using an existing, alternative framework for the time being.)
  - 12.1.1: 3D intractive visualization interface state and state of Bee implementation is unknown, as Is the suitability for short term goals
  - 12.2.2 – 12.2.5: Unknown which if any of these visualization capabilit8es are needed to meet short term goals. None are available in LArSoft, so an external solution would be required.