Experimental Physics Responsibilities (EPR) in CMS

Engagement office

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1) Introduction: EPR work in CMS

In CMS, operational, maintenance, and upgrade duties and shifts are shared equitably amongst all members. The Experimental Physics Responsibilities (EPR) system provides a means of quantifying and accounting for this workload. The formalization of the CMS workload into EPR tasks is intended to help Project Managers (PM) and Area Coordinators (AC) in managing CMS tasks, and to help institutes and members to identify the best way to contribute.

The CMS constitution indicates that contributions to the CMS EPR are a requirement for CMS member institutes, and an individual responsibility. Sufficient contribution to EPR is a requirement to become a regular author (see: https://cms-docdb.cern.ch/cgi-bin/DocDB/RetrieveFile?docid=3035).

The total EPR requirement changes year by year depending on the different activities foreseen. The list of EPR tasks for each CMS project, along with a nominal assignment of 'work-months', is defined for each year by the PM/AC. The workload estimate describes the amount of time required to complete the task. The practical work pattern required to complete each task depends on its nature and must be agreed with the task coordinator.

The EPR contribution required from each CMS author is calculated by dividing the total EPR work by the number of CMS authors, and is approved in advance by the CMS MB and CB. A larger contribution is required for new CMS members applying for regular authorship.

Since 2018, the EPR contribution due per author is four months, and the EPR contribution required to become an author is six months.

1.1) EPR task classification

From 2020 onwards, EPR work is based on thirteen projects and areas (ECAL, HCAL, HGCAL, MUON, TRACKER, BRIL, PPS, MDT, DAQ, L1 Trigger, Trigger coordination, PPD, Offline / Computing) plus a General category.

Tasks are identified and characterized by:
- The project / area name (Level 1)
- Level 2
- Level 3
- Task description (optional)
- Work-months needed
- Percentage of presence at CERN required
- Category of task (Member Task, Institute Responsibility Task, Qualification Task)
- Comment

EPR tasks are classified as:

1. **Member tasks,** they can be performed by any CMS member with the required skills

2. **Qualification tasks**, they are designed to help new CMS members to meet their EPR commitments for the authorship application. They can only be pledged by new CMS members who apply for authorship, called authorship applicants for a maximum of 3 months. Qualification tasks are defined by the PM/AC in addition to the regular EPR task list, preferably for upgrade work. Pledging and approval is done in the regular EPR tool.

3. **Institute Responsibility tasks**: Important and ongoing EPR tasks can best be solved by a long-term commitment of one or more institutions to ensure stability and continuity. These tasks can be designated as Institute Responsibility Tasks (IR task) by the PM/AC after prior consultation with institutions willing to commit themselves. Only the Team leaders and PM/CA can pledge for the Institute Responsibility specifying the following:
   - the number of EPR months for the contributions
   - the institute members who will contribute to the task
   - a contact person for the IR task.
   The PM/AC approve IR tasks.
   A commitment of the institute for three or more years is expected for Institute Tasks. The list of members and the number of months to pledge can be reviewed year by year. It may be terminated after consultation with the corresponding PM/AC and informing the engagement office.

2) EPR commitments of CMS institutes and members

For CMS Institutes, the annual EPR commitment (due) is the sum of the commitments of existing authors. CMS authors changing institutes are taken into account in the calculation of the institutes commitments (dues).

The commitment and work done of authorship applicants is accounted personally and separately from the institute / authors accounting.

The team leader is responsible for distributing the EPR work among the members of the team.

For Associated and Cooperating Institutes EPR contributions are encouraged but not required.

It is the responsibility of the institution's team leader to ensure that the EPR commitment (due) for their institute is met. The workload can be distributed among the team members. EPR work by engineers, technicians and others who are not authors will be counted towards the institution's EPR commitment (due).

2.1) EPR commitments for regular authors

As a regular author, a CMS member must make EPR contributions to enable the institute to fulfill EPR commitments and be covered by the M&O contribution of the home institute to maintain the authorship status.

CMS Emeritus members qualify as authors but are exempted from financial and EPR commitments.

2.2) EPR commitments for new CMS members applying for authorship

To become a regular CMS author, a member must:

- be registered in CMS as scientist (physicist or engineer) or as doctoral student for at least 12 months and

- contribute the necessary EPR work to obtain authorship, which is currently 6 months. There is no time limit for this contribution. Contributions from one calendar year before registration as scientist (physicist or engineer) or as doctoral student are counted for a maximum of 3 months.

If these conditions are fulfilled, the new member becomes a regular author if the M&O obligations are fulfilled and the team leader raises no objection.

New CMS members who should not become authors should be suspended. Suspended members have no EPR commitments (due), their EPR contributions are credited to their institute.

2.3) Possible EPR reductions for institutes

Reduction of EPR tasks for an institute may be requested by the team leader or deputy team leader, by email to the chair of the Engagement Office, to address the following situations:

- for parental leave, full time or part-time, a reduction of EPR equivalent to one year's normal requirement can be approved once per child, and can be spread over two calendar years,
- for serious issues, such as extended illness or similar, a reduction of EPR equivalent to one year's normal requirement can be approved. The request should be sent by the institute representative to the Spokesperson and the CB Chair to ensure privacy,
- during the phase of the writing of the PhD thesis, an EPR reduction of half of the yearly due can be approved and be spread over two calendar years,
- for authors, who are paid fully or partially with M&O A/B, a reduction of the yearly EPR equivalent to half of a year's normal requirement can be approved pro-rata for the time registered to the institute.
- No EPR credit is assigned for the coordination work of L1 manager and POG/PAG conveners. However, as a special case, an institute which could not achieve 100% of its EPR due, because of having L1 managers or POG/PAG conveners in its group who were unable to contribute the individual EPR due, can request via the institute representative to the Engagement Office that the amount pro-rata to the duration of convenorship be credited to the L1 managers or POG/PAG conveners, if the 100% is then accomplished.

3) Managing EPR work - Responsibilities for EPR operations

Responsibilities of Project Managers and Area Coordinators

Projects and coordination areas update the EPR task lists for the upcoming calendar year. Tasks can be designated as Institute Responsibility Tasks by the PM/AC after prior consultation with institutions willing to commit themselves.

Project managers and area coordinators define a set of Qualification Tasks for authorship applicants.

Pledges are reviewed and approved by the PM/AC normally until the end of July and, usually at the end of every calendar year, the work done.

Responsibilities of team leaders, CMS members

- Before pledging team leaders should update the status of every CMS member, including the suspension status.
- Team leaders should first pledge the IRs after prior consultation with the PM/AC or LV2-3 coordinators.
- Afterwards CMS members and team leaders should then pledge for EPR Member Tasks and possibly authorship applicants for Qualification Tasks.

It is the responsibility of the institution's team leader to ensure that the EPR commitments are met.

Responsibilities of the Engagement Office

The CMS Engagement office coordinates the use and organization of the EPR system and proposes changes if necessary, based on experience and feedback from the collaboration:

- It oversees the creation of the annual EPR task list.
- It sends the institute EPR status to each team leader twice per year and helps members and team leaders in case of necessity.
- It reports to the Management Board and Collaboration Board on the status and operation of the system.
- It acts as a link to the CMS support team in case of problems, bugs or requests.
- It receives the reduction requests from the team leaders and registers them if approved.

Responsibilities of the CMS support team

The CMS support team is responsible for the technical implementation of the EPR system, and the tools used by the collaboration to organize and track EPR work. It supports the Engagement Office and the CMS management providing database information and statistics.