



<http://grid.infn.it/gridice>

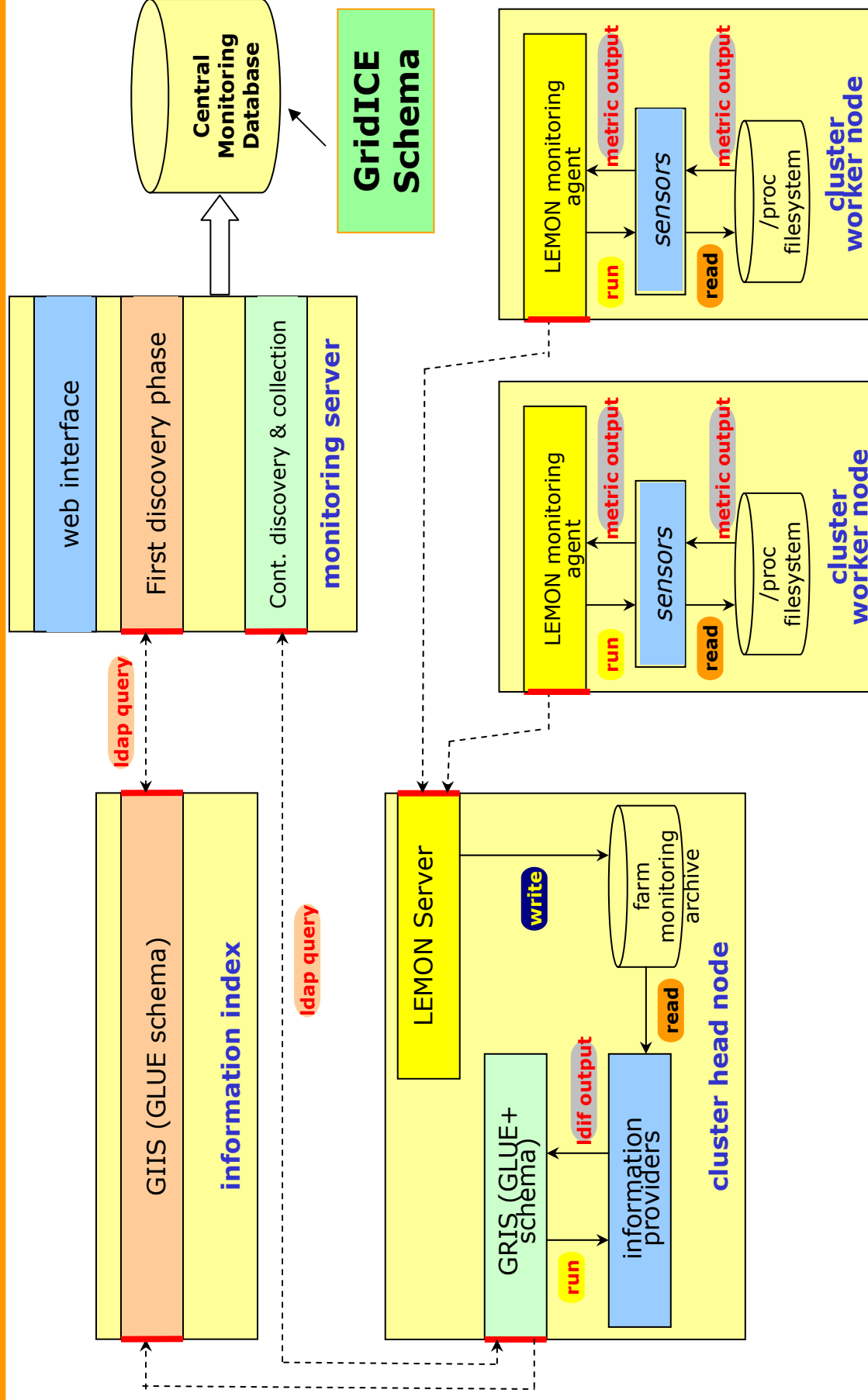
A monitoring tool for a
Grid Operation Center by

