



Summary of the Tracking Trigger Working Group

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Summary of the Tracking Trigger Working Group

- **The Initial CMS Silicon Tracking System Provides CMS with an unprecedented Tracking Capability**
- **At Super LHC it will be Mandatory to Provide CMS with Excellent Tracking Capability at 10^{35} but with the Additional Ability to Provide a Level 1 Triggering Capability**
- **It was Clear from Many Presentations that there Exist Many System Options for Implementing an Upgraded Tracker with Level 1 Triggering Capability and that it would Help Enormously to Evaluate these Options within a Single Straw Man Layout**



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- **Two Approaches for Providing a Level 1 Trigger were Discussed and it was Agreed to Focus on the Track Vector Approach**
- **It was Agreed to Focus on a 'Long Barrel' Design that in Addition to Providing Tracking with Triggering should also Minimize the Material in the Tracking Volume**
- **It was Agreed to Vigorously Pursue this Straw Man with the Objective of Optimizing all Tracking Systems for this Layout and to Review the Progress after One Year.**

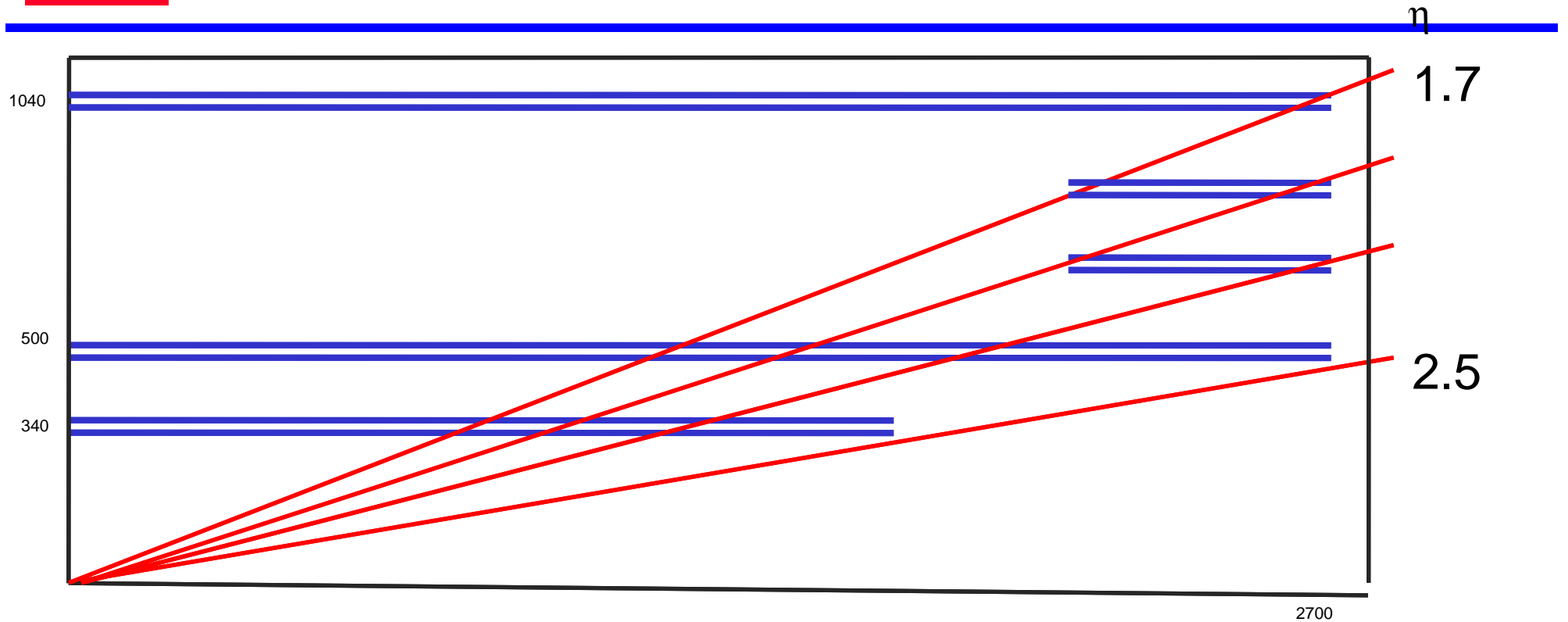


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- **In Addition to Focusing the Activities of the Simulation Working Group and the Layout Task Force it was Agreed to Partition the Required System Developments into a Number of Work Packages, to Ensure that All System Developments were Coordinated and Optimized for this Layout**
- **A Number of Groups who were Not Involved in the Initial CMS Tracking System have Expressed a Strong Interest in Contributing and Playing a Leading Role in a number Work Packages. It is hoped that more Groups will join in Future**

