

ALICE projects, initiatives and ideas in the framework of RCS-IT engagement

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1. Heterogeneous architectures

The use of alternative architectures (non-x86, accelerators) is already part of the data processing at all levels - from online compression (e.g. ALICE-EPN farm) to data analysis (ML) and Grid resources (HPC) and it will increase in the near and medium term. Presently, the efforts to design, establish and support alternative architectures is almost exclusively done by the experiments. We feel that IT should be involved in the entire life cycle of procurement of such resources, installation, software setup and operation to support future requests and more importantly to create a centre of competence in this area. This can be extended to expert support for code porting, especially for code common to the whole community (Geant4, ROOT), which will allow to exploit efficiently the already existing large GPU and HPC facilities

2. Common build infrastructures

Experiments devote substantial efforts to maintain the hardware and the infrastructure to build their software framework on different platforms. A common building infrastructure for the software continuous integration maintained by IT will allow the experiments to keep focus on the software development and optimization cycle.

3. Access to HPC and Cloud facilities

The access to HPC and cloud resources is becoming more and more important for experiments. HPC use is currently strongly encouraged by the FAs and resources scrutiny groups and we feel that HPC use will become mandatory in the near future, especially for grant-based access to these. To that end, a common effort of the experiment and IT is necessary to provide guidance and requirements documents to the HPC facilities, as well as a development of a general seamless gateway to as many HPCs as possible in Europe and US. This point is complementary to the arguments in p.1 and p.2 above. Similar requests can be applied to Cloud facilities, however there are already good examples from the past experiences where IT has assumed a leading role in their provisioning with very positive results.

4. Personnel

IT has the opportunity to be exposed to some of the above technologies and could train personnel supporting experiment activities by being involved in the specific tasks working closely with ALICE experts, e.g. porting experiment specific algorithms to GPU and to heterogeneous computing hardware. This should be implemented by seconding IT personnel on agreed projects within the experiments computing activities. Experiment teams could also join

the IT personnel for the validation of some operating system software or the evaluation of new hardware or software by testing it with the experiment application software.

5. New computing centre

To have a coherent view on the scope and possibilities of the new CERN computer centre, we ask IT to produce an updated roadmap for the deployment in the new CC building with the mechanisms for experiment-specific services to be hosted and administered. The experiments should anticipate and verify the viability of possible usage of the computer services for specific services, like filter farms, analysis facilities and alike.

6. Cluster management

Cluster management is an important area for effective operations of complex farms under the control of the experiments. Since these have somewhat different use cases than the WLCG sites, especially high-frequency system monitoring, provisioning techniques, configuration management, service discovery, logging and resource management, it could be important to have an inventory of the experiments' practices and requirements and the current IT activities in this area.

7. AOB

ALICE understands that this document is meant to identify strategic areas more than improvements in existing services. We would like to have an overview on the IT plans for the improvements of the collaborative tools (e.g. Indico, MD, twiki, cds, Google tools), for example a search tool for Indico, and for the support for the future linux distributions.