ALICE Offline Week

29/03/2017

Offline Week - Introduction

Predrag Buncic

CERN

Offline Forum

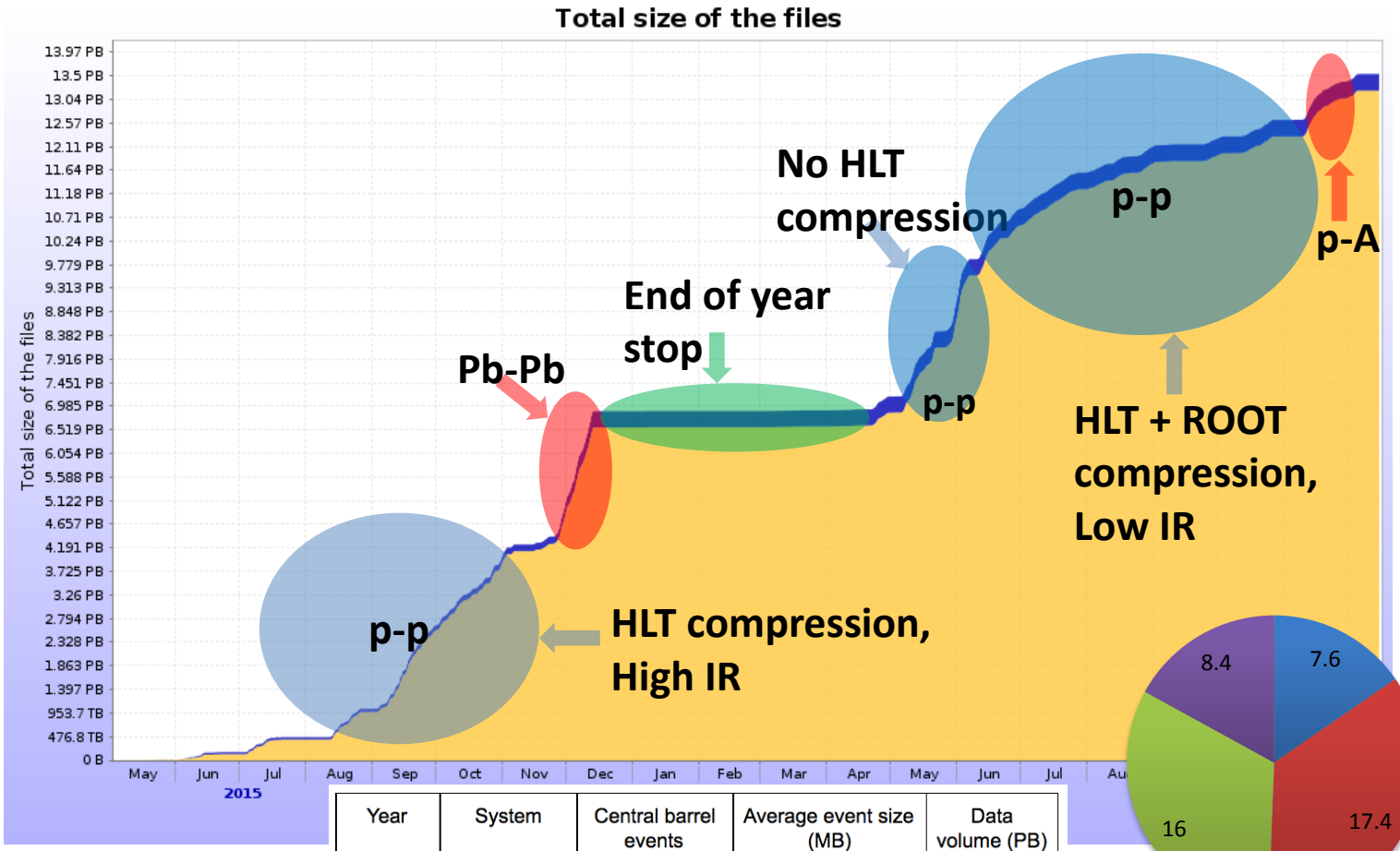
09:00 → 10:30 **Offline Forum**
Convener: Predrag Buncic (CERN)