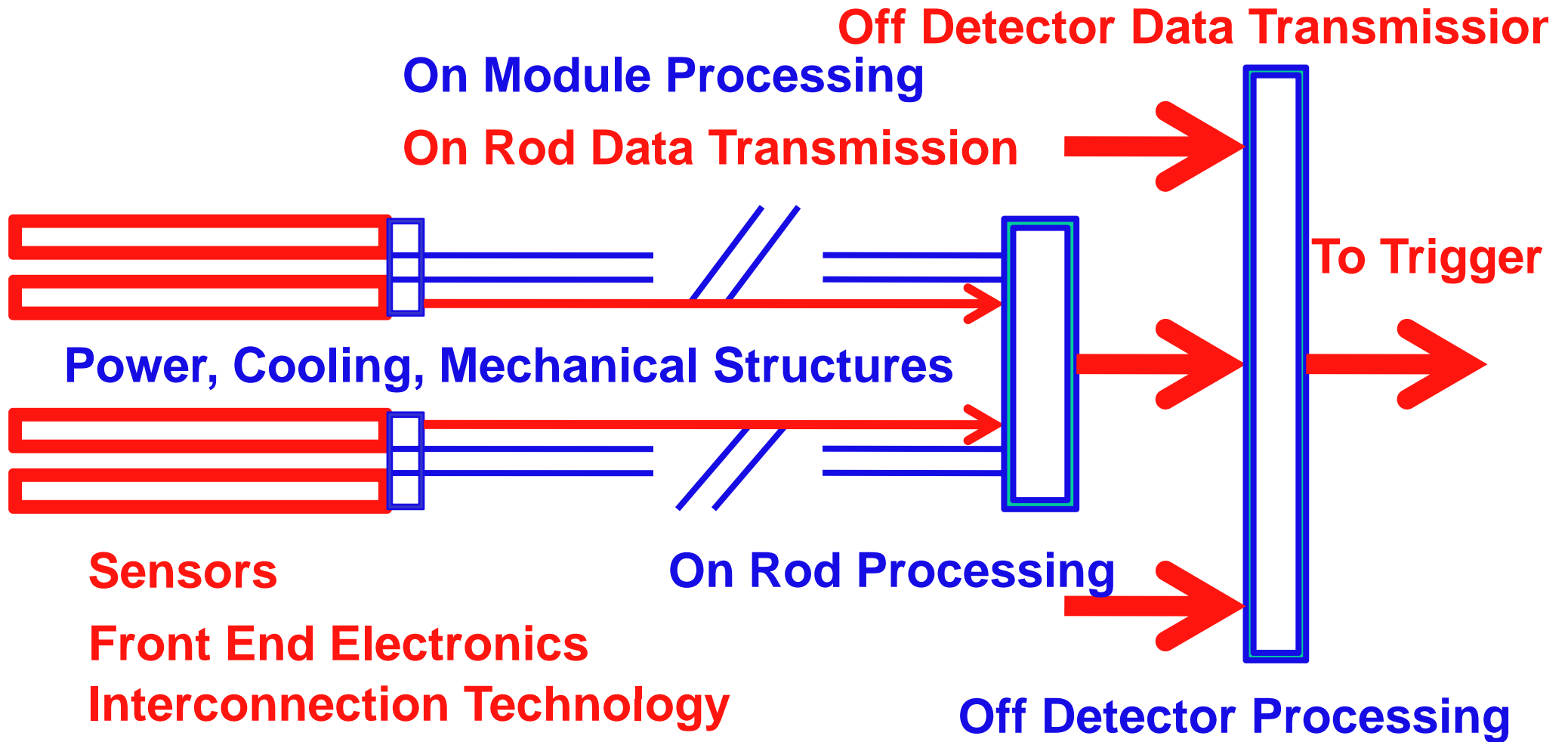


Layout for the Tracking Trigger Project





Scope of the Tracking Trigger Project





Basic Units for Tracking Trigger Project



Module Unit 100 * 100 * 2mm
Sensors, FE Electronics,
Interconnections, On module Processing

