



# The ARDA Project

Massimo Lamanna  
CERN



# ARDA working group recommendations

EGEE Middleware

- New service decomposition
  - Strong influence of Alien system
- Role of experience, existing technology...
  - Web service framework

ARDA project

- Interfacing to existing middleware to enable their use in the experiment frameworks
- Early deployment of (a series of) prototypes to ensure functionality and coherence



# End-to-end prototypes

- Provide a fast feedback to the EGEE MW development team
  - Avoid uncoordinated evolution of the middleware
  - Coherence between users expectations and final product
- Guarantee the experiments are ready to benefit from the new MW as soon it becomes available
  - Expose the experiments (and the community in charge of the deployment) to the current evolution of the whole system, to be prepared to use it in the best and quickest way
- Move forward towards new-generation real systems
  - Prototypes should be exercised with realistic workload and conditions (experiments absolutely required for that!)
    - No academic exercises or synthetic demonstrations
  - A lot of work (and useful software) is involved in current experiments data challenges: this will be used as a starting point
    - Adapt/complete/refactorise the existing: we do not need another system!



# E2E Prototypes implementation

- Every experiment has already at least one system
  - Analysis/Production typically distinct entities
  - Using a variety of back-ends (Batch systems, different grid systems)
- ARDA will put its effort on the experiment (sub)system the experiment chooses
  - EGEE MW as foundation layer
    - Multigrid interfaces outside our scope
    - Experiments do know how to deal with this
  - By default, we expect 4 systems
- **There is nothing like an ARDA prototype**
  - Adapt/complete/refactorise the existing (sub)system!
  - Collaborative effort (not a parallel development)
  - Commonality is not ruled out, but it should emerge and become attractive for the experiments. Anyway not imposed "from outside"



# E2E Prototypes implementation

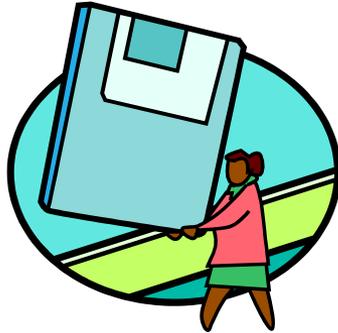
- The initial prototype will have a reduced scope
  - The component should be select to deliver the *first* prototype
  - Experiments components not in use for the first prototype are *not* ruled out (and used/selected ones might be replaced later on)
  - Not all use cases/operation modes will be supported
- Attract and involve users
  - Many users are absolutely required