- **09:00** **Introduction**
  Speaker: Predrag Buncic (CERN)
- **09:20** **Agile software project management for Run 3?**
  Speaker: Giulio Eulisse (CERN)
- **09:45** **What else needs to be done for Run2?**
  Speaker: Marco Van Leeuwen (Nikhef National institute for subatomic physics (NL))
- **10:15** **Discussion**

10:30 → 10:50 **Coffee break**

10:50 → 12:30 **Offline Forum**
Convener: Predrag Buncic (CERN)

- **10:50** **Summary of the Machine Learning Workshop**
  Speaker: Michele Floris (CERN)
- **11:20** **CAP - CERN Analysis Preservation initiative**
  Speaker: Markus Bernhard Zimmermann (Westfaelische Wilhelms-Universitaet Muenster (DE))
- **11:50** **Discussion**



Year	System	Central barrel events	Average event size (MB)	Data volume (PB)
2015	pp	900 M	4.7	4.23
	Pb-Pb	210 M	12	2.52
2016	pp	1400 M	3.9	5.5
	p-Pb	880 M	1.7	1.5

Data processing status

- The TPC track distortion correction algorithms have been finalized and fully validated with both pp and 2015 Pb-Pb data at various interaction rates.
  - Thanks to Ruben and Barrel Tracking Group!
- This has allowed us to start RAW data processing of the
  - 2015 Pb-Pb
  - 2016 p-Pb period
  - longest pp data taking periods, both from 2015 and from 2016
  - complete 2015 and 2016 data for di-muon spectrometer
- The associated Monte-Carlo simulation, anchored to the conditions data and distortion corrections from the RAW data calibration cycles was completed in the beginning of 2017
  - in time for Quark Matter
- Full processing of remaining 2015 and 2016 data is ongoing