EGEE-SA1

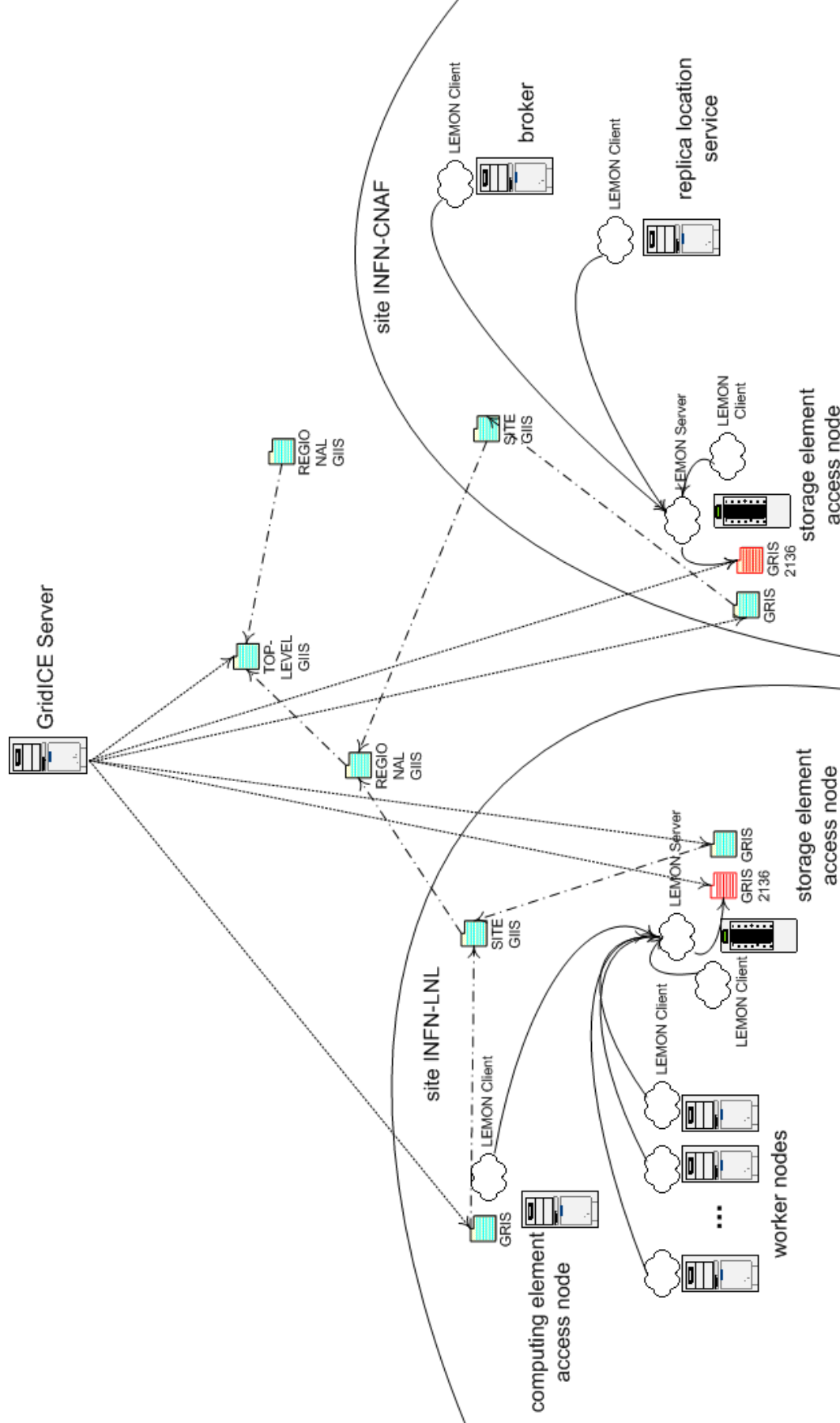
Sergio Fantinel, INFN LNL/PD

- Architecture overview
- CMS DC04 Experience
- Next Steps
- Requirements & Deploy

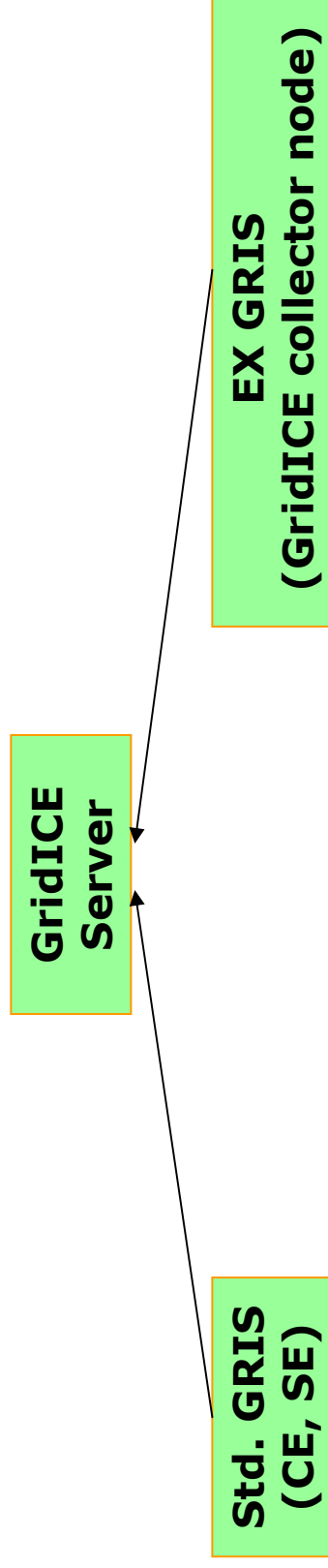
Data Collection Framework



Current Deployment Layout



- The extended monitoring info are published by a specific instance of an MDS GRIS (**one per site**): this is called **Extended GRIS**. Its existence is published in the Information Service by means of the *GlueServiceURI* object (the same approach to publish the RLS)
- This avoid the propagation of other information in the GIS (LCG requirement for MDS scalability issue).
- By default the EX GRIS runs in a SE/PlainGris machine;
 - this is the case of LCG2/INFNGRID-2 distributions
 - it is possible to configure it on an independent machine



