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Joint Computing and Data Handling Activities in JENNIFER 2

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JENNIFER 2
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Outline

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Ideas based on discussions we had while preparing the JENNIFER2 proposal
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JENNIFER2 deliverables are connected to:
developing common tools (synergy)

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Introduction

- The computing models of Belle II, T2K and HK experiments are at different design and operational stages but they have to face a variety of common problems to manage computational and storage resources, monitor the network and develop software.
- Each of the three collaborations has to manage a huge amount of data, which have to be made available to scientific communities spread worldwide.
- Large computing power is needed to reconstruct physics events in large detectors, with millions of readout channels, and to look for rare signals in a background dominated environment.

- The plan is: For each of these topics a set of technologies will be examined together.

Distributed computing

- DIRAC is a general framework for the management of jobs and resources over distributed heterogeneous computing environments. It will be one of the main common components used by the three experiments.

- We want to share information and idea about the usage of this framework for production and analysis, in particular we want to converge on a set of common technologies to take advantage from resources provided via Cloud interface.

Software

- Code development and distribution over sites are two common topics.

- We plan to share know how, best practice and procedure for the usage of distributed version control system for software development like GIT.
  Then we will share idea about directory organization and general usage of CVMFS, a software to replicate code in Grid and Cloud resources.

Network Monitoring

- The three experiments will run over a high latency network, connecting sites from three different continents.
- We want to define a common Tools to monitor the main parameters of the network infrastructure, measure performances and increase reliability.

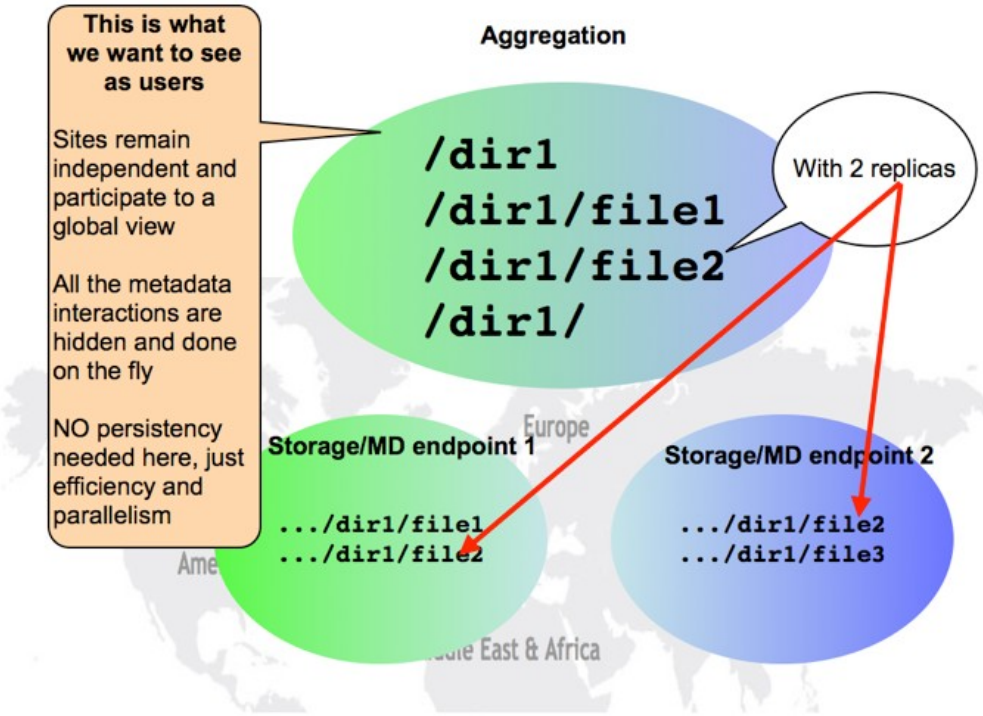
- The idea is to create a PERFSONAR Mesh for each experiment and a Global One that can represent the status of network connection among all involved sites using the WLCG/OSG perfSONAR Dashboard.
- In Belle II we already have some experience on this, so this will be used as a starting point

perfSONAR

Http Storage Federator

- All experiments will have to deal with Big Data samples
- One of the activity related to Data Management would be to exploit the dynamic http federation as paradigm for file access.

- We plan to put in place a demonstrator able to aggregate all the storages of the three experiments that offer http interface using Dynafed and we will analyze the possibility to use such global storage in different workflows for specific experiments.



FTS for data transfer

- One of the core service of a Data Management frameworks is the one dedicated to manage file transfer among sites. This basic service will be the first building block on top of which we can create specific data replication and data movement policies.

- We plan to verify the possibility to use FTS3 as common tools for the three experiment for file movement. In the demonstrator we will perform a set of Network Data Challenge test among the main sites in Europe and Japan.

FTS

Other ideas

- Distributed computing solutions could be used also to support public outreach (e.g. grid/cloud support for Masterclasses?)
- …

Schedule and summary

- Schedule details are in the proposal, but roughly within first year we will try to extend the Belle II usage of tools
- The study of specific experiments' needs together with gained experience should help us to fix the plan of further activities.
- During the second and third year these solutions will be developed, tested and implemented
- Finalization and possible extension of ideas can be pursued in the final period of the project.

- Conclusion:
  This is a new activity in Jennifer, but we have good chances to work on common tools in computing.
  → There is a lot of computing experience in Belle II; combining this with needs for other experiments (also extending regionally → UK) should help us to exploit the synergy in this development