



Enabling Grids for E-scienceE

CMS Dashboard of Grid Activity

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ARDA and Dashboard



- **ARDA is an LCG project on top the new EGEE middleware (gLite)**
 - Main objective is to enable analysis on the grid for LHC
 - Use the grid software as it matures (exposed to all pre-releases)
 - Verify the components in an analysis environments
 - Provide **early and continuous** feedback
- **Two main directions of the ARDA-CMS development**
 - **Dashboard** – monitoring system providing complete view of the Grid related and experiment specific information
 - **Task Manager** and **Task Monitor** for user analysis on the grid
- **The CMS Dashboard project**
 - Main goal is to provide a single entry point for the monitoring data collected from the CMS distributed system.
 - Joined effort of the CMS experiment, the ARDA project and the MonAlisa team.
 - The objective is provide a complete view of how the jobs of a certain VO are doing on the Grid
 - Dashboard was used for the first time during the CMS SC3 (Service Challenge 3) in end of 2005.

- **Provide a necessary level of interactivity**
 - *Not just precooked views, but possibility to dig in in case of troubles, possibility to ask detailed questions.*
- **Make the service pro-active**
 - *Foresee in future the possibility not only to collect and to expose information, but to analyze it and to generate alarms in case of evident problems*
- **Serve users with different level of requirements**
 - *Managers (computing projects managers, site managers, production managers) - CMS global views, site views*
 - *Users running their tasks on the grid - task views*
- **Support multiple grid flavours**
 - *Currently LCG/gLite and OSG middleware platforms.*
- **Follow input and feedback of the CMS community**
 - *What kind of information to collect*
 - *At what level to aggregate information*
 - *How to present collected information*

- **Quantities**

- How many jobs per site, per user, per submission tool, per data collection...
- Distribution over time

- **Usage of the resources**

- CPU, memory, IO rates
- Aggregated on different levels

- **Sharing of the resources**

- Between production and analysis
- Different analysis groups
- Individual users

- **How Grid is behaving**

- Success rate
- Failure reasons...