Basic info:

- Number of queues
- Job running/waiting
- Storage Area info

Extended info:

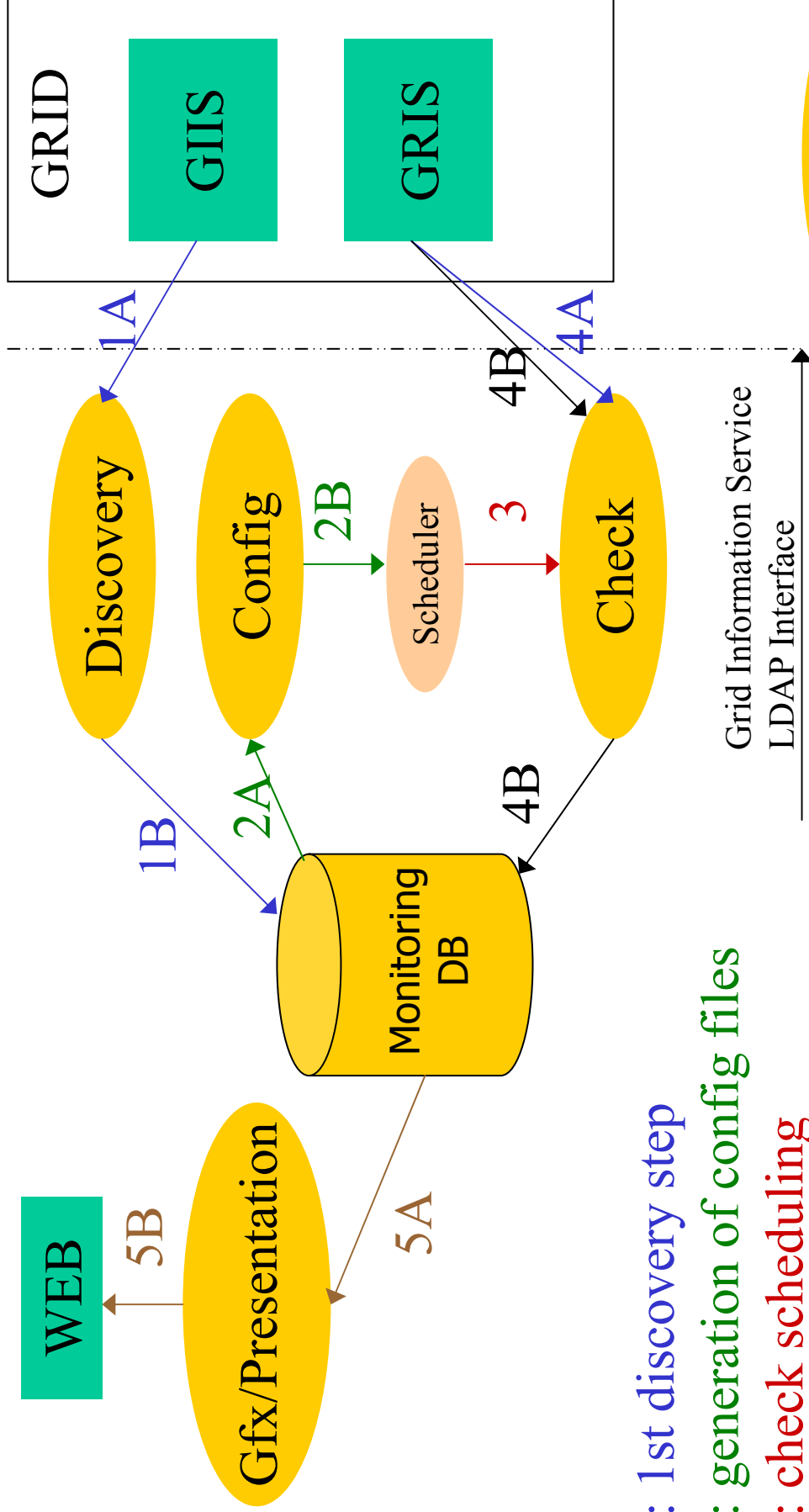
- Disk partitions space
- Network Adapters activity
- **Role** based (CE, SE, RB, RLS, WN,...) user defined services (daemons, agents,...)
- More...

