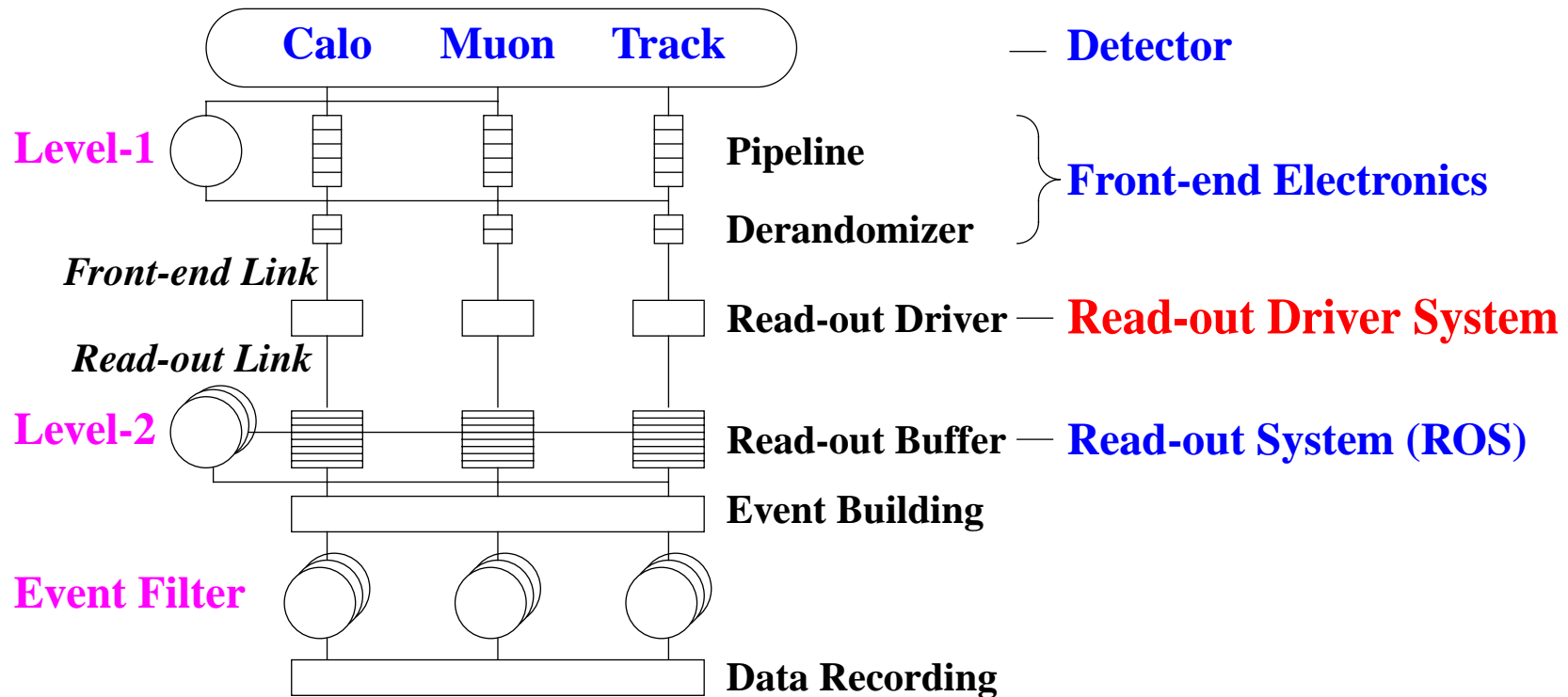


# *ROD Crate DAQ Task Force*

## *- Data Acquisition for the Read-out Driver System -*

- **Introduction**
- **Task Force**
- **ROD Crate DAQ**

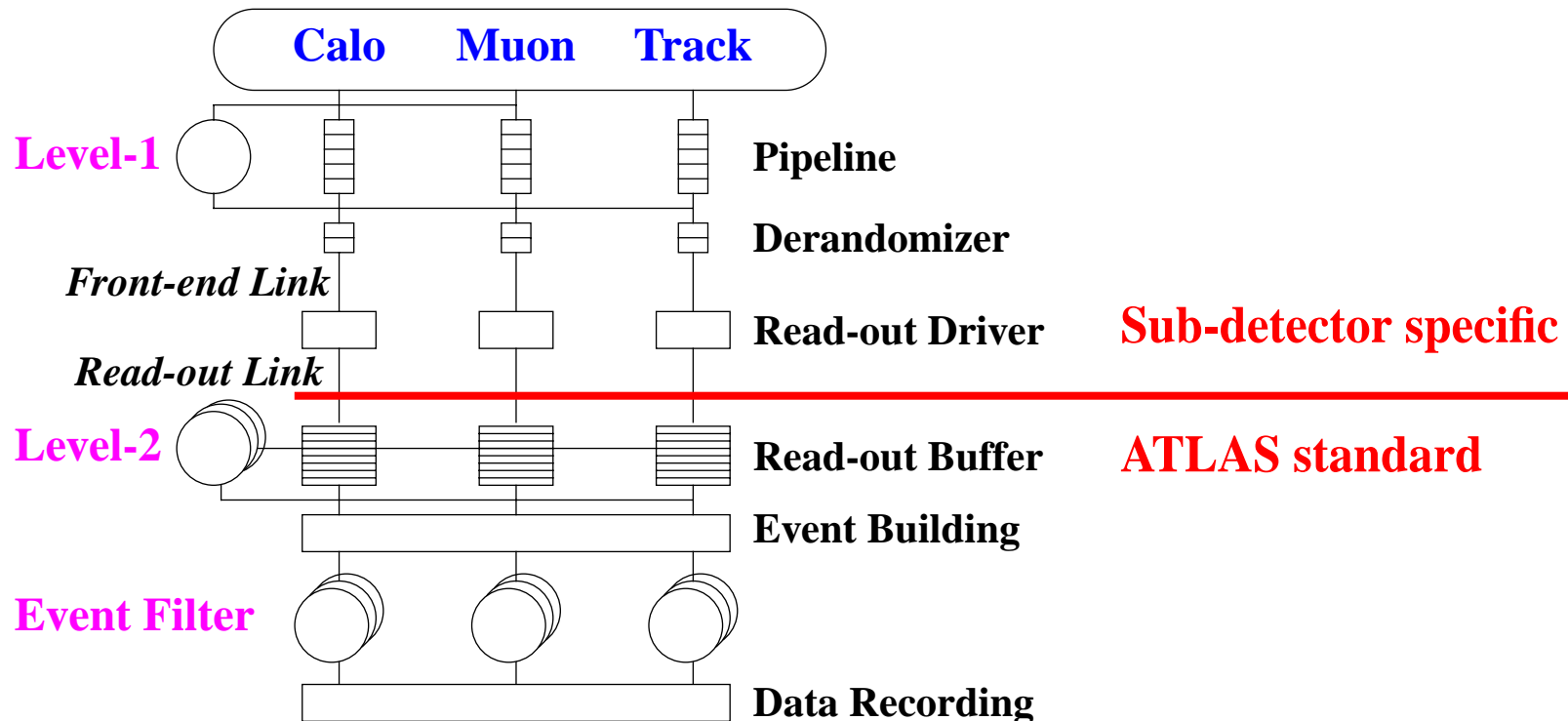
# Read-out Driver System - Context



## Read-out Driver:

- Inputs and multiplexes event data from Front-end Electronics via Front-end Link (FEL).
- Processes event data, e.g. zero suppression or signal peak finding.
- Outputs event data to Read-out System via Read-out Link (ROL).

# Read-out Driver System - Interface



- **Dataflow:**

Trigger and DAQ Interfaces with Front-end Systems:  
Requirements Document, ATLAS DAQ note 103.

