Atlas Software Workshop Summary

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Oufff...

Atlas Computing Organisation

- System coordinators and task leaders, WG chairs $\rightarrow$ Computing Steering Group
- COB, not intended to be executive body
- National Board being set up
- Need for further action:
  - Architecture working group after ATF, chief architect
  - Some software activities (eg. graphics), tools, support, productions, ...
  - Body preparing technical decisions
- Planning needed for Atlas and for reviews

News, general status

- CSG established - two meetings so far
- Technical group being set up, convened by Maya Stavrianakou
- ATF finished, architecture team being set up, too
- Quality Control group going ahead
- Lots of contacts and representations outside Atlas

Repository and releases

- In repository: Atlas packages, contributed software, external software
- New notion of external software in release tree, but not in repository
- Supported platforms: many - suggestion to drop AIX and Digital Unix, carry on with Linux, Solaris, HP-UX
- Repository is not all - also need release tree, external software, data files, SRT
- TDR production release awaiting more testing

Computing platforms

- Issues:
  - Atlas software releases
  - Operating system support at CERN including Asis, Sue, AFS, …
  - Public or Atlas wide facilities at CERN
- Proposal to drop Atlas releases on AIX, DUX
- General move to Linux, supported by Atlas
- Solaris as ‘safety net’
- HP-UX needed, in particular by test beam DAQ, and to protect existing investments

Tools

- OOAD: Together well received, more powerful, more intuitive than StP
- Will reduce StP licenses, but keep some
- Code checking tools under study
- Configuration management: Awaiting feedback from package authors
- Improvements to computing Web
- Documentation: XML not mature enough

Muon software

- TDR software fully integrated into Atlas frameworks
- Evolving from AMDB to AGDD, always keeping a fully functional system running
- Simulation profited by G4 courses, comprises test beam simulations
- Reconstruction: Muonbox to be wrapped, Amber to be migrated to Unix
- Detailed planning available
- MOUs discussed

Architecture task force

- ATF: representative mixture of interests and knowledge of OO technologies
- Input from Atlas and other projects
- Target: Common framework
- Complementary approaches: use-case driven A&D, derive components from experience
- Few key decisions: OODBMS, transient/persistent separation, data/algorithm separation, scratchpad event store, …
- Control: Traditional way chosen
- Follow-up: Architecture team

Architecture (cont'd)

- ATF (almost) dissolved, to be followed up by Architecture Team; first results (=prototype) in spring 2000
- ATF decisions to be taken pragmatically… not casted in stone, but not easily questioned either
- Further issues raised:
  - External review
  - Participation of community in work of ATF / AT
  - Collaboration with other groups (LHCb)?

Problem reporting and tracking

- Gnats to be replaced by Remedy
- Similar concepts
- Cultural problem: Threshold of submitting a bug/problem
- We should be at least as successful as other HEP projects...

Paso

- Successful tutorial (thanks Rosemary, David, Julius)
- Reminder of context with other packages
- New: space points in ID, events into graphics packages
- Documentation well received

LAr software

- Much attention on training (OOAD course, G4 course)
- Aiming for first full release in two years' time; this determines all other timescales
- ATF decisions appreciated, but need for ongoing architectural coordination
- Reconstruction: starting from Atrecon algorithm, in parallel OO design from scratch
- Many people working on G4 based simulation; different challenges in EM and had part; problem with EM geometry
- Work on XML detector description ongoing
- Discussions about software MOUs

Data base, detector description

- Synchronising with ATF decisions
- Looking at other projects (D0OM, Gaudi, …)
- Detector description: XML model and generic one fairly close for now, suit both simulation and reconstruction
- Consistent identifier scheme required
- G3 event access through Paso: Tutorial given, people working on completing access to TDR data
- Particle Physics Data Grid: US project

