

Addendum No. 10
to the
Memorandum of Understanding
for Collaboration in the Construction of the CMS Detector

Common Items for the Phase II Upgrade of the CMS Detector

Considering that:

The construction of the CMS detector is governed by a Memorandum of Understanding, along with its Amendments and Addenda, setting out the responsibilities of the different participating Institutes and Funding Agencies for the construction of the CMS detector¹ (Construction MoU).

Maintenance and Operation of the CMS detector is governed by a Memorandum of Understanding for Maintenance and Operation (M&O MoU)².

In order to be able to take full advantage of the planned High-Luminosity upgrade of the LHC, the CMS Collaboration (hereafter referred to as “the Collaboration”) has proposed in document “Financial Plan for CMS Upgrade” (CERN-RRB-2013-045) an Upgrade Phase II Project of the CMS detector consisting of modifications and replacements of existing Sub-detectors as well as new additions to the detector. This process will start in 2018 and is expected to be completed in 2026.

Proposals for Sub-detector Upgrades have been reviewed by the LHCC, based on an Upgrade Technical Proposal (CERN-LHCC-2015-010).

The financing of the Upgrades Phase II Project is agreed to be a common responsibility of the Collaboration. The overall sharing of costs is based on the principle of equity as defined by the proportionate share of PhD physicist authors supported by each Funding Agency.

Following approval by the CERN Director-General, individual Sub-detector Phase II Upgrades would be the subject of addenda to the Construction MoU, signed between the Funding Agencies contributing to these upgrades and CERN as the Host Laboratory.

For the Upgrade Phase II Project, the Collaboration has created a Common Fund to cover infrastructure costs that the Collaboration has agreed to bear at its common expense.

¹ Memorandum of Understanding for Collaboration in the Construction of the CMS Detector RRB CMS-D 98-31

² Memorandum of Understanding for Maintenance and Operation of in the Construction of the CMS Detector CERN-RRB-2002-033/2007

It is agreed as follows:

Article 1: Purpose

- 1.1 The purpose of this Addendum and its annexes is to lay down the rules governing contributions to and execution of the Common Fund in conformity with the Construction MoU along with its amendments and addenda.
- 1.2 All the annexes are an integral part of this Addendum.

Article 2: Parties

- 2.1 The Parties to this Addendum shall be all the Institutes, which are members of the Collaboration (hereafter referred as “the Institutes”) and their Funding Agencies, and CERN as the Host Laboratory. The current list of Institutes is given in Annex 1 and the current list of Funding Agencies is given in Annex 2.

Article 3: Duration

- 3.1 This Addendum takes effect from the date of its signature and shall remain valid until the start-up of the HL-LHC following Long Shutdown 3.
- 3.2 Any institute and its respective Funding Agency that joins the Collaboration subsequent to the signature of this Addendum shall accept the agreements in force and shall be expected to make an appropriate contribution to the Common Fund as shall be specified in a corresponding Annex to this Addendum.

Article 4: Contributions to the Common Fund

- 4.1 Annex 3 lists the Common Items components together with their estimated cost.
- 4.2 The Phase II Upgrade Common Fund is established at the level of 25'000'000 CHF (twenty-five million Swiss Francs).
- 4.3 Contributions to the Common Fund will be made by cash payments to a dedicated account at CERN or by an equivalent in-kind contribution to required components in agreement with the CMS Management. This Phase II Upgrade Common Fund will be managed and operated by the CMS Resources Manager together with the CMS Technical Coordinator, taking advice from the CMS Management.
- 4.4 The obligations of the Funding Agencies and their respective Institutes towards the Phase II Upgrade Common Fund are as follows:

- 4.4.1. For current members of the CMS Collaboration the Phase II Upgrade Common Fund will be shared in accordance with the principle defined in Article 9.2 of the M&O MoU (CERN-RRB-2002-033/2007) stipulating that it is proportional to the number of PhD physicist authors supported by each Funding Agency. The actual sharing percentage corresponds to the one established for the M&O-A budget in 2015 and is shown in Annex 4.
- 4.4.2 Any Funding Agency and its respective Institutes, not included in the list specified in Annex 4 (due to not being included in the M&O sharing at the time the list was established in September 2015 in view of having joined the Collaboration after this date), is also expected to make a cash contribution to the Common Fund. This contribution would be at least at a level corresponding to the lowest Common Fund contribution from any current member of the CMS Collaboration, which corresponds to approximately 36'000 CHF (thirty-six thousand Swiss Francs). The actual level of this contribution would be negotiated individually with each new Funding Agency with a view to adhering to the principle specified in Article 4.4.1 (i.e. establishing a level of contribution corresponding to the foreseen number of supported PhD physicist authors).
- 4.5 As the bulk of the financial commitments for the Common Fund fall on the period of 2018-2026, the full payments due into the Phase II Upgrade Common Fund should be made in the course of that period.
- 4.6 Payments into the Common Fund can be made in one instalment, at the start of the Phase II Project, or spread over a longer period as agreed between the CMS Management and the respective Funding Agency, with an emphasis on making every effort to collect the contributions in the early stage of the Phase II Upgrade Project.
- 4.7 All Phase II Upgrade Common Fund expenditures will be reported to the RRB.

ANNEXES

Annex 1:	List of Institutes and Contact Persons
Annex 2:	List of Funding Agencies and Representatives
Annex 3:	Components of Common Items
Annex 4:	Sharing of Upgrade Phase II Common Fund
Annex 5:	Summary of main Common Item Categories

The European Organization for Nuclear Research (CERN)

and

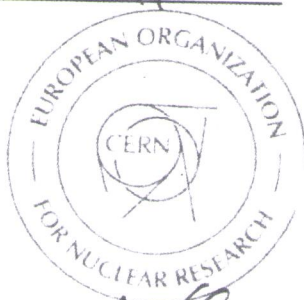
Ministry of Education and Science, Vilnius, Lithuania

declare that they agree on the Present Addendum to the Memorandum of Understanding for Collaboration in the Construction of the CMS Detector.

Signed in Geneva, Switzerland

on 19.12.2017

for CERN



Eckhard Elsen

Prof. Eckhard Elsen
Director for Research and Computing

Signed in Vilnius, Lithuania

on 12 January 2018

for Ministry of Education and
Science



Jurgita Petrauskienė
Ms. Jurgita Petrauskienė
Minister