Muon Group Software Report

LHCb Week - Computing Meeting

23 February 2000

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Caveat

- This past months a lot of work on Muon Detector logical layout (regions, granularity, strips/pads) and technology specific studies have been done
  - Studies performed in SICb
  - Final versions of private software will be made public in the next 2 weeks and following
  - Very little work done in Gaudi

- Decisions on open questions (e.g. chambers configuration) to be taken by the summer
  - Dedicated muon geometry studies
  - By end of June a new muon geometry description (code and database) for SICbMC

"Current" Software changes/improvements

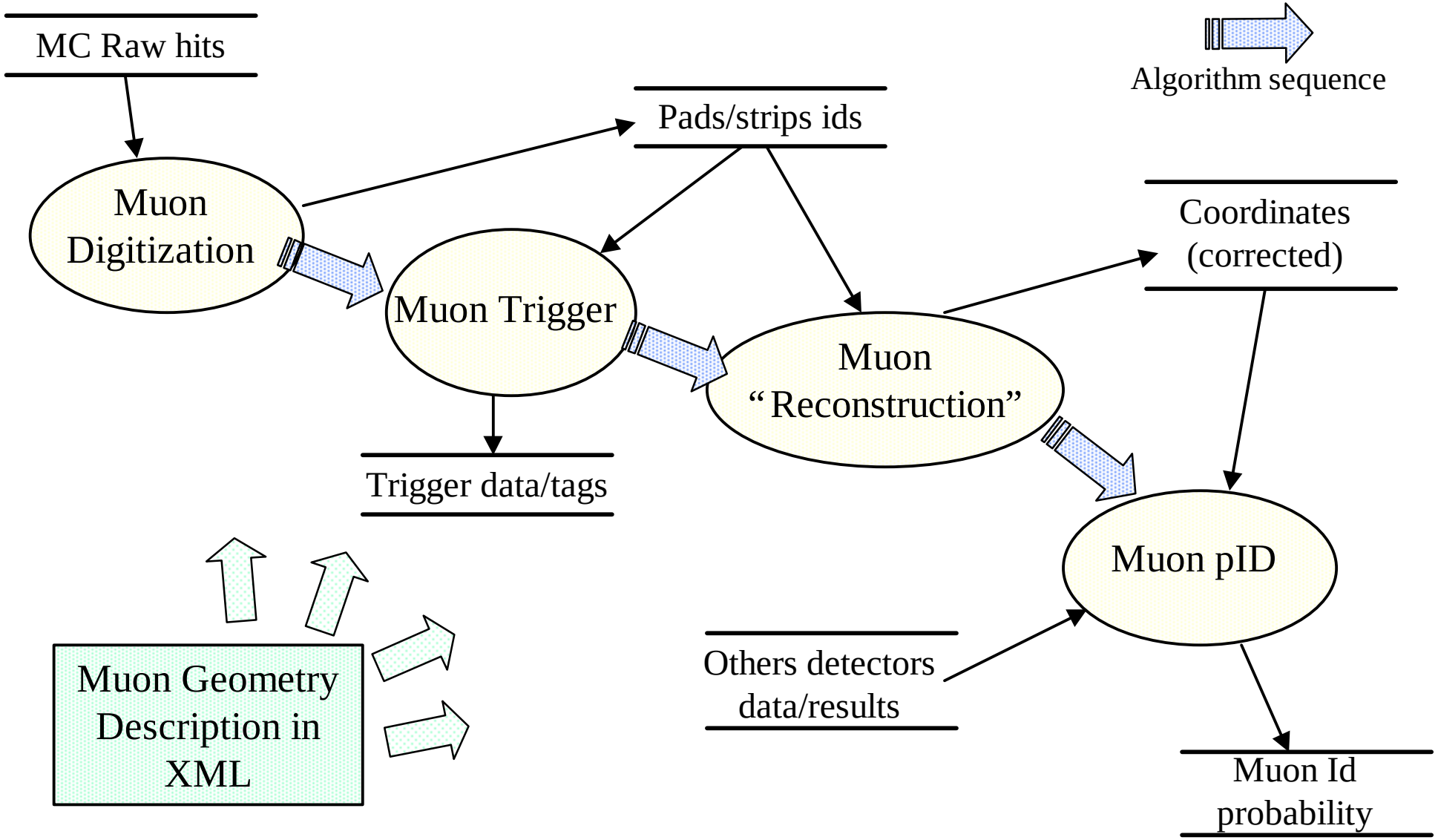
- Bug fixes
- Logical Layout
  - January 2000 layout (1 week)
    - improved x granularity in Region 1 for Stations 2 and 3
    - slightly improved x granularity in Region 1 for Stations 4 and 5 (related to physical layout)
- Digitization
  - Private mufillpd that handles digitization of strips
  - Cross Talk and Noise, developed in Rio is under test for SICb v222 (2 weeks)
  - Timing, developed in Rome I (4 weeks)

- Optimization of chamber configuration
  - Muon dedicated studies for geometrical description of modules in the stations (CERN, Rio, Rome I)
    - database and code changes
    - specialized generation of data, not in LHCb standard production
  - Final layout will included in SICbMC for LCHb production shortly afterwards

- SICbMC / SICbDST tests to prove they are equivalent to SICb
  - Some test data has been produced (by Eric), Paul will check it for the muon software next week

- Quality Assurance plots exist in various muon tasks code
  - Paul is in the process of collecting them and will provide routines for the standard productions of SICbMC and SICbDST

Muon Software tasks in Brunel



- Muon Digitization (Rio, +?)
  - prototype for Gaudi v2, reading SICb DBASE v116 exists
  - work in progress to move to Gaudi v3, SICb DBASE v220 (change in muon.cdf structure)
  - will use XML detector description
  - new features: noise, cross talk, timing, etc...
- XML detector description (Rio)
  - work will start after the prototype of the digitization will be moved
- Muon trigger (Marseille)
  - design ideas presented by Paul in a Software Week
- Muon reconstruction
- Muon ID
  - studies being done in Fortran/SICb at the moment by Alison
  - Rio has expressed an interest in developing it in OO

- Muon geometry simulation based on GEANT4 in the Gaudi Framework
  - we need to be ready for when SICbMC will be retired
  - work should start in about 6 months to gain the expertise necessary
  - what about physics background in the muon system?
    - is GEANT4 going to be sufficient ?
    - do we need to look into other packages ?
    - parameterization ?