



Progress Report: TTU Emulation

An Emulator for the RPC Technical Trigger

Andres Osorio-Oliveros

Universidad de los Andes

- Progress

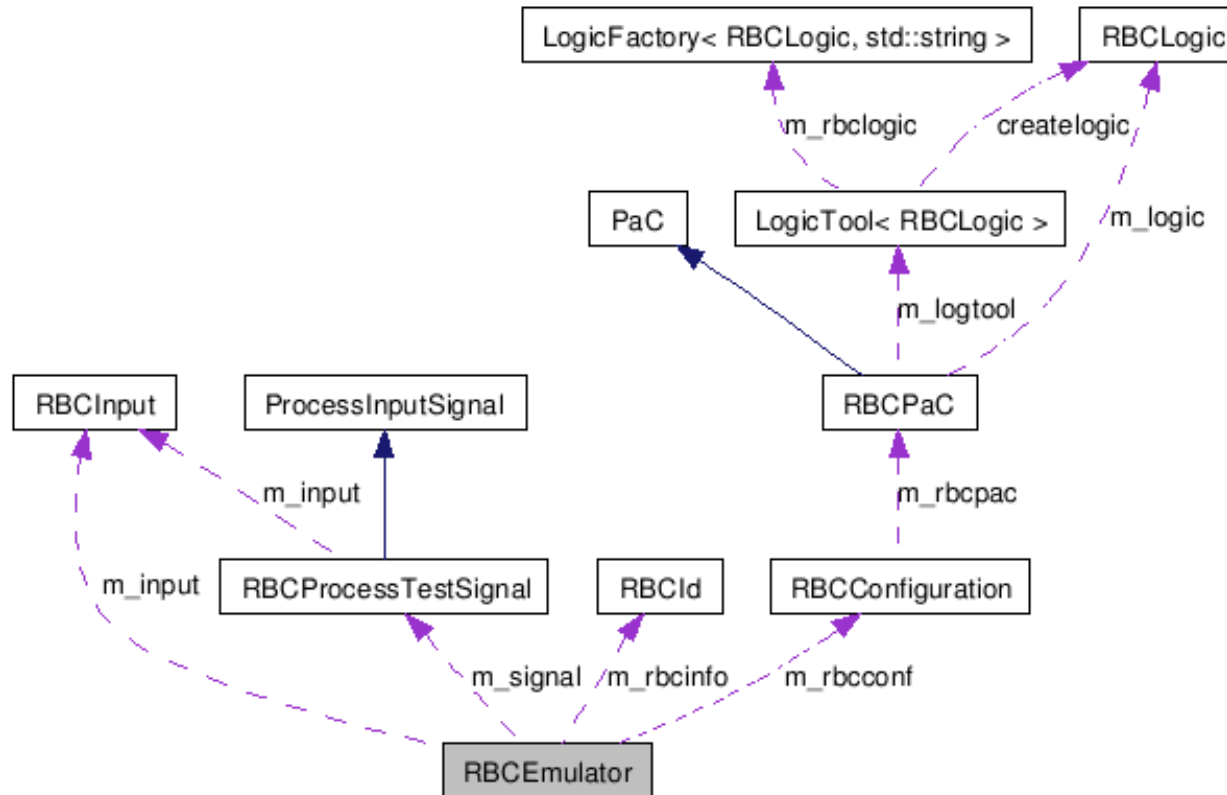
By the beginning of November:

- A private version of the RPCTechnicalTrigger package was in place
- Basic infrastructure: from local (RBC boards emulation) → to global (TTU emulation)
- Two kinds of logic are written at the moment (thanks to Flavio):
 - RBC Level: Coincidence Logic
 - TTU Level: Tracking Algorithm [1]
- Logic factory: usage of different types of logic is easy
- I have the mapping between 26/28 ORs to 6 layers per sector
- From this information and using a coincidence logic, I can obtain a wheel map
- The wheel map goes as input to the tracking algorithm
- Code is located at the SVN-UniAndes repository (private)

Implementation: Class Collaboration



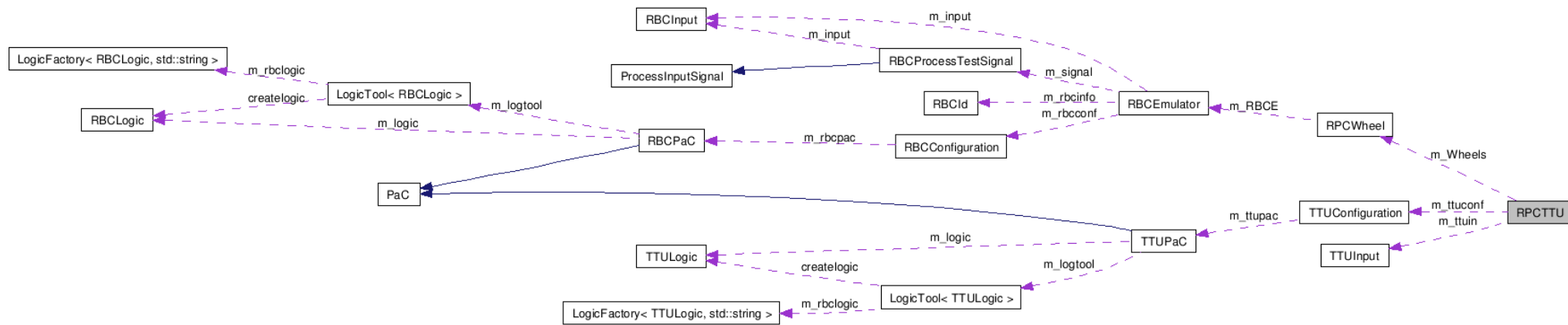
Class collaboration diagram (using Doxygen): RBCEmulator



