



# SLHC-PP

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#### **Abstract:**

The technical scope and an initial cost-estimate of the ATLAS detector upgrade are available. There is still substantial uncertainty about the timescale of these upgrades but the overall scope remains.



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The Preparatory Phase of the Large Hadron Collider upgrade (SLHC-PP) is a project co-funded by the European Commission in its 7th Framework Programme under the Grant Agreement n° 212114. SLHC-PP began in April 2008 and will run for 3 years.

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## 1. EXECUTIVE SUMMARY

The overall scope of the ATLAS detector upgrade was initially discussed in the 2005-7, has been refined over the last year, and is currently being documented in a Technical Design Report for the most immediate project, and in a Letter of Intent for the overall longer term upgrade changes. There is currently substantial uncertainty about the timescale for some of these upgrades but the overall scope is here assumed to not change with respect to earlier plans. The upgrade will encompass the entire inner detector of ATLAS, the trigger system and system readout electronics, parts of the calorimeters and muon systems and beampipe and shielding components in the forward directions. The first parts of the upgrade have entered the prototyping phase and a construction organization has been put in place. The other parts are in the R&D phase and will enter the construction phase one by one in the coming years.

## 2. SUMMARY OF SCOPE AND COSTS

The overall scope of the upgrade is currently being described in two key documents:

- The IBL (Inner B-Layer) Technical Design Report (<https://edms.cern.ch/document/1011962/14>) describing the construction of a new Inner Layer of the ATLAS PIXEL system aiming for installation 2014-15.
- A Letter of Intent (LoI) (<https://edms.cern.ch/document/1020649/1>) describing the overall upgrade project. The LoI has the following scope: Physics goals and overview, the Radiation Environment at sLHC, the Inner Detector replacement, the Muon system changes, the Calorimeter changes, Trigger and Data Acquisition systems at sLHC, upgrade of the Computing, Physics and Performance studies for the upgraded detector, Integration and Installation, Organization and Schedule, Cost overview.

The costs of the changes are described in both documents, representing an update of the original cost document at: <https://edms.cern.ch/document/802647/1>.

There are two dedicated working groups representing the entire ATLAS community responsible for the studies and material needed for these two documents, and the groups have met every 3-6 weeks the last year. Their meeting schedule and agendas can be found in the restricted area of the ATLAS upgrade INDICO pages:

<http://indico.cern.ch/categoryDisplay.py?categId=350>

## 3. CONCLUSIONS

The overall scope and cost of the ATLAS upgrade are defined and in the process of being documented. The implementation schedule and in some cases technical choices will be refined over the coming 18 months as ATLAS are being operated at LHC and increased experience with the existing experimental apparatus is being built up.