Mechanical
Structure



2 mm

2700 mm

On Rod Data Transmission

100 mm

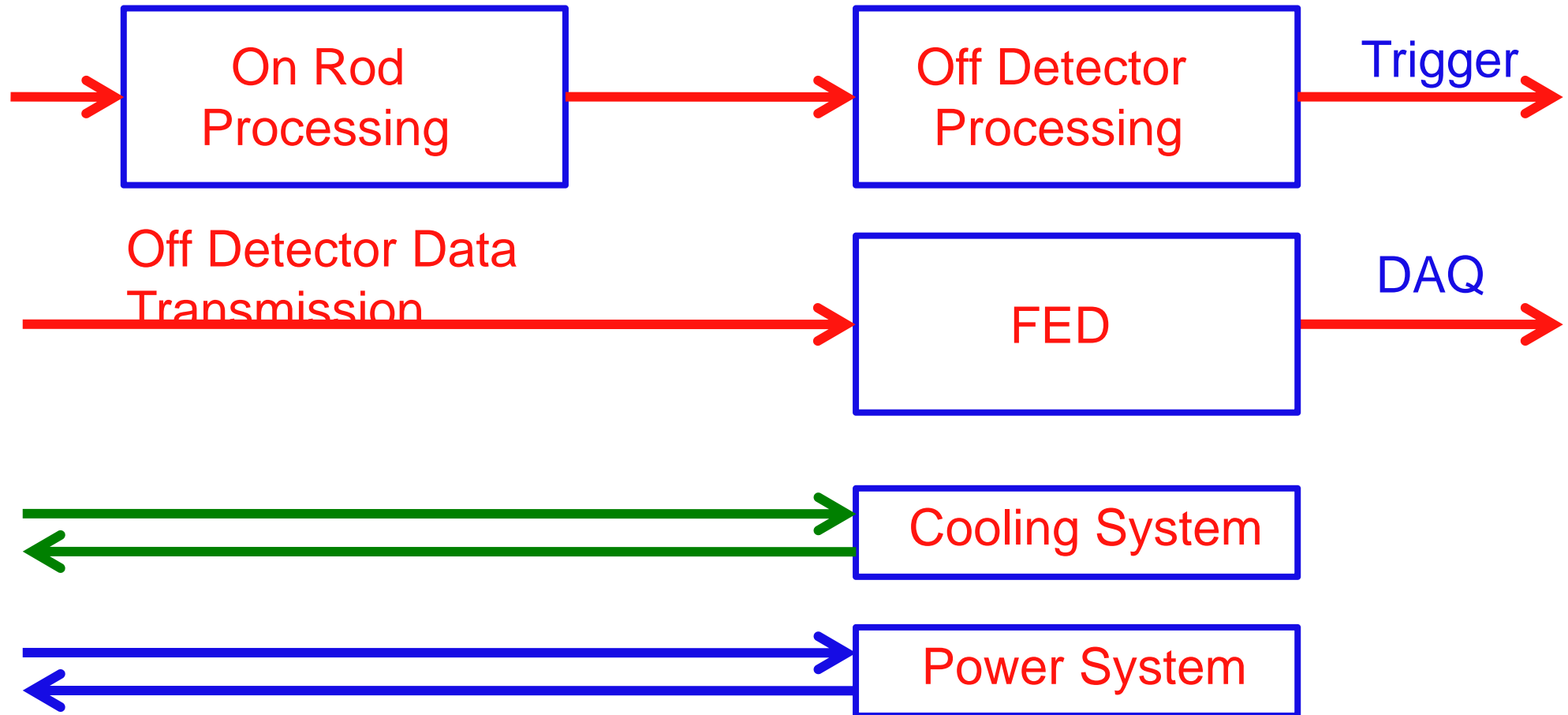
Power Unit
~12V in ~1.8V out

100 mm

CO₂ Cooling System



Basic Units for Tracking Trigger Project





Work Packages for Tracking Trigger Project

- **Module Design**
 - Sensor, FEE, Interconnection, On Module Processing, Construction
- **On Rod Data Transmission**
- **On Rod Processing**
- **Layout,**
- **Off Detector Data Transmission**
- **Optimization**
- **Off Detector Processing**
- **FEDs and DAQ system**
- **Powering and DCS System** (Grounding and Shielding)

**Simulation,
and**

**and
Systems**

Engineering



Proposed Project Time Scales

- **2009** Define and prove the Viability of All Systems within the New Straw Man and Review Progress
- **2010** Optimize the Layout and System Developments in the light of the work in 2009
- **2011** Prepare Demonstrators of all the Systems
- **2012** Prepare the TDR for an Upgraded Tracker



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- This has been a Very Productive Working Group (~ 45) which has Converged on a Number of Important Decisions
- I would like to Thank Everybody who Contributed to Defining this Exciting and Very Challenging Project, especially those Groups Joining for the First Time
- I would like to Thank our Hosts at Fermi Lab for providing the Creative Environment that made this Possible