

# LHCC Review for HL-LHC Computing

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# HL-LHC Computing

- HL-LHC will bring significant challenges in software and computing
  - High pile-up ( $\sim 200$ ) makes each event more complex, impacting directly on reconstruction times and pile-up digitisation
  - Higher trigger rates ( $\sim 10\text{kHz}$ ) means that the number of events to record, store and analyse rises dramatically from earlier LHC runs
  - Larger event sizes create a demand for higher bandwidth in and out of storage as well as bulk storage
- LHCC want to ensure that preparations to face this challenge are well mapped out and credible
  - This will be an ongoing process over the next few years
    - May 2020 - initial review looked at plans from ATLAS and CMS, from a common software perspective (HSF) and DOMA
    - **November 2021** - next review phase, with a particular focus on common software projects
      - See charge attached to the agenda
    - Then by CDRs, TDRs in the coming years

# November 2021 Review Objectives

- “focus on the requirements, plans and readiness of activities that are common to the experiments, including those under the WLGC umbrella”
- “main goal of this review is to ensure the experiments, WLCG, and the relevant software projects, have common and realistic expectations of requirements and timescales”
- “help the experiments plan their strategies and assist the projects in focusing on priorities and identifying any pinch-points”
- Areas which are reviewed are expected to provide a concise document (20-30 pages total)
  - There will be one document that covers the *DOMA* area
  - In addition to *Introduction; Event Generators; Simulation; Foundational Tools; Analysis*
  - To be delivered by **1 October**

# Specific Areas to Cover

- A description of the project and present plans and timelines to deliver the agreed functionality and performance
- Describe how the project is managed, including how it will set priorities, monitor progress, and communicate with stakeholders.
- Present the current status of the development teams and note any gaps in skills or effort.
- Describe any major risks, potential functionality gaps, and dependencies on other projects

# DOMA - Areas to look at

- Data Organization, Management and Access (DOMA) software components:
  - Rucio
  - File Transfer Service (FTS)
  - Storage interfaces and caching layers
  - Network technologies including monitoring and software defined networks.
- To this list we think we should add
  - CVMFS
  - Token based authentication
- N.B. There will be a general introduction document that can mention (briefly) any important areas which are not a concern
  - We should review things selectively, we cannot include everything
  - Reviewing something (or not) is not in itself a judgement

From the review charge document



# Next Steps

- Decide on exactly which projects should be covered
- Discuss needs with the experiments (short afternoon workshop?)
  - This needs to be harmonised
- Create an editing team for DOMA
  - A few general editors
  - Section editors for each project
- Timeline to finish by 1 October needs to be defined
  - Experiments should be able to comment on the document in advance
  - This would mean a decent draft before the summer holiday (end June?)
    - *Which is not much time at all...*
- Volunteers welcome of course
  - Please contact Simone, Graeme and Liz