Today's objectives

- Working group
  - Defined, initial membership, some background work
  - Approved by TDSG
  - Work in open meetings
    - *Initial suggestion: every second Monday at 16:00. First on 14/10*
- Introduce the WG
  - Mandate, mode of operation, objectives
  - *Expect comments/criticisms/suggestions*
- Initial list of "issues"
  - Short presentation
  - *Expect suggestions/criticisms*
  - Expect to work out prioritization (→ agenda of next open meeting)

Architecture Working Group

- **Background**
  - ATLAS TDAQ completed a 2-year phase of intensive design & development
  - Reviewed in July 2002
  - Next major milestone: TDR by June 2003
    - TDR will propose an architecture for ATLAS TDAQ
  - TDSG initiates a working group to coordinate definition of overall TDAQ architecture

- **Context**
  - ATLAS TDAQ organised in systems (Level-1, HLT and DAQ)
  - Systems are organised in sub-systems (e.g. DAQ includes online, dataflow, part of DCS)
  - Responsibility for design/development of TDAQ parts lies with systems/sub-systems
  - The architecture WG spans TDAQ systems & sub-systems and it is an integral part of the ATLAS TDAQ project structure

Status

- Organisation
  - Working group definition
  - Sketch of a workplan
- Parameters & Standard Values
  - Being collected
  - Organisation in a data base
- Current architecture
  - Guidelines for informal discussions
  - Informal discussions started
- Open Meetings
  - Today the first: present group
  - Propose initial biweekly schedule (every second Monday at 16:00, first one 14/10)

Initial Membership

- Beniamino di Girolamo
- Bob Dobinson
- Saul Gonzales
- Benedetto Gorini
- Reiner Hauser
- Sergei Kolos
- Giuseppe Mornacchi

Objectives and Constraints

- Coordinate (within the organisation of the ATLAS TDAQ project)
  - The definition of an overall architecture. Compatibly with performance, budget, scalability and deferral scenarios.
  - The identification, prioritizing and (if necessary for the TDR) solution of TDAQ system wide issues which fall outside of the competence of individual systems/sub-systems.
- Constraints
  - Evolve from the current ATLAS TDAQ developments
  - The design of Level-1 (as documented in the Level-1 TDR)
  - Budget, staging, deferral, scalability
  - TDAQ organisation & structure
  - TDR milestone (June 2003)
  - Findings of “Global issues working group”

Mode of Operation

- Breakdown in phases:

  For convenience the activities are grouped in two main steps: one for the definition of the work to be done and for the gathering of information, the second, based on the information gathered in the first phase, for the definition of the architecture, identification of global issues and tackling these latter. Depending on how the production of the TDR is organised, a third phase might be envisaged for writing those parts of the TDR relevant to the architecture.

Information Gathering

- Input
  - Mandate prepared by TDAQ steering group
  - Results of TDAQ review (July 2002)
- Deliverables
  - A definition document for the working group
  - Initial description of the current TDAQ architecture
  - A definition of parameters and standard values of global interest to TDAQ
- Means
  - Background material
  - Informal discussion with people from TDAQ systems/sub-systems

Phase 2

This phase is based on the architecture extracted from the current designs during the first phase. The role of the working group is that of coordinating the evolution of the current architecture into one that is valid for the TDR:

Identification of design weaknesses, necessary modifications and non-addressed issues. For example identify a weakness in the interface or boundaries between two components.

- Suggest an action to be undertaken, this could typically be the suggestion that one or more sub-systems collaborate together to find a solution to the problem identified. The member, or members, of the working group that represent the sub-system(s) will participate to the common effort to study the solution.
- The working group takes up the solution and includes it in the TDAQ architecture definition.

The working group acts as a catalyst, individuating “problems” and suggesting actions. It is not the role of the working group, as a whole, to supply solutions; this role belongs to the sub-systems. Nevertheless individual working groups members do participate to the elaboration of the solutions.

Scope

- Architecture
  - Components
  - Relationships (connections, interfaces,..)
  - Views
    - Data flow
    - Control
    - Data base
    - Location
    - …..

Scope II

- Components
  - ROD/ROD-crate/ROL
  - LVL1/TTC
  - ROS
  - RoIB
  - L2SV
  - L2PU
  - Network(s)
  - SFI
  - EF sub-farm
  - SFO
- Components
  - PESA
  - DCS
  - Controls
  - Data bases
  - Information/message services
  - Monitoring
  - ….

Preliminary Workplan

- 4 Major tasks
  - Organisation
  - Parameters and cost model
  - Architecture
  - Use cases

Organisation

Objectives: Set-up the working group, define objectives, composition, operational mode, workplan

Deliverables:

- WG definition document
- List of TDAQ system components relevant to the architecture
- Workplan

Time scale:

- End September

Parameters & Cost Model

Objectives: collect system parameters and standard values, organise in a data base + web interface, build a cost model of the system

Time scale: End February 2003

Intermediate milestones:

End October: 1st version of data base (including parameter values), initial cost model

End February:

- update data base (reflecting architecture where necessary)
- parameters document
- cost model reflecting the architecture

Architecture

Objectives: Provide an architectural definition of TDAQ for the TDR

Deliverables:

- a document describing the architecture.
- documents describing the issues, and how they have been addressed

Milestones:

End October:

description of current architecture

list of issues & recommendations

implementation of recommendations addressing the issues

End January 2003:

Issues documents

Architecture Workshop

End February 2003:

Integrate (issues) docs above into architecture definition document

Use Cases

Objectives: address global/operational TDAQ issues

Deliverables:

- a list of relevant use cases, with priorities (defining also which ones to tackle before the TDR)

- documents describing the use cases

Milestones:

End November: list of use cases

January 2003: organise task force associated to each use case

End March: documents available

Architecture Document

- Outline
  - Parameters
  - Architecture Overview
    - Components (definition)
    - Views
    - Data flow, control, data base, location, …
  - Component (1 section per component)
    - Definition, requirements, errors and behaviour, …
  - Interfaces (1 section per interface)
    - Definition, responsibility, realization

Issues

- Stageable/Scalable architecture
- Monitoring
- Control network (and other networks)
- Parameters/standard values
- Errors
- Fault tolerance (in particular single points of failure, e.g. DFM)
- Compliance to partitioning requirements
- Common schemes for local control/supervision
- Interfaces between components