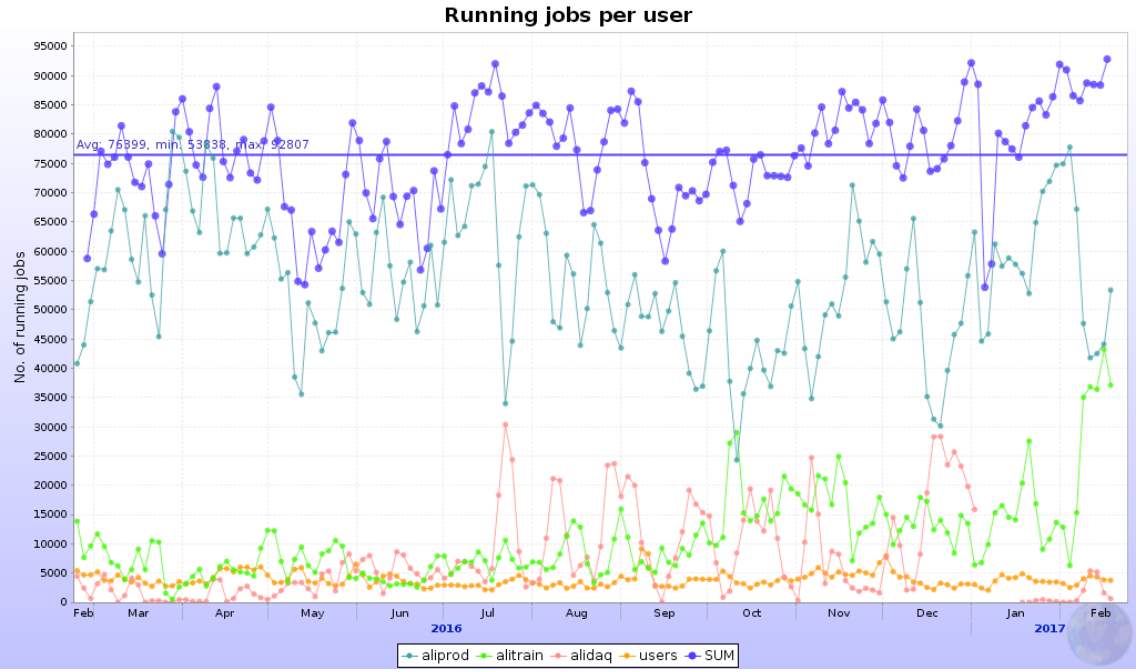
DPG

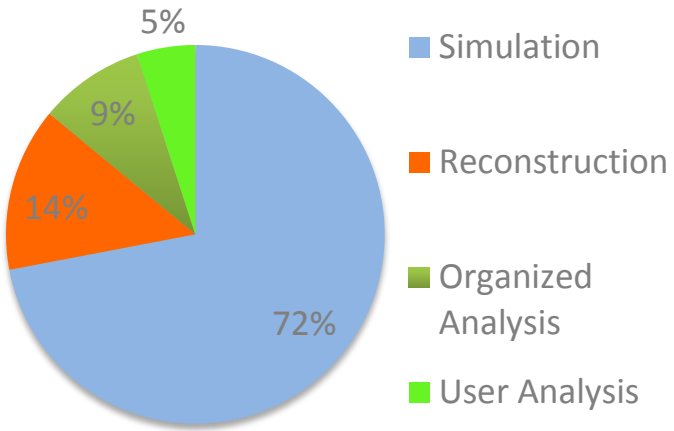
ALICE · Data Preparation Group

The DPG in alphabetical order:

More this afternoon….

Grid usage