- GridICE is based on the Grid Information Service (GIS).
- The current production GIS engine is LDAP-based (MDS 2.x)
- The GridICE architecture is independent from the specific GIS engine
- The support for new GIS (e.g R-GMA) requires a minimal work on the publishing and collection of data; the rest of the framework will be preserved (e.g., web interface)
- Our goal is to support the coexistence of multiple GISes and of multiple local monitoring systems (e.g. GANGLIA)

Discovery service: entities

- **RESOURCES**: are the entities discovered from the GIS (*1st. discovery step*), e.g.:
 - Cluster Head Nodes
 - Storage Services
- **COMPONENTS**: are the entities belonging to resources and discovered directly from resource itself, (*continuous discovery*) e.g.:
 - Computing Elements
 - Storage Space
 - Network Adapters

Server side service layout



1: 1st discovery step

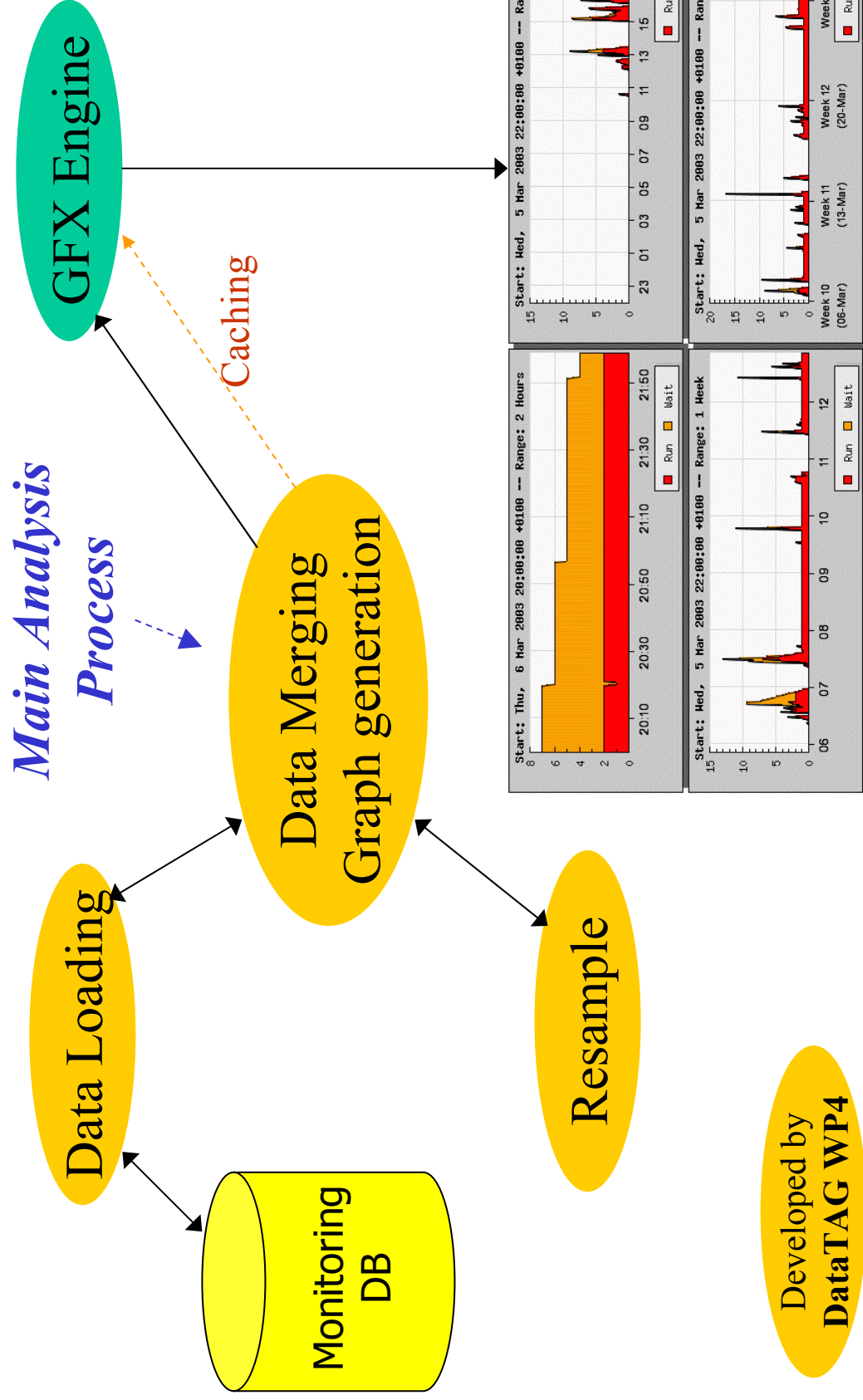
2: generation of config files

3: check scheduling

4: cont. Discovery/entities info collection

5: DB info rendering

Developed by
DataTAG WP4

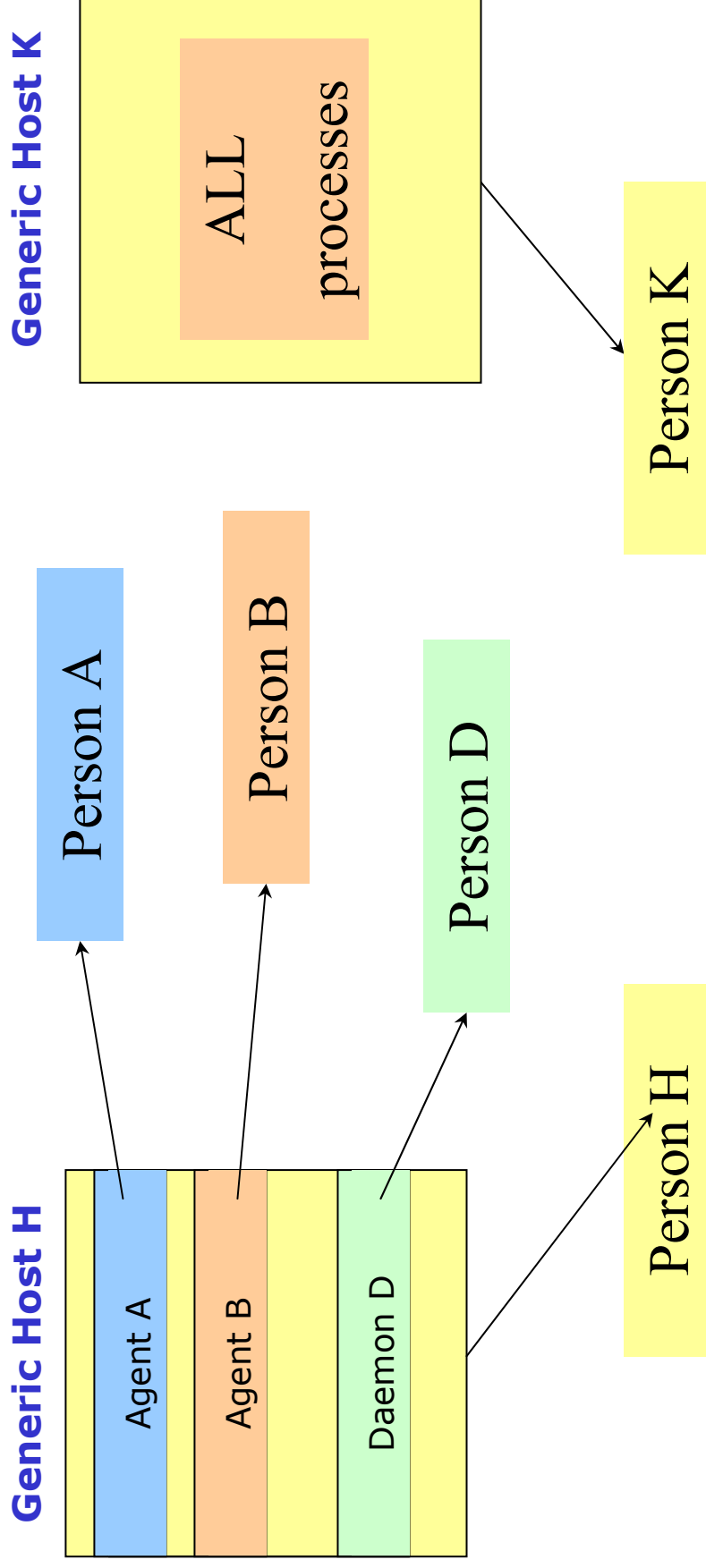


- GridICE is currently used/integrated with the CMS DC04
- 10 monitored sites from LCG-CMS/CMS merged BDIIs info; 6 sites publish extended information; 3 sites publish complete WNs info (~ 400 WN's)
- Most difficulties encountered come from the following facts:
 - at the rump up of the CMS DC04 the monitoring requirements and the environment were not well known
 - High utilization of proprietary/non-grid resources
 - High latency on people response due to DC stress