# E2E Prototypes

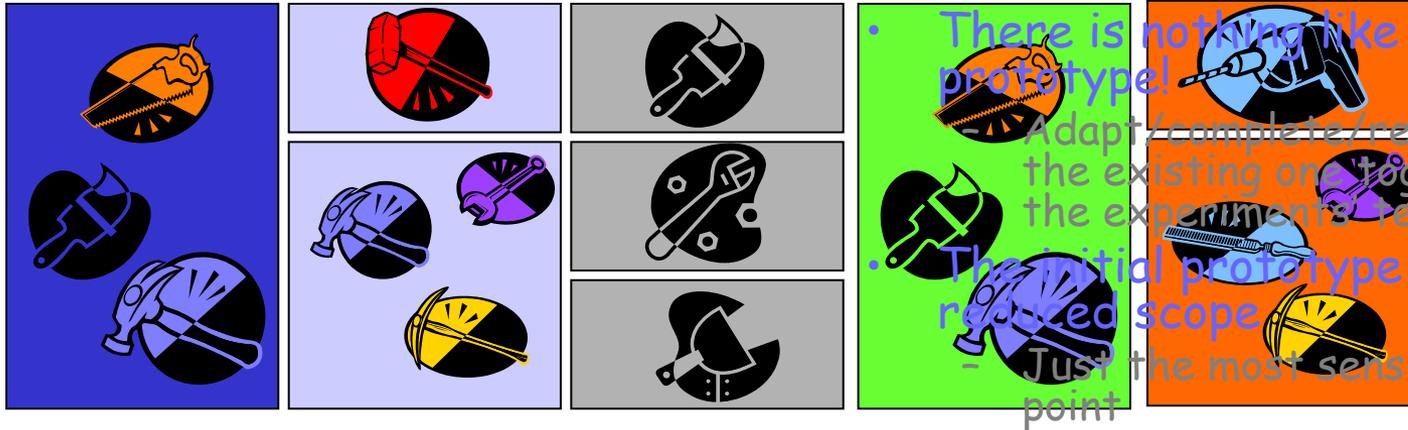


Experiment software

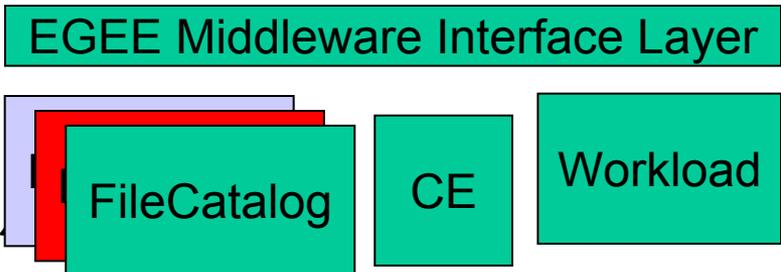


- Each experiment chooses the "starting point" (1 system)
  - Subset of the existing system
  - Emphasis on analysis
  - EGEE MW as foundation layer

Experiment-specific middleware



"Generic" middleware



Other systems in use (LCG2, G2003, NorduGrid, LSF, PBS, ...)



# Project plan

- One prototype per experiment
  - Formally, the project starts April the 1<sup>st</sup>
  - Preparation phase already started
  - Same pattern being proposed to each experiments
    - Interfacing to EGEE MW
    - Direct contribution into experiment-specific "Upper Middleware"
  - Focused dedicated effort to be added to the experiment system
    - Not a demonstration system to be added to the experiments plans
    - Mainstream activity

| Milestone | Date           | Description  |
|-----------|----------------|--|
| 1.x.1     | May 2004       | E2E x prototype definition agreed with the experiment              |
| 1.x.2     | August? 2004   | E2E x prototype using basic EGEE middleware                        |
| 1.x.3     | November? 2004 | E2E x prototype improved functionality                             |
| 1.x       | December 2004  | E2E prototype for experiment x, capable of analysis                |
| 2.x       | December 2005  | E2E prototype for experiment x, capable of analysis and production |

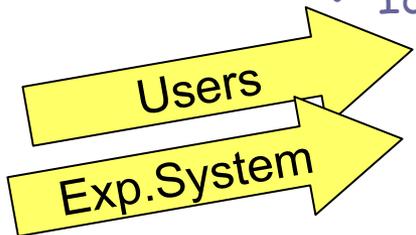


# ARDA Project first set up

- LCG:
  - Project leader (Massimo Lamanna/CERN)
  - 4 LCG staff (100% at CERN) matching the 4 EGEE staff
  - 1 more staff from LCG (100% at CERN)
  - About 3 FTEs from other sources (always at CERN)
- EGEE:
  - 4 NA4 staff (Already selected. 3 persons on April 1<sup>st</sup>, the fourth one on May the 1<sup>st</sup>)
- Experiments:
  - 4 experiments interfaces
    - Represent the experiments in project implementation and evaluation
    - Identify and coordinate the experiment configurations
  - analysis groups in the experiments with whom the implementation people can work to specify the services and validate the implementations
  - "upper middleware" teams (experiment-specific MW)