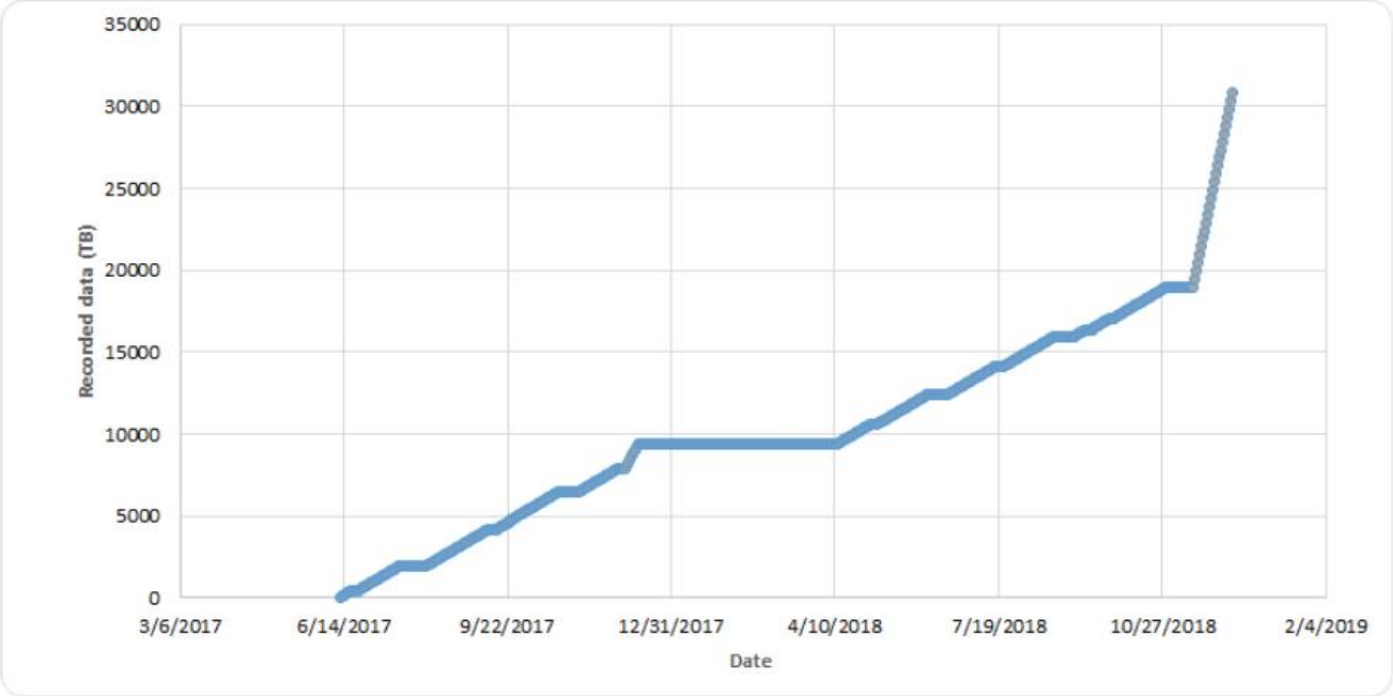




- High grid usage, good utilization of opportunistic resources
  - Average 76K parallel jobs, record 112K jobs
  - ALICE HLT cluster provides 4K jobs (5% of total)