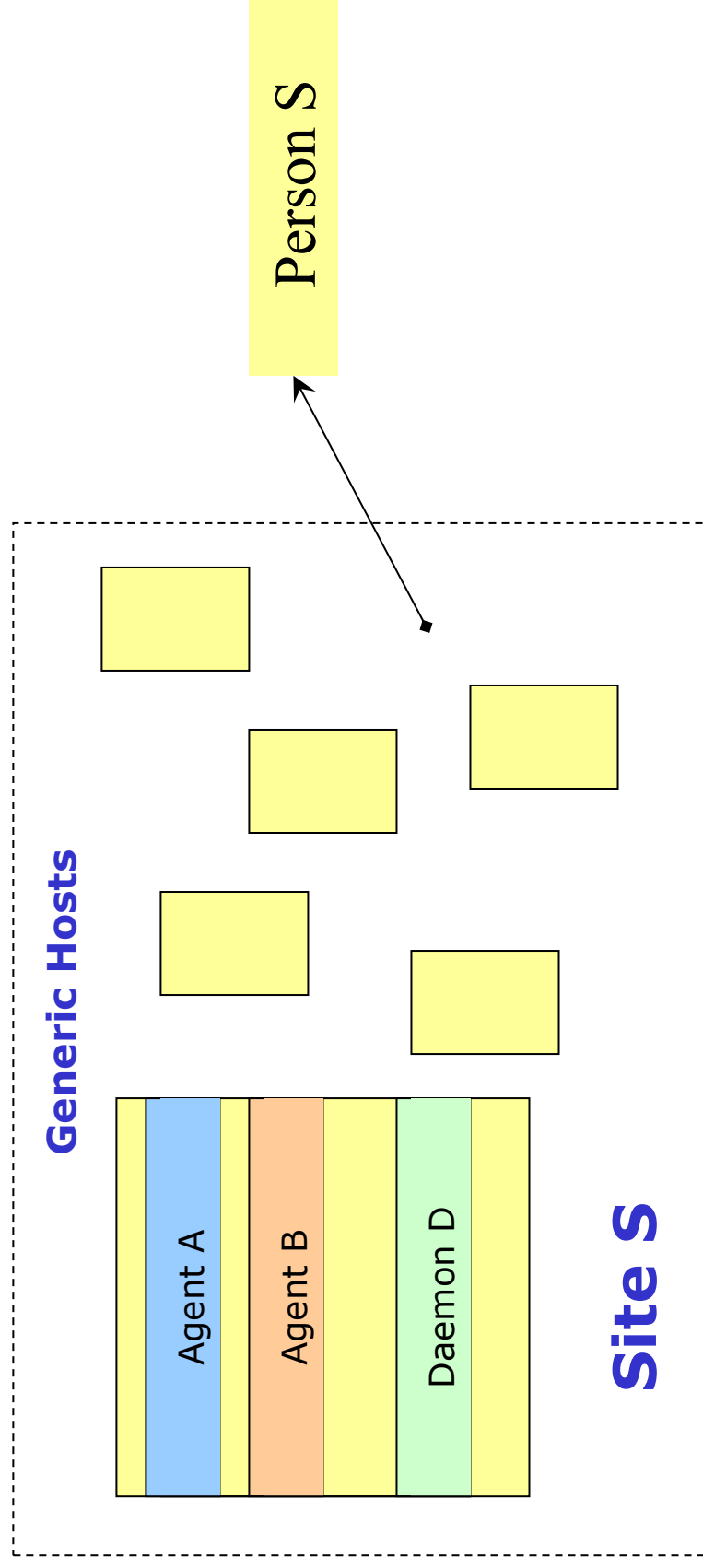
- The following are the areas where the GridICE team put the major efforts during the DC04
 - produced instructions to install GridICE agent on WNs in site installed with LCG-2 that has no WNs monitoring support (manual & LCFGng)
 - produced instructions to install GridICE agent on whichever host (UI, non Grid/LCG,...)
 - support to users
 - LEMON preinstalled on hosts compatibility issue resolved (hosts managed by IT/CERN for CMS DC04)

- We are in direct contact with IT people of CERN to ensure the compatibility of GridICE with the hosts managed by this CERN division: they are providing and managing most of the CERN hosts involved in the CMS DC04
- We are ready to monitor, with all our extensions (e.g., services, file systems, network adapters) all IT/CERN managed hosts, **with particular attention to experiment needs**, e.g.:
 - Export Buffers (ClassicSE, SRM, SRB)
 - key machines running Agents (i.e. lxgate04.cern.ch for CMS DC04)
 - Other machines like UI running import agents

- The **notification capability** was added to the GridICE server (host & process levels):



