

DAQ Consortium Schedule Notes

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DUNE DAQ Dataflow Meeting

Introduction

The DAQ Consortium is developing the work plan/schedule between now and protoDUNE-II.

Background: FD_DAQ_Schedule_V8 (May 2020)

- PDII Operations, 01-Jan – 31-Dec-2022
- PDII DAQ/SC installation complete, 03-Jun-2021
- PDII DAQ/SC ready for operations, 03-Sep-2021
- Preliminary DAQ software design review passed, 06-Jul-2021

PBS v0

Dave Newbold gathered input from DAQ Working Groups and put together a 'product breakdown structure' (PBS), a schedule based on deliverables not work or resources. WBS will come later.

The stated objectives:

- Produce a PD-II development plan that we can monitor progress against
- Understand dependencies between work areas (and external groups and milestones)
- Compare plan to resources and availability of people

Dataflow section

3	Dataflow				Dataflow
3.1	Application framework				Application framework
3.1.1	Initial release	1 Sep 2020			Initial release
3.1.2	Integration with CCM config	1 Dec 2020			Integration with CCM config
3.1.3	Integration with CCM RC	1 Dec 2020			Integration with CCM RC
3.1.4	Consolidation release	1 Mar 2021			Co
3.2	Central libraries				Central libraries
3.2.1	IPM	1 Oct 2020			IPM
3.2.2	Metrics system	1 April 2021			
3.3	Dataflow applications				Dataflow applications
3.3.1	Example app	1 Sep 2020			Example app
3.3.2	MiniDAQ readout and disk IO	1 Oct 2020			MiniDAQ readout and disk IO
3.3.3	Event builder / DFO	1 Dec 2020			Event builder / DFO
3.3.4	DS interface	1 Feb 2021			D
3.4	Data formats				Data formats
3.4.1	HDF5 tests complete	1 Sep 2020			HDF5 tests complete
3.4.2	Data packaging design	1 Oct 2020	50		Data packaging design
3.4.3	Data writing implemented	1 Dec 2020	51		Data writing implemented
3.5	Storage system				Storage system
3.5.1	Requirements documented	1 Nov 2020			Requirements documented
3.5.2	Technology survey complete	1 Jan 2021	54; 133		Technology survey comp
3.5.3	GFS deployment	1 Mar 2021	55		
3.6	HLF dispatcher				
3.6.1	Spec and top-level design complete	1 April 2021			Spec and top
3.6.2	Implementation complete	1 Sep 2021	58		
3.7	Operational documentation	1 Aug 2021			

Software demonstrations

- Milestone dates indicated when the listed item should be done

1.3	Software demonstrations		
1.3.1	First DAQ apps demonstrated	1 Oct 2020	7; 45
1.3.2	MiniDAQ installed at sites	1 Dec 2020	7
1.3.3	Readout chain demonstrated	1 Jan 2021	15
1.3.4	PD-II switch to new DAQ SW	1 Feb 2021	16
1.3.5	SW trigger distribution demonstrated	1 Mar 2021	
1.3.6	Trigger primitives pipeline demonstrated	1 April 2021	18; 71; 113

- ‘First DAQ apps’ are examples (e.g. readout app)
- ‘MiniDAQ installed at sites’ means fully operational
- N.B.: ‘Switch to new DAQ SW’ by Feb 1, 2021

From Dave's slides

Schedule Backbone: SW releases

- R1: Basic application framework (Aug 2020)
 - Supports first test apps, developer training, etc
 - First test of CI and packaging tools
- R2: Enhanced IPM, error reporting, config service, event handling and disk IO (Oct 2020)
 - What we used to call 'miniDAQ'
 - Support UD / DS development, hardware tests, timing system software devt, 'benchtop' demo of full readout chain, etc.
- R3: Configuration, run control, data formats (Dec 2020)
 - All features required for T1 (in some state of initial readiness...)
- R4: Further features, fixes, monitoring, data formats, storage system (Mar 2021)
 - Supports T2, builds in lessons / feedback from T1
- R5: Consolidation, full operator support, performance (June 2021)
 - Approaching the 'final feature set', supports T3 via operator GUI, etc
- R6: Final feature set, HLF, external interfaces (Sep 2021)
 - Anything not listed above, supports T4 end-to-end test

From Dave's slides, too

Schedule backbone: system tests

- (T0: Consolidation, timing system installation)
- T1: Initial system operation at CERN (February 21)
 - Short test: checkout of new timing system, maybe new r/o hardware
 - First use of DAQ suite in operational conditions
- T2: Full function operations (May 21)
 - Short test: test of software distribution of 'hardware' triggers at low rate
 - First test of new data writing, storage, monitoring tools, etc
- T3: Full performance operations (Aug / Sep 21) – the key test
 - Long test: achieve full performance spec, test all 'non standard' run modes
 - Check out with WIB2, DAPHNE, (maybe) calibration systems, etc
- T4: 'Data challenge' (Nov 21)
 - Long test (maybe with cold systems); run full data pipeline from trigger to FNAL
 - First look at realistic data quality, trigger primitives, etc
- T5: Self-triggering / HLT operations (Dec 21, if time)
 - 'Stretch' test of cosmic / calibration triggers if conditions and time allow
 - Could also be done during / after the PD-II run, but nicer to complete ahead of this if possible