More tomorrow morning…

Expectations for 2017 and 2018



- During pp data taking mode will be set to limit the TPC readout rate to 400 Hz
  - The goal is to reach the statistics objective set for Run 2 in all trigger categories as well as at the reference energy of 5.02 TeV
  - The total amount of data recorded will be 17.5 PB

- During the Pb-Pb run in 2018, assuming the HLT compression of a factor of 6 we anticipate a total readout rate of 10 GB/s
  - The total amount of data recorded will be 12 PB

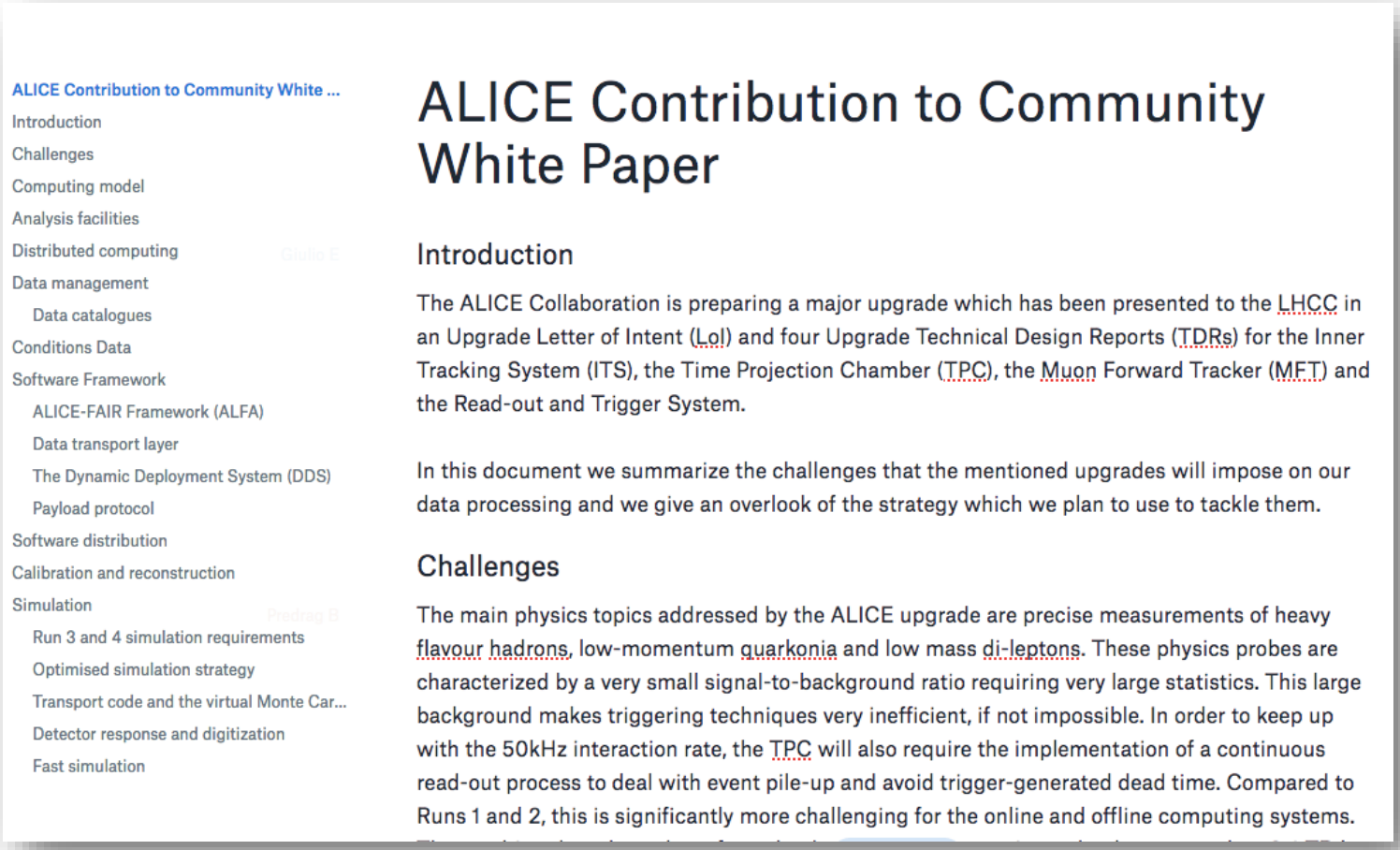
Beyond Run 2…

- Preparations for Run 3
  - For well known reasons the offline experts were busy fixing problem with Run 2 reconstruction/calibration
  - This has delayed work on Run 3 by one year

- We are need to re-focus development effort on Run 3
  - Run 2 software will have to go into maintenance mode
  - We should really try not to vary data taking conditions too much as this can trigger new problems and require more expert time

More this morning…

ALICE and HSF CWP



ALICE Contribution to Community White ...
Introduction
Challenges
Computing model
Analysis facilities
Distributed computing
Data management
Data catalogues
Conditions Data
Software Framework
ALICE-FAIR Framework (ALFA)
Data transport layer
The Dynamic Deployment System (DDS)
Payload protocol
Software distribution
Calibration and reconstruction
Simulation
Run 3 and 4 simulation requirements
Optimised simulation strategy
Transport code and the virtual Monte Car...
Detector response and digitization
Fast simulation

ALICE Contribution to Community White Paper

Introduction

The ALICE Collaboration is preparing a major upgrade which has been presented to the LHCC in an Upgrade Letter of Intent (LoI) and four Upgrade Technical Design Reports (TDRs) for the Inner Tracking System (ITS), the Time Projection Chamber (TPC), the Muon Forward Tracker (MFT) and the Read-out and Trigger System.

In this document we summarize the challenges that the mentioned upgrades will impose on our data processing and we give an overlook of the strategy which we plan to use to tackle them.