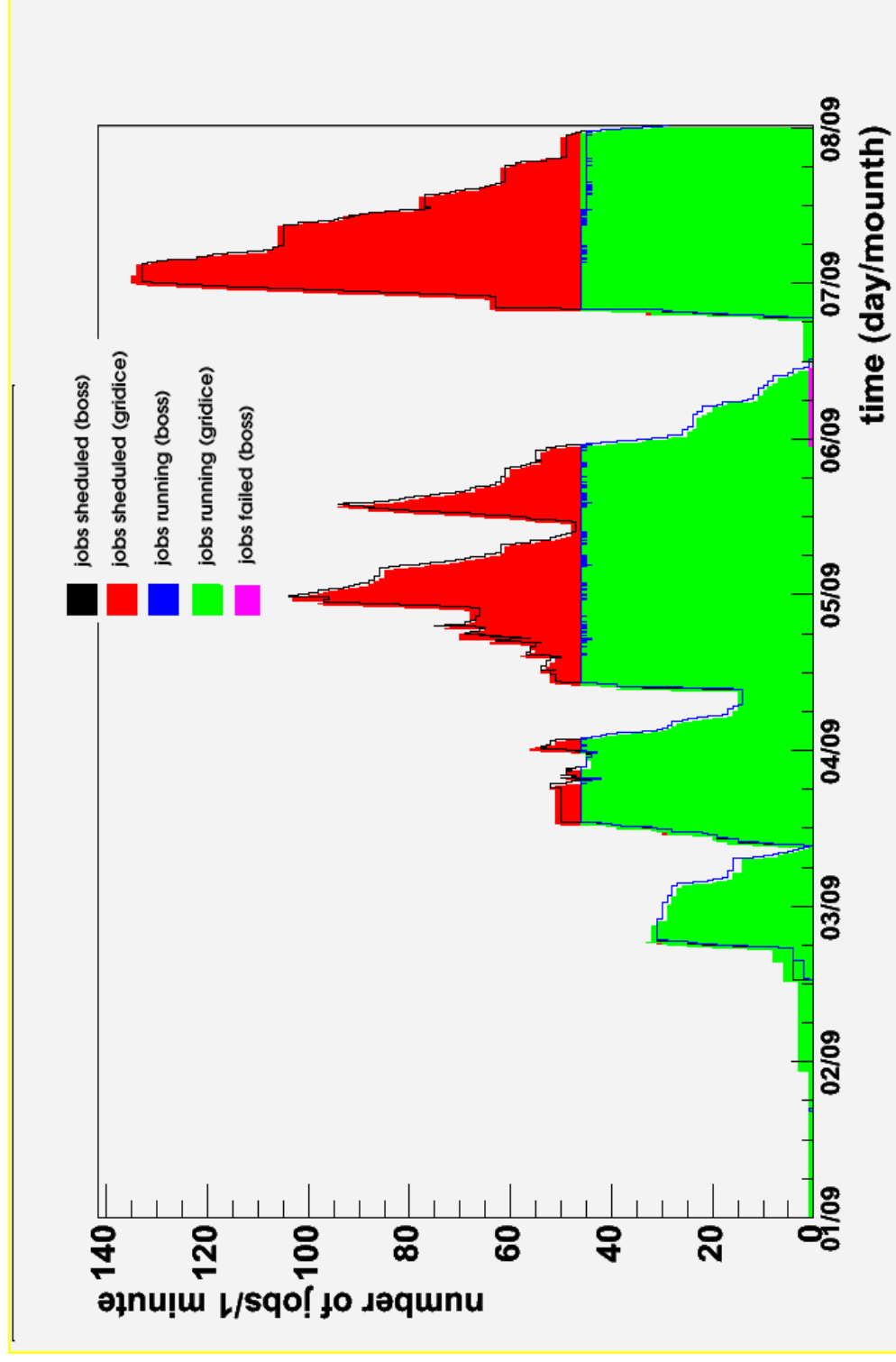
- The **notification capability** was added to the GridICE server (host & process levels):



We can substitute **Person** with a **Group of persons**

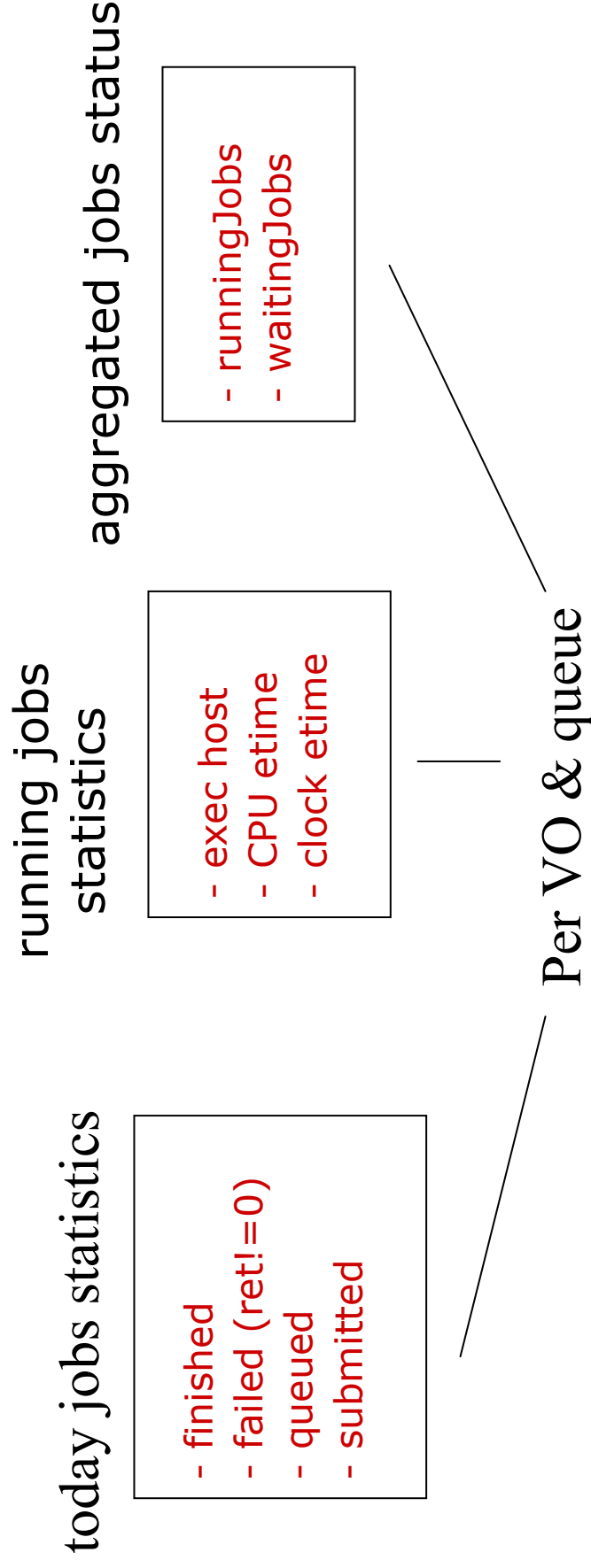
- We have experience with the notification service with 3 main sites: LNL, CERN, PIC
- **LNL**: helped us in many situations when services crashed (e.g., sbatchd LSF daemon on CE & WNs, nfsd on LCFGng server) or host disappeared from the GIS. Sometimes GridICE correctly reported down of hosts, while the local monitoring (ganglia) has not caught the anomaly.
- **PIC**: correctly notified of RBs services restart for maintenance made by PIC people.
- **CERN**: RBs services unavailability
- The RBs was not heavily used since 1 week ago, when CMS started the fake analysis