RD45 activities

- Atlas much interested in exploiting OODBMS
- Current baseline choice: Objectivity/DB
- Concerns about single vendor, small market
- Possibly need to be ready to develop HEP OODBMS
- Support for existing usage, assessment of needs, risk assessment, liaison with Objy etc.: perhaps RD45, perhaps new project - Hans Hoffmann to decide
- Variety of solutions - boundaries between OODBMS and object extensions of RDBMS becoming more fuzzy

Atlantis

- Concentrated on track pattern recognition: difficult in intuitive projections
- V-plot (phi versus dip angle, with indication of distance from given radius) is a real three-dimensional information
  - sensitive to charge and pt, displacement of z
  - need to apply filtering (no of layers hit) and vertex finding (histogram of hit pairs in pixels etc.)
- Fast, algorithms can be used in batch reconstruction
- Data flow from G3/Zebra into Atlantis: XML

Analysis tools

- Project of putting CBNT in Objectivity, and analysing them with LHC++ tools
- Web pages revamped, now more useful and user-friendly
- Requirements and use-cases being collected; still incomplete, but already imposing some constraints
  - Hooks to interactive simulation and reconstruction, persistency
- Evaluation to follow (not a shoot-out)

Geant4

- Powerful kernel, extensive and extensible physics models
- New release upcoming
- Different categories of users: collaboration members and outsiders
- Moving to ISO C++, STL (native as supplied with compilers)
- Reference cvs tag for G4 members ~ once a month - sources only
- Complex support model

Quality control group

- Mandate and composition
- Software onion model, higher requirements for kernel software
- Coding conventions: document being prepared; Spider with priorities
- Software ownership: Packages owned by working groups, WGs prime responsibles for quality assurance (reviews, walkthroughs, tests…)

Graphics WG

- Need for close contact with AT
- New design of graphics core code
- Progress in Atlantis, Aravis, Wired
- Common Java projects - namespaces

Reconstruction WG

- Many newcomers - lack of (good) documentation
- Atrecon to be made maintainable
- ID: spacepoints; iPatRec, xKalman improvements
- Calo: review of existing stuff, new designs
- Muons: CSC included, muonbox wrapped, Amber ported
- CBNT in Objectivity: get new people started

Simulation WG

- Critical mass reached, people concentrating on geometries, training almost completed
- Accordion geometry, XML and G4 geometry builder, complete chain for muons
- G4 geometry: expensive for large number of volumes
- Physics: some problems - missing Atlas knowledge, or bad models? Working group
- G4 deficiencies: user comfort, release procedures, ...

Software aspects of generators

- Interface between generators and simulation
- Isagen: Isajet for Dice
- B decay packages evolving
- Minimum bias need better understanding
- Parton calculations into shower MC

Personal observations (9/99)

- 3rd workshop with large component on policy, organisation etc.
  - Hope that we can focus on technical issues in future
- Numerous people attending for the first time
- Large variety of opinions
  - Have participants all spoken the same language? Have they talked effectively to each other?

- Less politics, much more technical stuff this time

- Again true... Which is a VERY good thing…
- IMHO, much progress… ATF has helped...

Desirables (9/99)

- Yet more end users and representatives of physics and performance groups
- More participation, both actively and passively, of Trigger, DAQ and Event Filter
- Geant4 based simulation
- On a very good way (combined performance groups integrated)
- Active part could still be improved… EF SW talk next time round
- Simulation WG, report, G4 presentation

Personal observations (cont'd)

- Fairly heavy agenda, with lots of constraints (availability of rooms, speakers, etc.)
  - Plenty of interesting topics
  - Not an accident (I hope)
  - Agenda became sort of a bazaar
- What next?
  - Change organiser?
  - Accept bazaar mode?
  - Topical workshops?
    - Actual, urgent stuff + one subject as centre of interest?

Organiser's comments

- Thanks to all…
  - speakers
  - organisers of sessions (drink!)
  - who provided input
    - Norman for a very collaborative spirit
  - who participated
  - who helped me with the technical stuff
  - ...