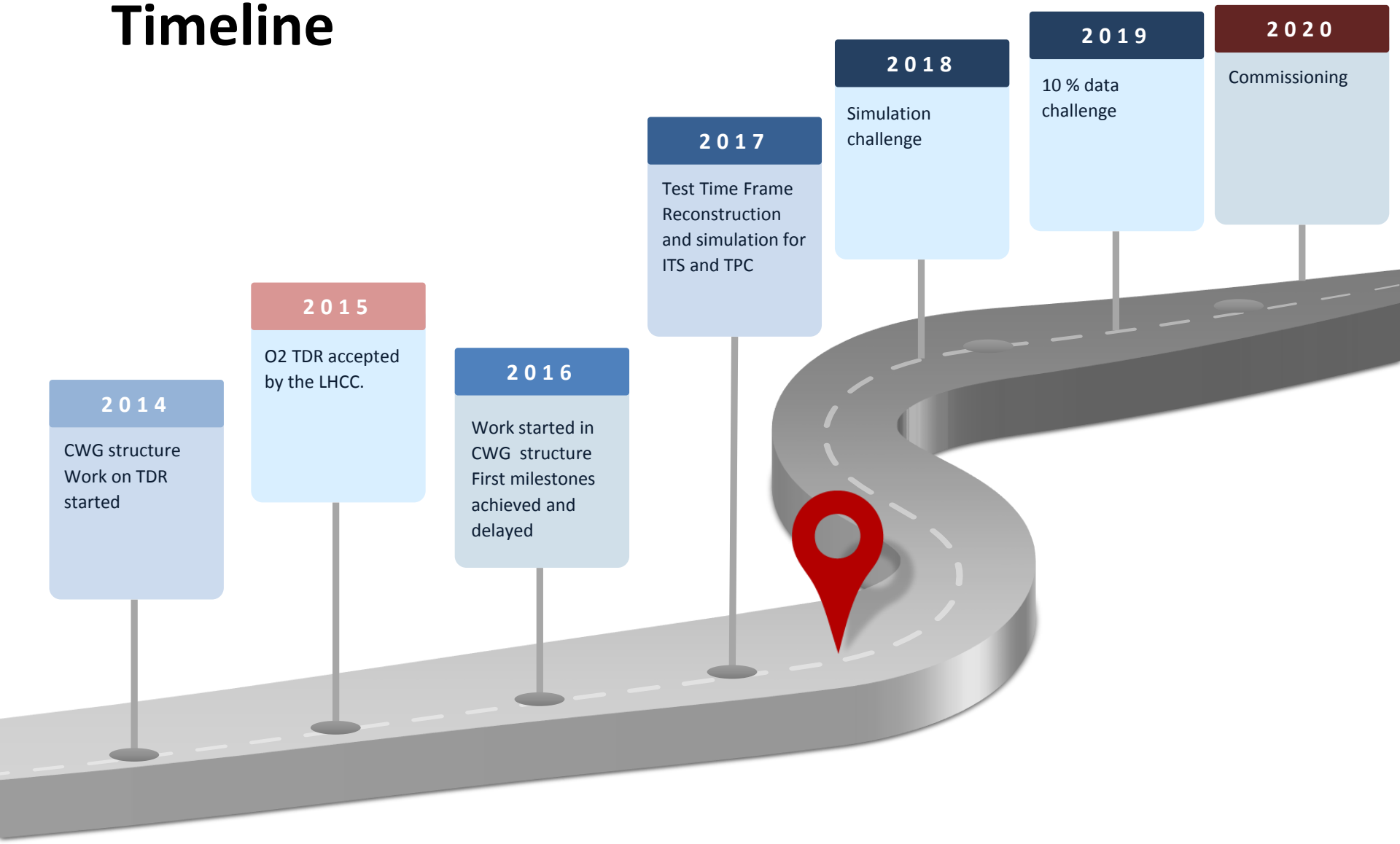
Challenges

The main physics topics addressed by the ALICE upgrade are precise measurements of heavy flavour hadrons, low-momentum quarkonia and low mass di-leptons. These physics probes are characterized by a very small signal-to-background ratio requiring very large statistics. This large background makes triggering techniques very inefficient, if not impossible. In order to keep up with the 50kHz interaction rate, the TPC will also require the implementation of a continuous read-out process to deal with event pile-up and avoid trigger-generated dead time. Compared to Runs 1 and 2, this is significantly more challenging for the online and offline computing systems.

