

Thoughts on Applications Area Involvement in ARDA

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The main inputs so far...

- ◆ ARDA AA Meeting Nov 27
 - ◆ Small first meeting with the AA LCG people we expect to be involved with a substantial amount of their time
 - ◆ Derek Feichtinger, Juha Herrala, Kuba Moscicki, Frederick Orellana
 - ◆ Plus Frederic Hemmer, Predrag Buncic, Dirk Duellmann, Alberto Aimar and myself
 - ◆ Had an overview of ARDA from Predrag, then discussed possible areas of AA activity
- ◆ Frederic's initial ARDA middleware meeting in early Dec
 - ◆ TW attended (some of it) as AA rep
- ◆ PEB and SC2 presentations of (almost) this talk in Dec
- ◆ Workshop yesterday
 - ◆ Didn't lead me to change anything substantive in this talk from the version presented Dec 9 (not necessarily a good thing)



General ARDA AA Objectives

- ◆ **Common software above the middleware layer**
 - ◆ Adapting, extending, interfacing AA software for ARDA
 - ◆ Participating in ARDA interface definition; ensuring AA requirements met
 - ◆ Applying lower level middleware services in specialized higher level services directed at HEP and analysis
 - ◆ Early PEB agreement on ARDA: Middleware covers as much as possible; remaining higher levels covered by AA (if common) or experiments (if not)
- ◆ **Integration and validation**
 - ◆ Integrating ARDA middleware services and analysis application level services into end-to-end distributed analysis prototype
 - ◆ Assisting integration of distributed analysis prototype or components thereof into experiment environments
 - ◆ Validation of the prototype [and feedback to middleware providers]
 - ◆ Proposal to use the GAG as the principal feedback channel seems a very good one to me



Possible work areas

- 1) Event data management and access
- 2) Framework integration services
- 3) Interactive analysis tools
- 4) Analysis environment integration and validation

... and with thoughts on work package organization

We expect ARDA will use SPI services and policies



Event data management and access

- ◆ Event collections, physics-level datasets, physics queries
- ◆ Efficient sparse data access
- ◆ Data access below file level (event objects)
- ◆ Splitting at physics dataset level

- ◆ A mix of interface development, POOL work, ROOT work

- ◆ Collections work currently going on in a POOL WP, but this work needs an ‘analysis’ perspective and not just a ‘persistency’ perspective – ARDA can provide that
 - ◆ Make this ARDA work package a joint work package with POOL Collection WP

Will be addressed by Dirk in the next talk



Framework integration services

- ◆ Interfacing/integrating framework-level distributed services
 - ◆ Distributed messaging, error handling, logging, ...
- ◆ Interactive interface; Python, ROOT bindings
- ◆ Framework access to more sophisticated middleware services?
 - ◆ Workflow management, replication, ...
- ◆ Probably mostly a very 'thin' activity
 - ◆ not developing services, or even the interfaces
 - ◆ But contributing to interface definition
 - ◆ just packaging/integrating them for the AA architecture
 - ◆ Maybe participation in some specialization of generic services closely connected to the framework? (e.g. managing provenance data)
- ◆ The long-empty 'grid based services' box in SEAL
 - ◆ Joint ARDA/SEAL WP



Interactive Analysis Tools

- ◆ Interfacing to tools supporting interactive (low-latency, rapid-response) analysis
- ◆ ROOT, PROOF integration
- ◆ User interfaces to tools supporting analysis workload management
 - ◆ User level management/monitoring
 - ◆ User level reservations ('what' and 'when')
- ◆ Interfacing to tools supporting dynamic job interaction/control
- ◆ AIDA integration

- ◆ Needs will vary from experiment to experiment; probably mostly experiment-specific integration
- ◆ If there is an AA element, fold into the next WP...



Analysis Environment Integration & Validation

- ◆ ARDA integration as an analysis system in experiment environments
 - ◆ Integrating experiment specific front end and service components with ARDA components into an end-to-end system
- ◆ Early priority: users in experiments testing detailed use cases using experiment-integrated ARDA
 - ◆ Get ARDA in the hands of physicists doing analysis as soon as possible (as soon as there is a tool of interest to attract them – experiment ARDA teams need to sell the product)
- ◆ The key work package
 - ◆ Support and assist four distinct but collaborative ARDA integration efforts in the experiments
 - ◆ Coordination for the higher level elements of ARDA not coming from the middleware
 - ◆ Coordinate gathering of feedback from experiment ARDA teams/users
 - ◆ Use GAG for middleware feedback channel
 - ◆ Provide overall coordination/coherence for ARDA end-to-end analysis systems



Summarizing My Current Thoughts on WPs

1) Integration and Validation

- ◆ Primarily providing coordination, communication, coherence for efforts residing in the experiments and projects
 - ◆ Some similarity to Physics Validation in the simulation project
 - ◆ Though the (majority of the) work will go on in the experiments and projects, a common focal point is needed if it is to be a common effort

2) Event data management

- ◆ Physics-driven event collections
- ◆ Joint WP with POOL Collections

3) Framework integration

- ◆ ‘Thin’ adaptation of middleware services to whatever is required for integration in experiment analysis frameworks
- ◆ Joint WP with SEAL



