Rev. 5 15 October 2024

ALICE Service Work

This document describes how service work is organized in ALICE.

Preamble

In order to ensure the full success of ALICE operation and data taking during LHC Runs 3 and 4, a list of tasks identified as service work is established and maintained, which concerns detector maintenance, operation, calibration, quality control, data processing and outreach, as well as coordination and managerial roles in ALICE.

The ALICE service work proposal received a unanimous vote from the ALICE Collaboration Board on August 30, 2019. Service work is part of the ALICE constitution. The allocation key is the number of M&O-A members per institute or cluster. The proportion to the M&O-A contribution defines:

(1) The CPU & disk resources for grid operation and data processing & analysis: each funding agency must provide (Memorandum of Understanding, CERN-C-RRB-2005-01, and Annexes 1-11).

(2) The contribution to the ALICE M&O-A budget: each funding agency must provide (Memorandum of Understanding, CERN-RRB-2002-034).

(3) The amount of experimental shifts in the ALICE Run Control Centre (ARC) and on-call shifts: each institute or cluster must provide (ALICE constitution).

(4) The amount of service work each institute or cluster must provide (ALICE constitution).

Moreover, each doctoral student must provide a workload of 6 months of full time equivalent service, or 0.5 FTE, before graduating (ALICE constitution). This requirement results in doctoral students providing a substantial amount of service work. For this reason, the maximum amount of service work performed by an individual doctoral student is capped at 6 months FTE. Exceptions are to be discussed in the Service Work Board upon request by the Team Leader, e.g. in case of fully technical theses.

1. Definitions

Service work classes

At present, experimental shifts and on-call shifts (see (3) above) are treated separately from service work (see (4) above). However, the Service Work Board is considering integrating experimental shifts and on-call shifts into the service work to allow more flexibility for institutes or clusters to fulfill their respective allocations. For this purpose, four different classes of service work are defined as follows:

class 1 Experimental shifts in the ALICE Run Control Centre at P2 and online.

class 2 On-call shifts.

class 3 All service work that is not part of classes 1 or 2. This includes detector maintenance, operation, calibration, quality control, data processing and outreach as well as coordination and managerial roles in ALICE.

class 4 Activities of constructing, installing, commissioning, testing, and managing detector upgrades, as further specified in the section Upgrades. The related R&D activities are excluded.

Service work classes 1 and 2 are handled by Run Coordination and are accounted for separately in the ALICE shift management system (SAMS).

Service work classes 3 and 4 are handled by the Service Work Board and are accounted for in the Service Work System based on GLANCE, in terms of the effort needed for their fulfillment, expressed in Full Time Equivalent (FTE) units.

To quantify the SW effort in a general way, a conversion factor to express the shift credits in terms of FTE has been defined, as detailed in the next section.

Amount of service work per M&O-A member

Each institute or cluster must provide service work in proportion to their M&O-A contribution. The total amount of service work is expressed in FTE units. Most service work is credited with the actual workload. However, some managerial roles are credited as service work neutral, even though they may require a large fraction of the working time of the appointed person.
In order to quantify what the expression **service work neutral** means, the following definitions are used:

- T is the overall amount of service work in a fiscal year expressed in FTE units excluding roles that are service work neutral.
- M is the overall number of M&O-A team members of the ALICE Collaboration.
- P is the overall number of FTE units paid by M&O-A funds.
- κ is the average share of service work in a fiscal year per M&O-A team member.

Service work that is paid for by M&O-A funds is not credited to any individual nor any team.

A specific service work/role can be credited as service work neutral, i.e. it is credited κ FTE units; with:

- N being the overall number of service works/roles credited as service work neutral,

the value for κ can be conveniently expressed as:

$$\kappa = \frac{T - P}{M - N},$$

since the quantities $T,\ M,\ N$ and P are determined in advance for each fiscal year.

A unique evaluation of the effort needed for kinds of SW is achieved by introducing the conversion factor $\gamma = 2.2$ that represents the effective days of work corresponding to 1 shift credit. The conversion factor takes into account the fact that shifts at CERN imply extra travel days, shadow shifts, as well as night and holiday work. The conversion is necessarily approximate since shift credits reflect the responsibility level of different shift duties, while FTE units are a sheer measurement of the time needed to complete an activity.

Each institute or cluster must provide shifts in proportion to their M&O-A contribution. The number of SAMS credits λ per M&O-A member in each team is proposed for each year in advance by Run Coordination and defined by the Service Work Board. Hence, assuming an overall number of 250 working days/year, the overall effort per M&O-A team member is $\kappa + \frac{\gamma\lambda}{250}$ FTE units.

Experimental shifts and on-call shifts must be ensured by the collaboration with the highest priority. For this reason, the obligations for each institute in terms of shifts and service work class 3 are, and will be, defined separately. If needed, the institutes can do more shifts to compensate for their lack of service work class 3, but not the other way around.