First large deployment in the CMS-LCG0 testbed

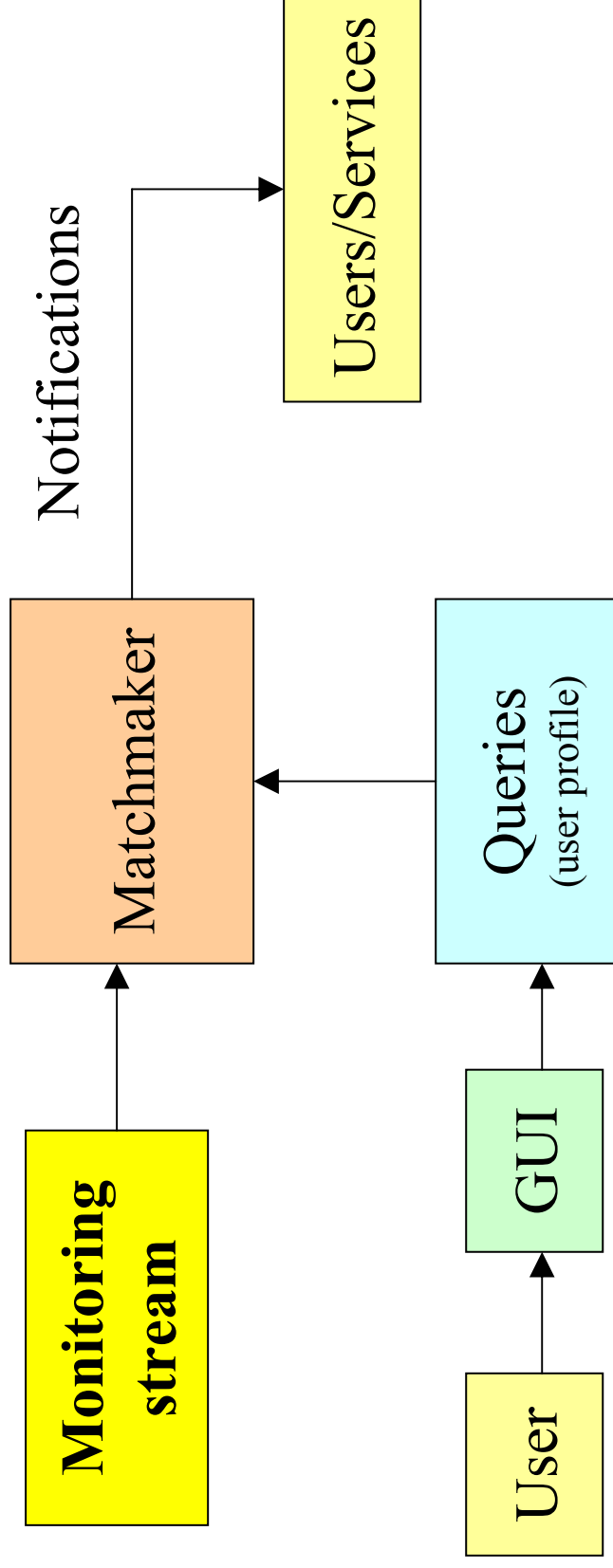


graph and analysis provided by: M. Maggi et al. – INFN Bari CMS group

- **Job Monitoring per VO:**
in order to meaningfully accomplish this, we need either a **VO-based authorization service** (e.g. VOMS) or an **accounting service** to be deployed;
- in the meanwhile we are working on a customized solution



- Until now, we have based our notification service on a pre-defined schema: only the GridICE server administrator can manage the notification system
- In future we expect to have a flexible system where authorized users will be able to set up via a GUI the notifications they would like to receive



Next steps

Short Term

- We are ready to deploy a minor release with minor GUI & agent fixes (next week)
- Job Monitoring per VO

Long Term

- Generic Interface for Graph Generation
- Configurable Notification Service

- Requirements:
 - From LCG Certification/operations groups
 - From INFN grid users
 - From the CMS-LCG0 experience
 - From LCG-GOC
 - ...and we are collecting new requirements from the CMS DCC04
- Deployed servers:
 - LCG-GOC
 - INFN production
 - CMS DCC04
 - LCG Certification
 - GILDA testbed
 - ...
 - foreseen on the upcoming ATLAS DC