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LHCb Computing Upgrade

This is the entry point for all activities related to Computing for the LHCb Upgrade.

Upgrade Software Planning Group (USPG)

The USPG was formed in December 2017 in order to oversee and coordinate activities on the upgrade software. The USPG is composed by:

- Upgrade Software Coordinator (USC) -- Marco Cattaneo
- Computing Coordinator (or Deputy) -- Concezio Bozzi, Benjamin Couturier
- Online Project Leader (or Deputy) -- Beat Jost, Markus Frank
- Simulation Coordinator (or Deputy) -- Gloria Corti, Dominik Muller
- RTA Project Leader (or Deputy) -- Vladimir Gligorov, Benjamin Couturier, Stephanie Hansmann-Menzemer
- Spokesperson (ex-officio)
- Deputy Spokesperson (ex-officio)
- Physics Coordinator (or Deputy) (ex-officio)
- Operation Coordinator (or Deputy) (ex-officio)

Each of the subsystems represented within the USPG maintains its own management structures.

To aid coordination and help newcomers find out effort is most needed, the USPG maintains a dedicated page enumerating the ongoing upgrade software activities across all subsystems.

LHCC Milestones

We have three milestones:

- 2016 Q1: Roadmap for the TDR (LHCb internal note) [↗](#) -- **DONE** --
- 2017 Q4: Computing Technical Design Report (to be reviewed by LHCC) -- draft for TB and collaboration wide review
- 2018 Q3: Computing model for Run3 (to be reviewed by LHCC)

The roadmap document

The activities related to the computing upgrade started in summer 2015, in preparation of the 6th computing workshop, held in Paris in November 16th-20th 2015.

Five working groups were established

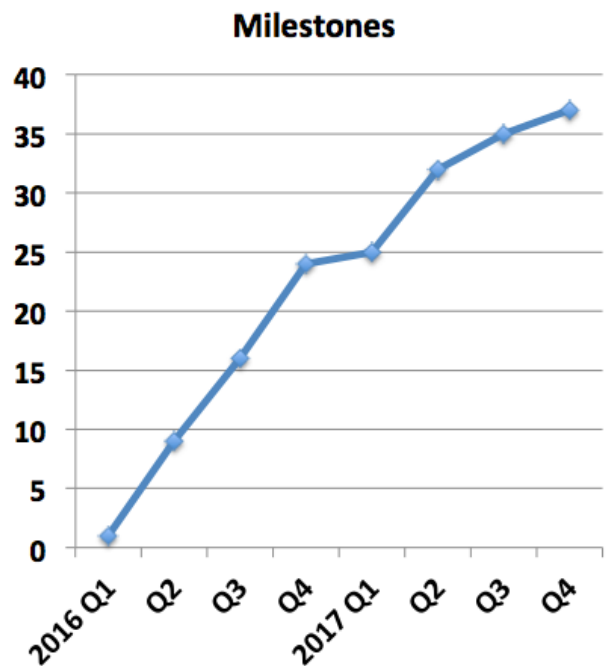
- Hardware and dataflow [↗](#) (conveners: Niko Neufeld, Daniel Campora, Mike Sokoloff)
- Scheduling and framework (Tim Head, Gerhard Raven)
- Event Model (Yasmine Amhis, Roel Aaij)
- Collaborative Tools [↗](#) (Silvia Amerio, Sebastian Neubert)
- Data Processing and Analysis Model (Andrea Contu, Chris Haen)

In addition, input is provided by relevant people in the area of simulation, non-event data, external software.

A summary of the Paris workshop is available [here](#). The roadmap has been released as LHCb-INT-2016-016 [↗](#), PDF available [here](#) [↗](#). A summary of the document was given in this talk [↗](#) at the 79th LHCb week [↗](#) in March 2016.

The milestones towards the TDR are the following

Activity	2016				2017			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Framework and Scheduling:								
Task-based framework defined		◇						
Ready for first integration				◇				
Ready for second integration					◇			
Event Model								
Demonstrator designed		◇						
Ready for first integration				◇				
Ready for second integration					◇			
Non-Event Data								
Technological choice made		◇						
Ready for first integration				◇				
Ready for second integration					◇			
Hardware and Dataflow								
Self-contained algorithms available		◇						
Demonstrators tested				◇				
Ready for second integration					◇			
Integration								
checkpoints			◇		◇		◇	
Data processing, analysis								
Setup WG with PWG liaisons	◇							
Definition of data formats			◇					
Tests of ETC and random access				◇				
Simulation								
Fast Simulations				◇				
Migration to GEANT4.10			◇					
Simulation Geometry Strategy			◇					
Migration to HepMC 3.0				◇				
Gaussino, 1st version			◇					
Gauss use of Gaussino, 1st version					◇			
Parallelization of Gauss						◇		
Externals (DIRAC)								
Integration of non-SQL DBs		◇						
Integration of message queues			◇					
Integration of logging system						◇		
Migration plan to python3							◇	
Collaborative Working								
Analysis Frameworks: working examples		◇						
Analysis Frameworks: proposal			◇					
SW design test and review: proposal		◇						
SW and computing workshops								
Written Reports from WGs		◇			◇		◇	
Technical Design Report								◇



From the roadmap to the TDR

After the release of the roadmap, a Task Force on Core Software (TFCS) was established to work on time-critical items such as the restructuring of Gaudi towards a task-based framework, the update of the event model, the evaluation and implementation of alternatives for the conditions database and the detector description.

The first hackathon of the TFCS was held on May 26-27th, just before the 7th Computing Workshop^[1]. The second hackathon^[2] was held on July 7-8th. The third hackathon^[3] was held on September 19-20th. The fourth hackathon has taken place in November during the 8th Computing Workshop^[4]. The fifth hackathon^[5] was held in January 25-27, preceded by a C++ course and a tutorial session on the new framework. The sixth hackathon^[6] was held on March 27-31. The next hackathon is scheduled in the week of June 19th.

Activities related to the TFCS are documented here.

Activities in the other working groups are documented in the following pages:

- Parallelization^[7] (formerly known as Hardware and Dataflow)
- Collaborative Tools^[8]
- Data Processing and Analysis Model

More information on simulation and DIRAC are available at the simulation and distributed computing (DIRAC) pages

Upgrade Software and Computing Technical Design Report

The TDR is completed, has been internally reviewed (P. Charpentier, S. Stahl, U. Marconi), and is available for collaboration-wide review at this link.

Meetings, mailing list

Meetings can be found under the Computing Upgrade indico category. General meetings [are](#) held on Tuesdays at 09:30 on a monthly basis. Meetings of the TFCS [are](#) held every two weeks in the same time slot. Information from the parallelization working group can be found here, meetings happen irregularly, see indico category here [here](#), the mailing list is [lhcb-parallelization](#). The meetings of the Collaborative Tools Working Groups are grouped here [here](#).

The mailing list [LHCb-UpgradeComputing-Discussion.AT.cern.ch](#) has been setup and is open to subscriptions.

-- ConcezioBozzi - 2016-01-18

This topic: LHCb > LHCbComputingUpgrade

Topic revision: r13 - 2019-08-15 - GiovanniPassaleva



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