Special leave

For the duration of parental leave or serious illness, an M&O-A member of an institute or cluster is not counted when calculating the shift and service work due on request by the team leader.

Upgrades

The introduction of service work ensures that ALICE is operated successfully in LHC 3 and 4. Resources, including personnel, for the Research & Development activities that lead to the preparation of a Technical Design Report (TDR) must come from additional sources. Thus an upgrade project is not credited within the Service Work system until the corresponding TDR is approved.

However, in case a doctoral student devotes a substantial part of their thesis to an approved (e.g. an LoI exists, as for ALICE 3) upgrade Project, the obligation of 6 months of service work is waived in individual cases upon request by the relevant Project Leader to the Service Work Board.

When a TDR towards an upgrade is prepared, the Service Work Board evaluates in close collaboration with the Project Leader how much service work is required for maintenance, operation, calibration, quality control and data processing as well as coordination and managerial roles within the Project. The work required to construct, install and commision the upgraded equipment is evaluated as well.

When the TDR is approved, the construction, installation, commissioning, testing and managing activities related to the upgrade project become service work of class 4. To ensure the successful operation of ALICE, only a fraction f ($f \leq 1$) of the actual workload devoted to service work of class 4 is credited to the teams. The value of the fraction f is determined by the Service Work Board in advance for each fiscal year.

Finally, once installed in the ALICE cavern, the upgrade becomes a regular detector and is thus part of service work of classes 1-3.

Analysis Facilities

An Analysis Facility (AF) provides additional computing resources that are in excess of the due (MoU, see preamble (1)). The required workforce for the maintenance and operation of an Analysis Facility is evaluated by the Service Work Board and credited as service work in case such an exception is in the interest of ALICE to ensure continuation of this AF. The status of the existing ALICE Analysis Facilities is reported by the ALICE Software Data Processing and Computing Coordinator and the Computing Resource Coordinator in a dedicated document.

Outreach

ALICE has about 12000 visitors per year with about 1000 guides. For each guide, 2h of service work per visit is credited to their team. The list of visits will be extracted by the CERN central visits database and inserted in GLANCE in an automated procedure in order to be accounted for as service work. Master classes are also credited.

Managerial roles

Managerial roles are highly rewarding, personally as well as for the team of the person being appointed. While some of these roles are potentially full-time appointments, they are credited as service work neutral.

Service-work neutral roles are defined and regularly evaluated by the Service Work Board, approved by the Management Board and regularly presented to the Collaboration Board.

Juniors

The Juniors have 3 representatives in the Collaboration Board and 3 Junior Committee members. Their service work is reviewed by the Service Work Board and credited according to the actual workload.

Analysis trains

In each Physics Working Group (PWG), up to 3500 analysis trains are run per year on Run 2 data. Train operation is largely executed by doctoral students as service work. For each train, a workload of 15 minutes is credited in an automated procedure. The processing of Run 3 data foresees a shift-like operation using the ALICE analysis train system hyperloop.
The actual expected workload for train operation in terms of FTE is estimated in advance for each year by Physics Coordination.

2. Modus Operandi

Service Work Board members

The Service Work Board consists of the Service Work Coordinator, Technical Coordinator, Run Coordinator, Resource Coordinator, the Spokesperson and their deputies, the Collaboration Board Chairperson and their deputies, a representative from the Collaboration Board, and a representative from the juniors (ALICE constitution).
The mandate of the junior representative is 1 year and renewable.

Service Work Board meetings

The Service Work Board meets monthly. The workload of the past quarter is subject to minor adjustments reflecting the actual work done. The planning of service work is updated in close collaboration with the Project Leaders and Coordinators once a year. The service work is approved by the Management Board and regularly presented to the Collaboration Board.

Assignment

Service work tasks are made available to all ALICE members from August 1, 2020 through the Service Work System based on GLANCE. Team Leaders contact the respective Project Leader/Coordinator with their request in order to reach an agreement. The Project Leader/Coordinator assigns a service work task to a team member. The affiliated institute or cluster receives the credit. In case of more than one affiliation, the Team Leaders have to agree on how the credit is shared amongst the teams.

In order to ensure continuity, mid to long term engagement of institutes or clusters to a specific task is strongly encouraged.

In case an institute or cluster encounters difficulties in being assigned their service work quota, the Team Leader(s) shall contact the Service Work Board.

In case a Project Leader/Coordinator encounters difficulties in the fulfillment of a particular service task, they shall contact the Service Work Board.

Accounting

In case an institute or cluster does not comply with providing its assigned fraction of service work of class 3, the same sequence of actions is followed as when an institute or cluster does not fulfill its shift duties. This is followed up by ALICE Management and Collaboration Board Chairs.

Start of service work

Service work started on January 1, 2021.