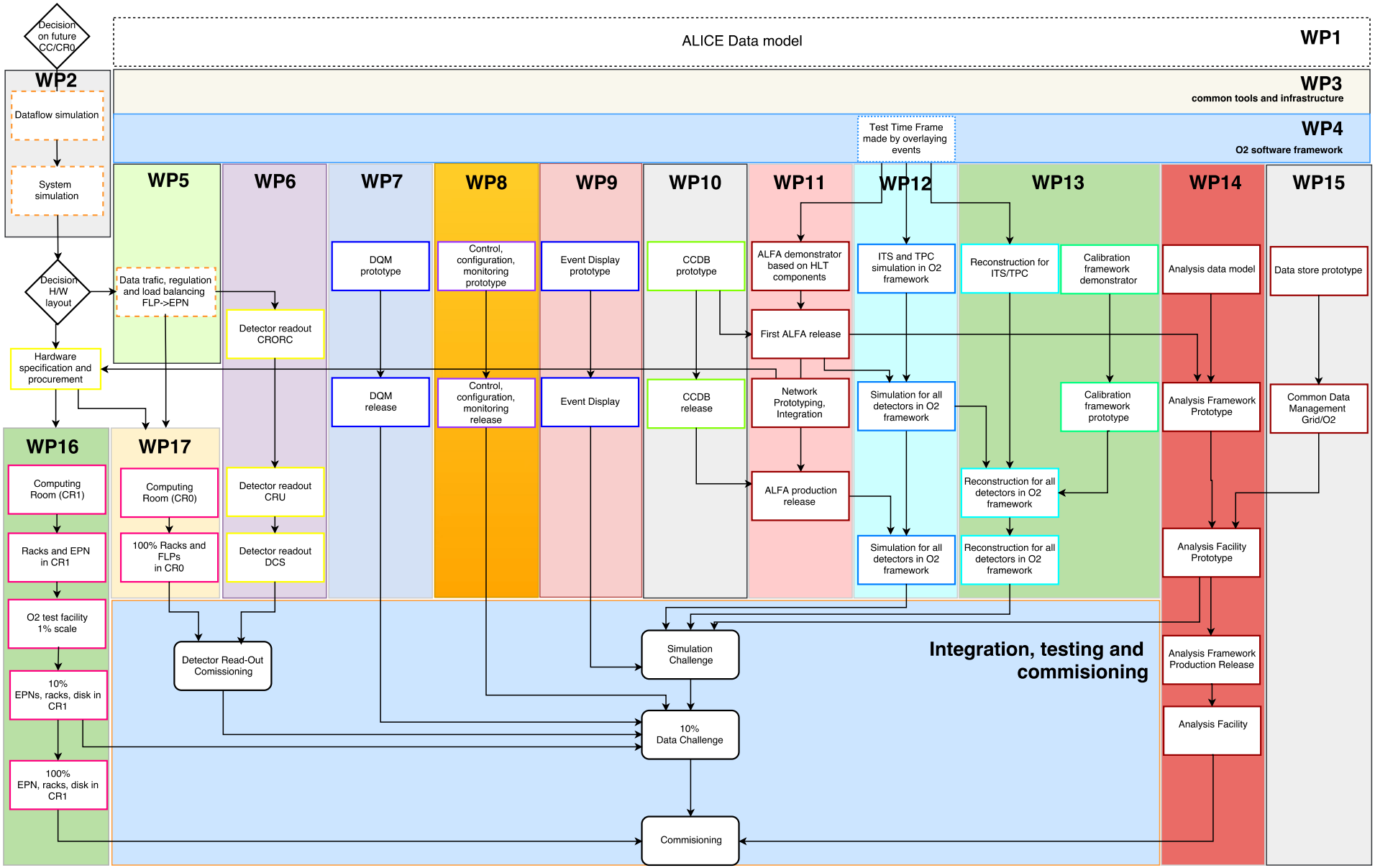
The US NSF ‘S2I2’ project proposal & Conceptual roadmap for HL-HLC era computing

Well, this happened yesterday but
the work will continue…

Timeline


2014
CWG structure
Work on TDR started
2015
O2 TDR accepted by the LHCC.
2016
Work started in CWG structure
First milestones achieved and delayed
2017
Test Time Frame Reconstruction and simulation for ITS and TPC
2018
Simulation challenge
2019
10 % data challenge
2020
Commissioning