Implementation: Class Collaboration



Class collaboration diagram (using Doxygen): RPCTTU



Current development:

- Basic integration with CMSSW

Tests:

- Data is read from an ascii file
- Configuration database: a Toy mysql database was created to get access to configuration parameters
- At the moment such database remains at the toy level (objects in there are not realistic)

Work to to be done:

- Finish basic integration with CMSSW: `cmsRun rpcttcfg.py` (1 day)
- Do some more realistic tests: I can use cosmic data (MC): test algorithms
- Understand better what kind of objects should be accessed/stored on Database: (patterns,ids,hardware specific,???)

Backup Slides



Motivation

Sub-detectors at CMS have the ability to send special trigger signals known as **Technical Triggers**. These signals are used for test and calibration.

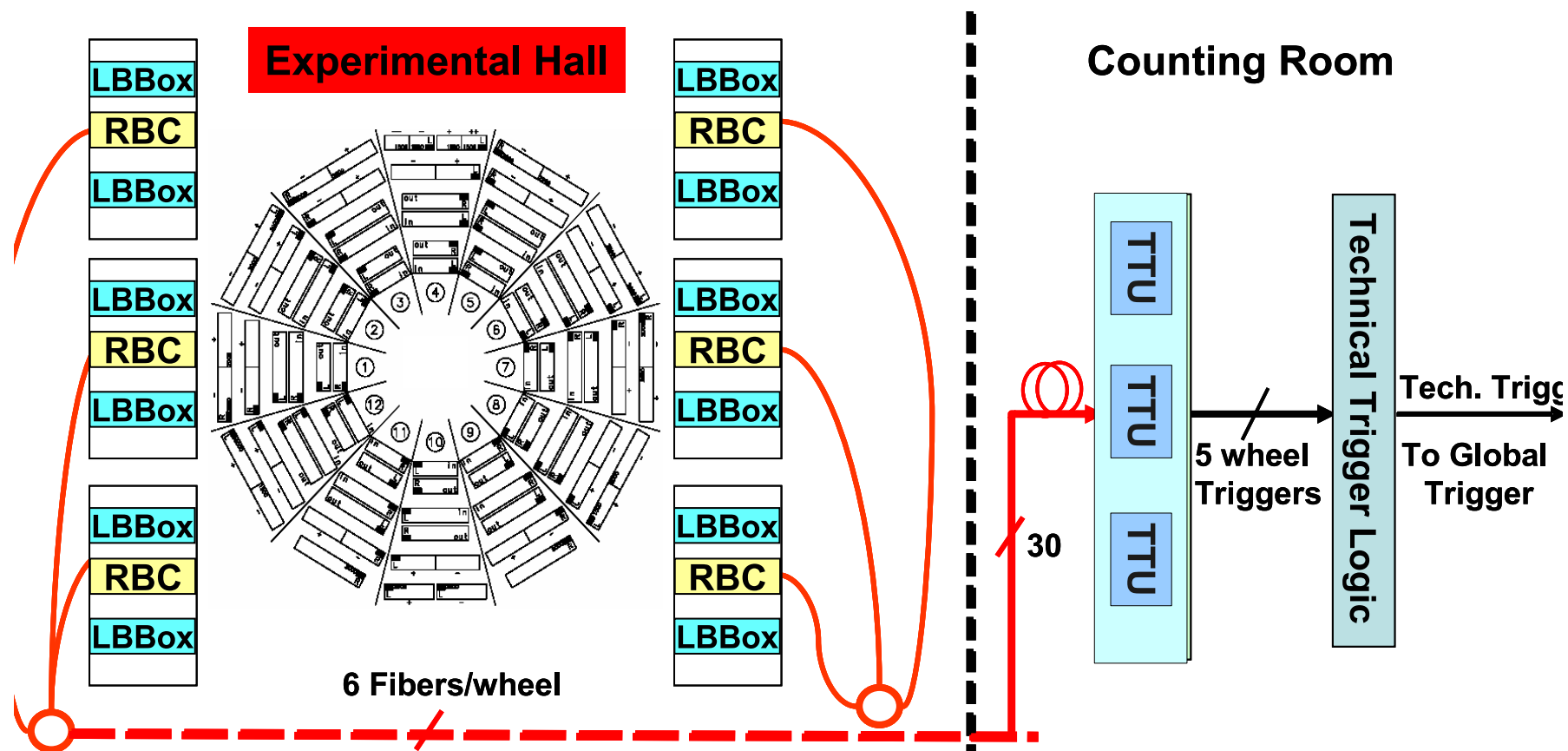
- The Resistive Plate Chambers or RPC are part of the Muon Trigger system.
- The RPC have implemented a Technical Trigger: the **RPC Balcony Collector (RBC) Technical Trigger**

In particular, the RBC-TT was designed to trigger on **cosmic muons**.

RBC Technical Trigger



New boards were implemented:



From F. Loddo (Ref [2])

References

- [1] Loddo F. *A configurable Tracking Algorithm to detect cosmic muon tracks for the CMS-RPC based Technical Trigger.* xxxxx, Mumbai, 2007.
- [2] Loddo F. *An RBC based Technical Trigger for the CMS Experiment.* xxxxx, Valencia, 2007.