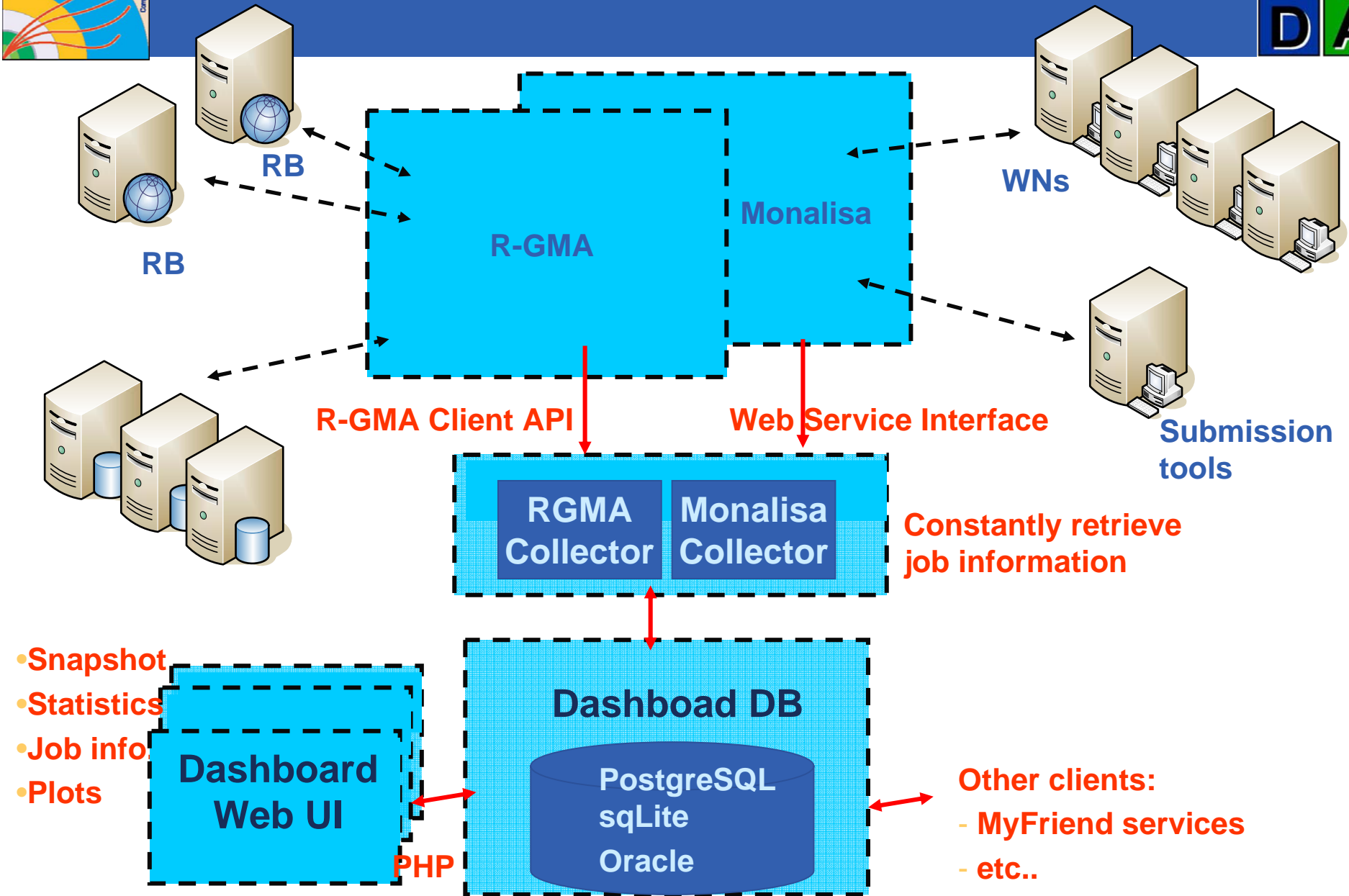
- **How CMS application is behaving**

- Success rate
- Failure reasons...

- **How CMS data is distributed over the sites**

- **Indication of the problems related to**

- *Pure Grid troubles (lack of stability, scalability, performance)*
- *Site configuration*
- *Data publishing*
- *Data access*
- *Software distribution*





Sources of information



- **Currently two main sources of information are used**
- **R-GMA** for getting Grid related data (logging and book-keeping)
 - Under investigation possibility to use Gridlce and the LCG2 Real Time Monitor Resource Broker XML Files to complement the data.
- **MonAlisa** for **CMS-related data and system information**
 - CMS has a very positive experience for using MonAlisa for system monitoring.
 - In ARDA we started to use MonAlisa for job monitoring.
 - There is a plan to use MonAlisa to get batch system related information for the OSG sites
- **RGMA and MonAlisa are complementary in terms of the type of information they provide.**
 - Using two sources of information make possible crosschecking between the two.
 - Our experience shows that it allows to **increase the reliability of the system.**



Use of the Dashboard during SC3



ASAP

Arda Support for cms Analysis Process



Conditions

user site submission tool

collection

sort by

type of view

Submitted After , Submitted Before , Status At latest

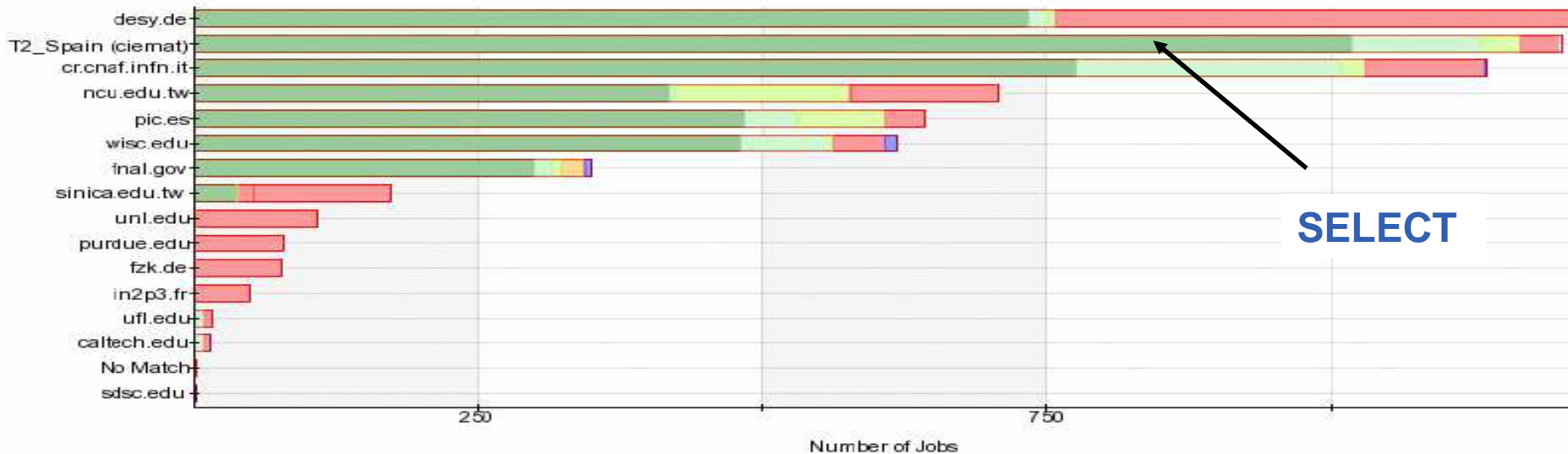
Note: time format is yyyy-mm-dd or yyyy-mm-dd hh:ii:ss
Your current timezone is the same as [UTC+1 \(CERN\)](#), [click here](#) if you want to change it.