O2: From CWGs to WPs…



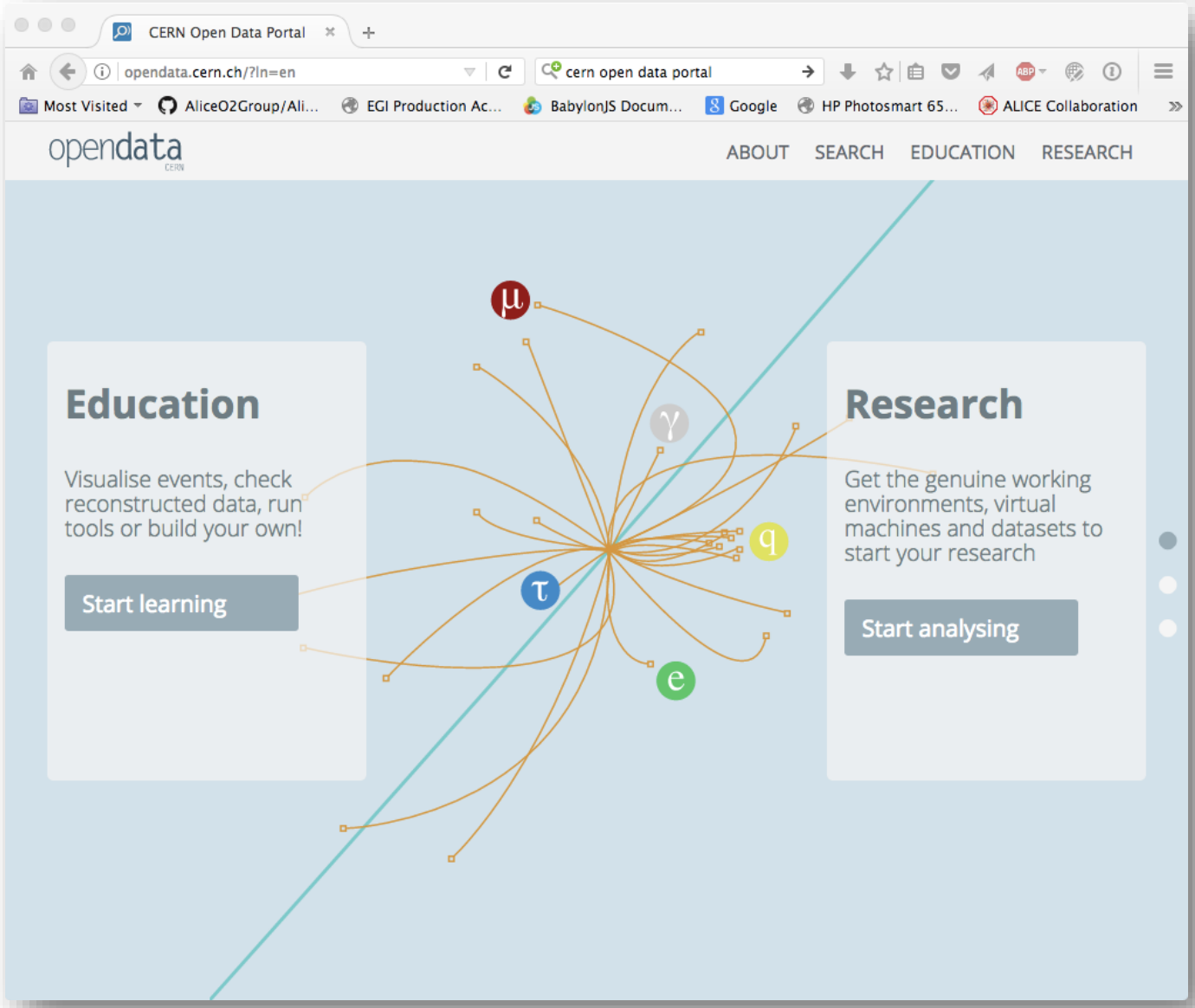
http://goo.gl/QZUE1d

More on Friday and in years to come…

WP Summary table

WP	Title	Leading Institute	WP Leader
1	Data Model	FIAS	Mikolaj Krzewicki
2	Data Flow and System Simulation	CERN	Iosif Legrand
3	Common tools and infrastructure	CERN	Dario Berzano
4	O2 Software Framework	CERN	Giulio Eulisse
5	Data distribution and load balancing	FIAS	Gvozden Neskovic
6	Detector readout	CERN	Filippo Costa
7	Quality Control	CERN	Barthelemy Von Haller
8	Control, Configuration and Monitoring	CERN	Vasco Chibante
9	Event Display	WUT	t.b.c.
10	CCDB	CERN	Costing Grigoras
11	ALFA	GSI	Mohammad Al-Turany
12	Simulation	CERN	Sandro Wenzel
13	Reconstruction and Calibration	CERN	Ruben Shahoyan
14	Analysis framework and facilities	CERN	Peter Hristov
15	Data Management	CERN	Latchezar Betev
16	Computing Room CR1 (FLP)	CERN	Ulrich Fuchs
17	Computing Room CR0 (EPN)	FIAS	Johannes Lehrbach

More in the next talk…



More in the last talk of this morning …