- **Control (implicit):**

Online Software System + Detector Control System

# *Read-out Driver System - History*

- ROD Workshop 1998:
  - Sub-detectors:
    - Some common DAQ functionality needed at the level of the ROD Crate.
      - Can we re-use software for the DAQ/EF -1 Read-out Crate?
  - DAQ/EF -1 experts:
    - Read-out Crate software not easily applicable to ROD Crate.
    - Better understanding of sub-detector requirements needed.
- Detector Interface Group, 2001:
  - Many discussions between sub-detectors and T/DAQ group
    - clearer picture of sub-detector requirements.
  - ROD Working Group Task Forces:
    - VMEbus Interface ⇒ recommendation document
    - Crate Controller & VMEbus Libraries
      - ⇒ common procurement & VMEbus API
    - Read-out Link ⇒ recommendation document
  - see also talks by R. McLaren and C. Parkman

# *ROD Crate DAQ Task Force - I*

- **Mandate:**

- Define scope of DAQ in the ROD Crate:

- outline requirements;
    - sketch a framework;
    - enumerate the framework's modules.

- Propose workplan for development and distribution

- ⇒ Prepare **ROD Crate DAQ definition document** and submit it for discussion to Detector Interface Group.

- **Composition:**

- T/DAQ **and** sub-detector experts:

- N. Gee, B. Di Girolamo, S. Falciano, J. Hill, G. Lehmann, D. Liko, J. Petersen, L. Poggioli, R. Spiwoks (chair), L. Tremblet, C. Zeitnitz

# *ROD Crate DAQ Task Force - II*

- Meetings:

- Weekly phone conferences every Thursday 10 to 12 am.

- First meeting 17 JAN 2002, five meetings so far.

- Some discussions using mailing list.

- Web page:

- <http://atlasinfo.cern.ch/Atlas/GROUPS/DAQTRIG/DIG/rodtaskforce/>  
(or from DIG web page)

- Presentations and discussion material

- Notes of all meetings

- Draft ROD Crate DAQ definition document

- Mailing List:

- [atlas-mgt-tc-esp-dig-rcdtf@cern.ch](mailto:atlas-mgt-tc-esp-dig-rcdtf@cern.ch)

# *ROD Crate DAQ Task Force - III*

→ **Status:**

- **First draft of definition document:**
  - Available since 11 FEB 2002.
  - “Contract style”: many small, named paragraphs, ~ 30 pages.
  - Table of content:
    - 1) Introduction
    - 2) Definition of Terms
    - 3) Uses - Basic Functions
    - 4) Uses - Scenarios
    - 5) Framework
    - 6) Workplan
- **“Inspection” of definition document:**
  - Comments have been collected.
  - Started on 21 FEB 2002 to go through paragraph by paragraph.
  - Extrapolate that another month will be needed.
- **Submission of definition document:**
  - APR 2002: the definition document can be sent to DIG.
  - All sub-detectors and T/DAQ will be asked to comment.

# *ROD Crate DAQ - I*

→ ATLAS Standard:

- Software distribution available to all sub-detectors.
- Provides common DAQ functionality at the level of the ROD Crate.
- Provides libraries and skeleton processes ( $\approx$  **toolbox**)  
which have to be adapted by the sub-detectors to the specific needs of their ROD Crates.

• Scope:

- Small laboratory setup with single ROD Crate;
- Bigger laboratory setup with multiple ROD Crates;
- Testbeam setup;
- Commissioning, calibration and production at the experiment.

• Availability:

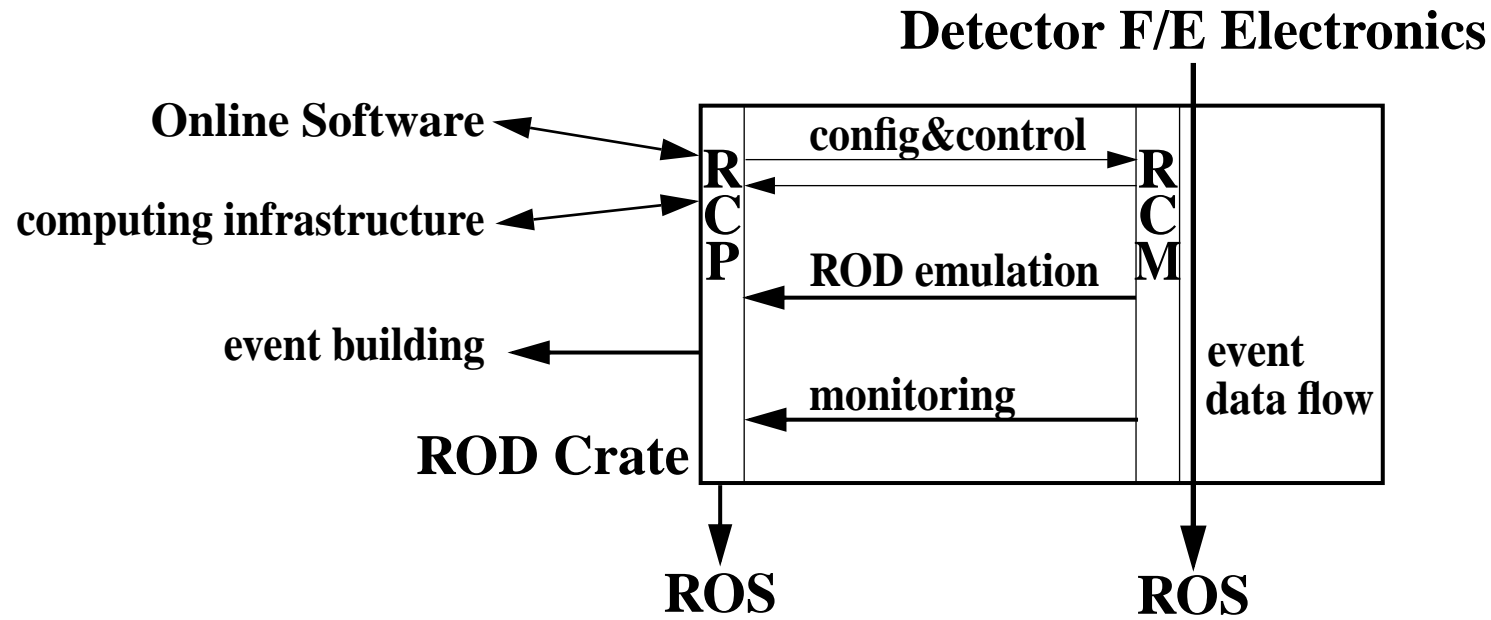
- Some sub-detectors need ROD Crate DAQ **now!**
- Could be available in summer 2002.
- Will be based on existing software in Online and ROS.





# ROD Crate DAQ - III

→ Basic Functions:



- Emulation;
- Configuration and control;
- Monitoring;
- Event building.

# *ROD Crate DAQ - IV*

- Emulation:

- **Case A:** not fully functional ROD prototypes, non-ROD modules at testbeam  
⇒ emulate ROD functionality by reading event data via VMEbus into VMEbus single board computer.

- **Case B:** no ROD

- ⇒ emulate ROD functionality on VMEbus single board computer: input, process and output data on VMEbus single board computer.

- Configuration and Control:

- Provide Run Control skeleton and Data Access Library  
⇒ interface to Online services.

- Monitoring:

- - Event data monitoring;
  - - Scaler values and histogram monitoring (derived from event data);
  - - Operational monitoring (not derived from event data).

- Event Building:

- - Assume that coherent event data sampling is provided by RODs.
  - - Assemble event data from **several** ROD Crates via **local area network**.



# *ROD Crate DAQ - Open Questions*

→ **beyond the mandate of ROD Crate DAQ Task Force**

- Calibration:

- Sub-detectors specific calibration procedures?
- Interaction with Front-end Electronics?

- Front-end Electronics Configuration data:

Online and DCS databases are used today. Single database?

- Databases:

- Front-end electronics configuration, see above.
- Logging of run-related information:  
Online Bookkeeping is used today. Conditions Database?
- Storage of calibration data: Conditions Database?