ROB User Requirements Overview

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http://www.cern.ch/HSI/rob
**ROB Functions - a selection**

- **ROB Data**
  - Receive TTC information
  - Handle run control requests
  - Handle monitor data requests

- **XOFF**
  - On RoI_request
    - Send to Level-2
    - On L2_reject, delete fragment
    - On L2_accept or L3_request, send to Level-3

- **Pre-process data**
- **Expand data**
- **Compress data**

**Legend:**
- Red: Essential function
- Blue: Can be done by other module or not required in prototype
- Pink: Possible but unlikely

**ROD Data XOFF**
- RoI_Request
- RoI_Data
- L2_accept
- L2_reject
- L3_done
- L3_request

**Data to L3**
Document Control

- Used PSS-05 Software Engineering Standard from European Space Agency
- Template exists for FrameMaker (made by Software Development Tools Group at CERN)
  see http://www.cern.ch/CERN/Divisions/ECP/IPT/DocSys/PSS05/
- Breaks down the product life-cycle into modular tasks - the first is the definition of User Requirements
- Each Requirement is defined by Attributes eg:

**UR DI-FC  Flow Control**

The ROB must be able to control the flow of input data on the Read-out Link in the event that its buffer becomes full.

- **Need** Essential.
- **Priority** Prototype. It is desirable that both strategies noted below (XOFF and L1_inhibit) be implemented in the prototype.
- **Stability** The flow control mechanism may change.
- **Source** Dataflow.
- **Clarity** Flow control could be implemented by a signal to the Read-out Link (XOFF) causing it to stop transfers or by a signal to the Level-1 Trigger (L1_inhibit) causing it to stop issuing L1_accepts.
- **Verifiability** To be tested during prototype -1 program.
# Document History

1. **Document title**: Read-out Buffer for the ATLAS Experiment at LHC User Requirements Document

2. **Document Reference Number**: ROB-URD-V1.2.0

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Items for Discussion

- What are acceptable error rates on the input links?
- How are fault conditions handed?
- How long should data fragments be stored and so what is the maximum size of the buffer memory?
- What is the impact of LVL2 algorithms like determination of the missing energy and the TRT scan on the requirements?