Strong link with exp. teams

Strong link with exp. teams

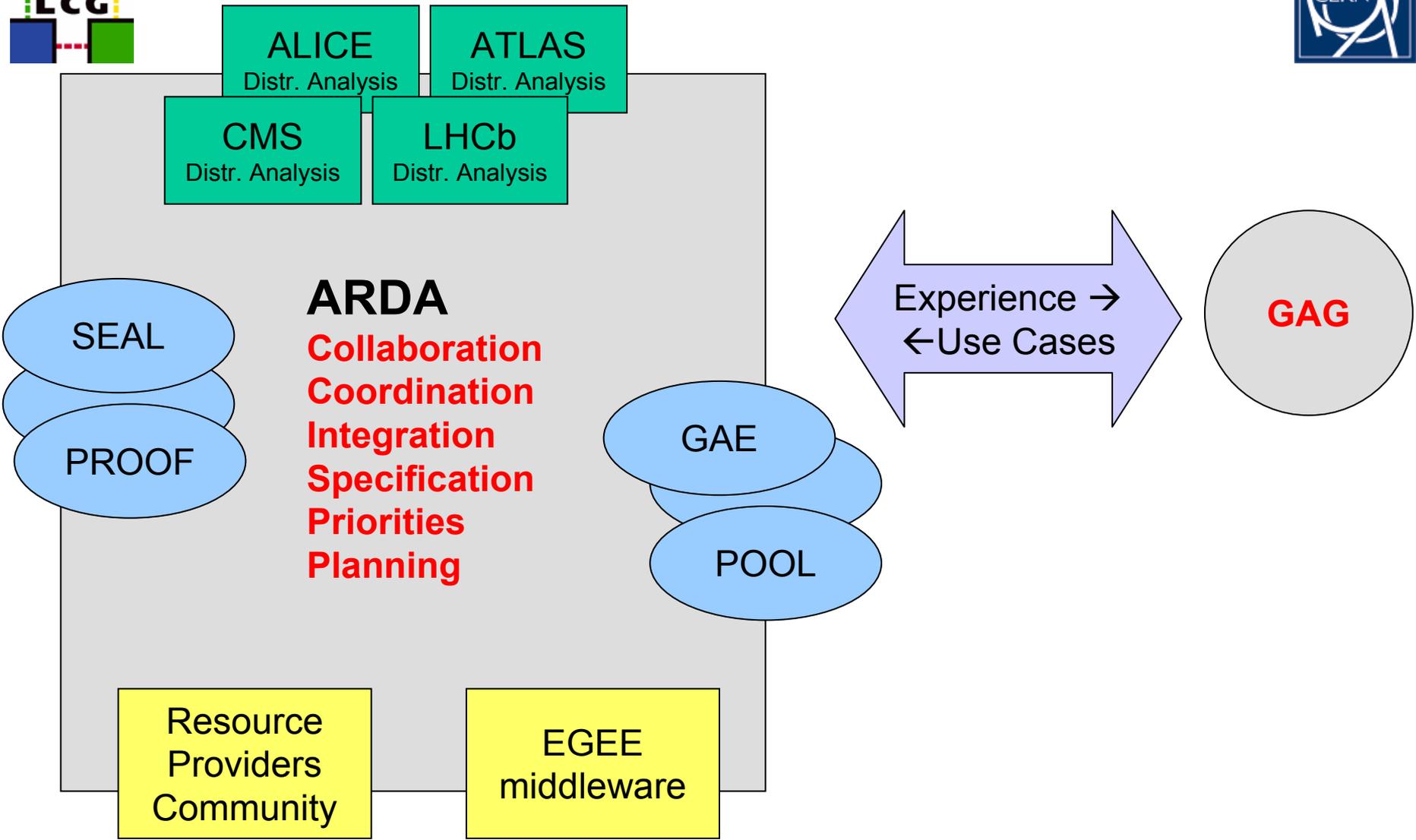




# ARDA Project

- Stakeholders:

- "E2E integration team"
- EGEE MW team
- 4 LHC Experiments
  - Interfaces:
    - Piergiorgio Cerello (ALICE)
    - David Adams (ATLAS)
    - Lucia Silvestris (CMS)
    - Ulrik Egede (LHCb)
- **Users from the 4 experiments!**
- HEP tools providers
  - GAE
  - GANGA
  - POOL
  - PROOF
  - ROOT
  - SEAL
  - ...
- Service providers





# ARDA @ Regional Centres

- “Deployability” is a key factor of MW success
- A few RCs (2?) will have the responsibility to provide early RC installation for ARDA
  - Understand “Deployability” issues
  - Extend the ARDA test bed
  - The ARDA test bed will be the next step after the most complex “EGEE Middleware” test bed
- Stress and performance tests could be ideally located in some RCs
  - This is for experiment-specific components (e.g. a Meta Data catalogue)
  - Leverage on RC local know how



# Coordination and forum activities

- The coordination activities would flow naturally from the fact that ARDA will be open to provide demonstration benches
- Since it is neither necessary nor possible that all projects could be hosted inside the ARDA experiments' prototypes, some coordination is needed to ensure that new technologies can be exposed to the relevant community
  - Transparent process
- ARDA should organise a set of regular meetings (one per quarter?) to discuss results, problems, new/alternative solutions and possibly agree on some coherent program of work.
- The ARDA project leader organises this activity which will be truly distributed and lead by the active partners



# Conclusions

- Project plan being prepared
  - Converge within LCG before the end of March
- Good response from the experiments so far
  - Very constructive attitude!
- Stay tuned 😊