"The ARDA project"

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on behalf of the LCG-ARDA project

http://cern.ch/arda

www.eu-egee.org   cern.ch/lcg

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LCG ARDA working group recommendations
circa end 2003

- New service decomposition for a grid system
  - Strong influence of Alien system
    - the Grid system developed by the ALICE experiments and used by a wide scientific community (not only HEP)
- Role of experience, existing technology…
  - Web service framework

gLite Middleware

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

ARDA project

End-to-end prototypes: why?

- Provide a fast feedback to the EGEE MW development team
  - **Hit the road running!**
    - Avoid uncoordinated evolution of the middleware
    - Coherence between users expectations and final product
- Experiments ready to benefit from the new MW as soon as possible
  - **Hit the road running!!**
    - <u>Frequent snapshots</u> of the middleware available
    - Expose the experiments (and the community in charge of the deployment) to the <u>current evolution</u> of the whole system
    - Experiments system are very complex and <u>still evolving</u>
- Move forward towards new-generation real systems (analysis!)
  - **Hit the road running!!!**
    - Prototypes should be exercised with realistic workload and conditions
      - No academic exercises or synthetic demonstrations
      - LHC experiments users absolutely required here!!!
    - 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: <u>we do not need another system!</u>

ARDA project in a nutshell

- ARDA is an LCG project whose main activity is to enable LHC analysis on the grid
- ARDA is coherently contributing to EGEE NA4 (using the entire CERN NA4-HEP resource)
- Use the grid software as it matures (EGEE project)
    - ARDA should be the key player in the <u>evolution from LCG2 to the EGEE infrastructure</u>
    - <u>Complementary information</u> to the LCG2 experience (e.g. Data challenges)
    - Provide <u>early and continuous</u> feedback (guarantee the software is what experiments expect/need)
    - <u>Exposed to gLite since May 18th</u> ☺
- Use the last years experience/components both from Grid projects (LCG, VDT, EDG) and experiments middleware/tools (Alien, Dirac, GAE, Octopus, Ganga, Dial,…)
    - Help in adapting/interfacing (direct help within the experiments)
    - Every experiment has different implementations of the standard services, but:
        - Used mainly in production environments (Few expert users, coordinated activities)
    - ARDA
        - Interface with the gLite middleware
        - Verify (help to evolve to) such components to analysis environments
            - **Many users (Robustness might be an issue)**
            - **Concurrent "read" actions (Performance will be more and more an issue)**
- One prototype per experiment
    - A Common Application Layer <u>might</u> emerge in future
    - The emphasis is to enable each experiment to be ready to benefit from the new EGEE infrastructure!
- Provide a forum for discussion
    - Comparison on results/experience/ideas
    - Interaction with other projects
    - Organise ARDA workshops
    - Contribute to EGEE events

Experiment interfaces
Piergiorgio Cerello (ALICE)
David Adams (ATLAS)
Lucia Silvestris (CMS)
Ulrik Egede (LHCb)

(ARDA) workshops

- 1st ARDA workshop (January 2004 at CERN; open)
- 2nd ARDA workshop (June 21-23 at CERN; by invitation)
  - "The first 30 days of EGEE middleware"
- NA4 meeting mid July
  - NA4/JRA1 and NA4/SA1 joint sessions organised by M. Lamanna and F. Harris
- d ARDA workshop (beginning of October 2004; open)
  - 2-day meeting

New: Operations

Emphasis: gLite

Cross fertilisation between ARDA workshops (HEP focused) and NA4 events (broader scope and larger community)

"The first 30 days of the EGEE middleware" ARDA workshop

- CERN: 21-23 of June 2004

- Monday, June 21
  - ARDA team / JRA1 team
  - ATLAS (Metadata database services for HEP experiments)
- Tuesday, June 22
  - LHCb (Experience in building Web Services for the Grid)
  - CMS (Data management)
- Wednesday, June 23
  - ALICE (Interactivity on the Grid)
  - Close out

"The first 30 days of the EGEE middleware" ARDA workshop

- Effectively, this is the 2nd workshop (January '04 workshop)
- Given the new situation:
  - Glite middleware becoming available
  - LCG ARDA project started
  - Experience + need of technical discussions
- New format:
  - "Small" (30-35 participants vs 150+ in January)
    - To have it small, by invitation only…
  - ARDA team + experiments interfaces
  - EGEE Glite team (selected persons)
  - Experiments technical key persons
  - Technology experts
  - NA4/EGEE links (4 persons)
  - EGEE PTF chair
- Info on the web:
  - URL:http://lcg.web.cern.ch/LCG/peb/arda/LCG_ARDA_Workshops.htm

Activity with the experiments

- ALICE
  - Interactive access to the gLite grid services
  - Good progress (also shown as a demo in the ARDA workshop)
- ATLAS
  - High level analysis services for the experiments (DIAL) on top of the gLite infrastructure
  - Collaboration
- CMS
  - Detailed plan
  - Preliminary analysis softw
- LHCb
  - Adapt their "uevolution of th
  - Collaboration on the LHCb metadata catalogue

See D. Feichtinger talk in the JRA1/NA4 session

Present status

- Usable software made available as promised ☺
    - We understand (and strongly support) the prototype model ("release early, release often" paradigm)
        - We understand that "early" might imply "incomplete"
    - What the pre-production system should look like?
        - See next slide
- Responsiveness of the JRA1 team
    - "High level"
        - Prototype access is an extra load
            - we believe it pays off for the common goal (i.e. high quality gLite software)
    - Bug fixes / workarounds / discussions
        - Good relationship, trust (developers working around the clock, positive reactions to input, constructive attitude!)

- Present critical issues:

  - Stability of the gLite prototype

    JRA1 session

  - Availability of significant resources (~100) CPU sites at least 3 sites collected) to attract serious users

    SA1 session

    JRA1 and SA1 sessions

  - Effective data access to significant fraction of the experiments data service
    - CASTOR storage element not yet available
    - "Key" ROCs must join (some LCG Tier1s)

  - Coherent software distribution mechanism for the experiment software

    JRA1 session

Look forward to useful discussions in Catania!

Conclusions

- Up and running
- Main tool: end-to-end prototype
    - Definition of the detailed programme of work
    - Contributions in the experiment-specific domain
- Playing with the Glite middleware
- Experience discussed (and augmented) within the workshop activity
- Catania workshop
    - Discussions NA4/JRA1
    - Discussions NA4/SA1
- Stay tuned ☺