Jobs Status

show table: plot: [Note: How job status and success rate are calculated](#)

Site vs Number of Jobs for CRAB-v03-SC3

Site vs Number of Jobs for CRAB-v03-SC3



SELECT



Use of the Dashboard during SC3

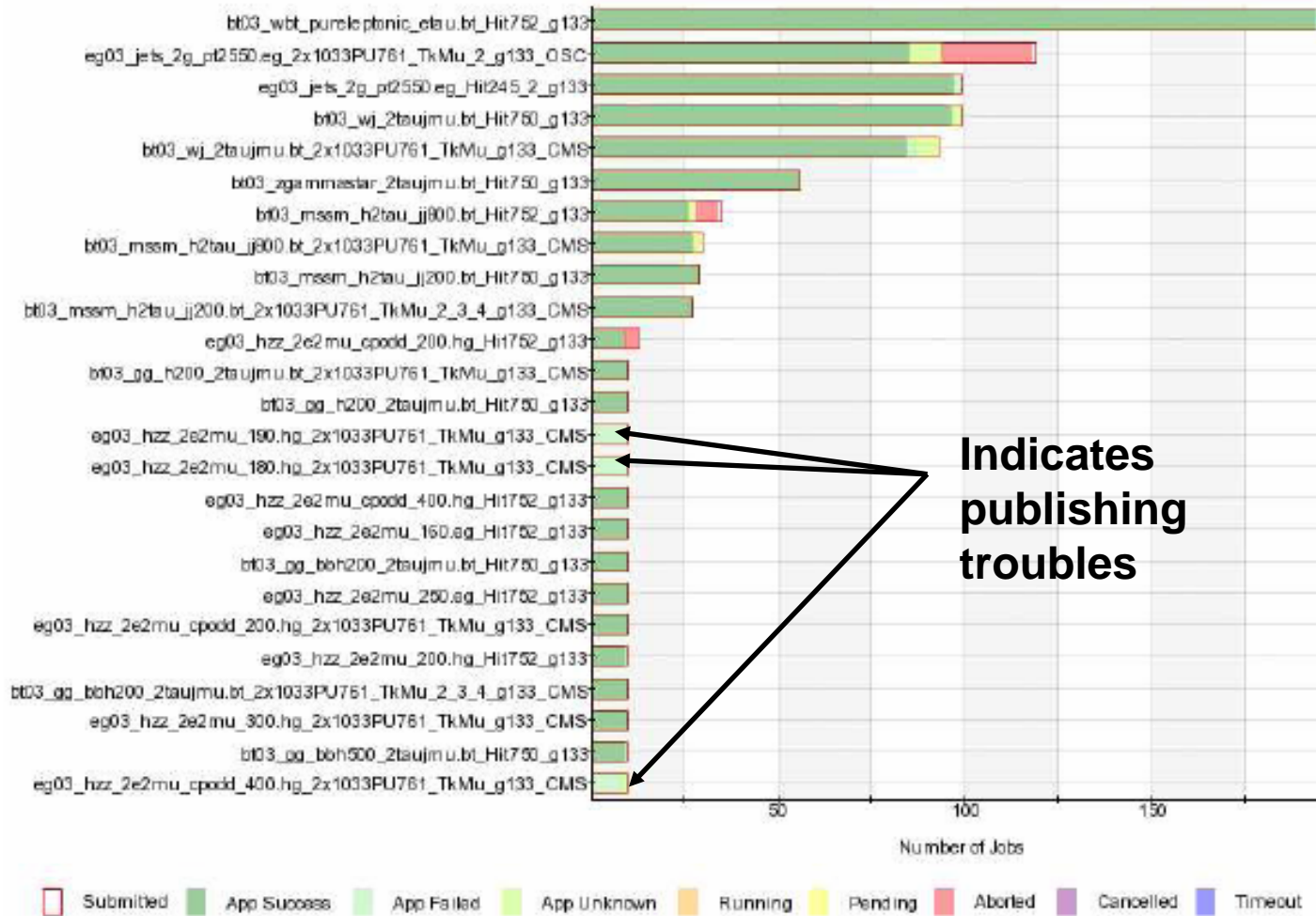


ASAP

Arda Support for cms Analysis Process



Collection vs Number of Jobs at T2_Spain (ciemat) for CRAB-v03-SC3



Indicates publishing troubles

- **ARDA analysis system is used by the CMS physicists for running their analysis tasks on the Grid and by CMS management to monitor the grid activities. Dashboard has got positive feedback from the community and will be integrated in the new CMS analysis system.**
- **First prototype of the Dashboard and its use during CMS service challenge demonstrated need of the experiment in the common monitoring tool combining Grid and experiment specific information. LHC experiments are running on several middleware platforms, so the single entry point of monitoring information has an additional value.**
- **Still a lot of work has to be done to pass from the prototype to a production quality system providing a needed level of reliability, scalability and performance.**