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PLAN - FROM LS2 TO RUN3-LS3 AND OUTCOMES FROM THE FIRST RUN3-LS3 PLAN EXERCISE

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Abstract

To complete its mission, the Run3-LS3 Installation Coordination team needs a tool to centralize and collect, at a macroscopic scale, all activities to be performed in the programmed stops for Run3 and LS3, including those postponed from LS2.

The LS2 experience and the similarity of needs made the PLAN tool the obvious choice to fulfil this function. It was created with a precise LS1 scope, used during LS2, and even if the goals/needs are similar, the PLAN tool was not developed to easily include a new PLAN or be adapted according to the specific needs : significant changes therefore had to be defined, planned, and developed within the constraints defined by the Run3 programmed stops and the LS2 completion. The transition from LS2 to this new period, and the support given in that transition, help to understand some of the reported difficulties, some of the user needs, and lead to the introduction of two new PLAN stages and training sessions for users.

The first PLAN Run3-LS3 exercise running in parallel to the development presented extra challenges ; the open communication with the users to understand their usage was key for the success of this first exercise, to improve data quality, and to identify future needs. In this first PLAN exercise more than 1800 activities were created and more than 11000 contributions requested.

INTRODUCTION

The PLAN tool was developed for and used during the previous Long Shutdowns (LS1 and 2) [7,1,2] to support the respective Committees collecting and arbitrating activities during these critical periods.

PLAN was developed around few basic concepts, where one PLAN is for one given programmed stop period with a staged lifecycle and with the possibility of having several versions. Each PLAN version contains activities that have themselves a workflow associated, and each activity can have several contributions (work requested to another group). With the Run3 Installation Coordinator nomination in March 2021 [3], the same needs were identified and the PLAN tool was the easiest choice to fulfil them.

Despite the similarity of needs, the Run3 installation frame and scope were considerably different from the LS2 period, which was one of the main triggers to adapt the tool. The additional reasons for the changes in the tool were the simplification needs and the tool limitations associated to the scope for which it was created initially for LS1 [7].

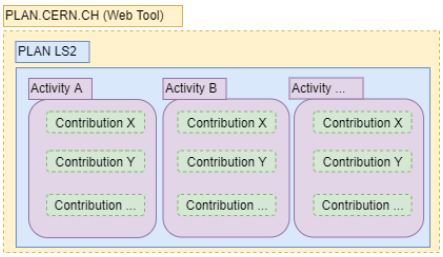

Figure 1: PLAN concepts.

Having a tool available to perform the LS2 closure exercise, develop the modification needed for Run3-LS3, considering the limited resources and the Run3-LS3 timeline, and then the declaration of activities for Run3-LS3 all within a year time scale was a challenge.

The first Run3-LS3 exercise was launched end of 2021 and closed in March 2023. The version 1 of data is now frozen and a new version 2 is available with most of the data from version 1.

STANDARD DEVELOPMENT PROCESS

The CERN Business Computing group development team in charge of the PLAN tool follows a standard development process for every new development among all the tools they manage. The process is based on a feature approach that is then divided in smaller user stories to better estimate the effort required. The business owner (Run3-LS3 team) defines the needs, and helps in the definition of features and user stories. Following this initial phase a SAFe methodology [4] is followed and smaller deliverables defined, developed and made available for test before deployment.

TOOL DEVELOPMENT

The PLAN tool was developed to fulfil the LS1 and LS2 Committee needs, but not to allow multiple PLAN active simultaneously. To integrate the Run3-LS3 installation needs, different challenges had to be surpassed and decisions taken.

Improvements and changes of the tool were deemed necessary to comply with the Run3-LS3 Coordination needs. An agreement on the team that will be the owner of the tool and on the development resources provider was reached before the start of the work. Thanks to that, it was possible to launch the development work on sound basis. The definition of changes took into account:

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- The analysis of the tool usage for LS2 through an analysis of the available data and ongoing closure process;
- The feedback received from the tool users;
- The responsibility associated to the different information available in the tool;
- The tool simplification.

The initial list of changes could be categorized in different families based on the amount of development work required:

- Parametrization: implement new list of values for fields that already existed (e.g. priorities, periods, activity type, ...);
- New developments:
  - Modifications of the existing fields to obtain different information from users (e.g. Project/study, contribution type, ...);
  - Improvement of the data quality (e.g. implement extra check gates/matrices, define new fields as mandatory, ...);
  - Changes of workflows and processes.

The first challenge once the list of changes was defined and categorized, was to define a roadmap allowing to have a tool fully operational for the LS2 closure, and a new version that was good enough to declare activities by mid-November 2021 for the Run3-LS3 installation period. Some decisions had to be made to stage the development in four phases based on what would be needed for the PLAN Run3-LS3 initialization and which functionalities would be needed for the following PLAN stages (e.g. prioritization, resources allocation, ...).

In addition to the development needed to implement new functionalities or to modify the existing ones, the development team also allocated time to the technology upgrade, the support, the tool maintenance and evolution, and to all the modifications required by the IT services. The development performed in 2021 and 2022 accounted for more than 200 workdays ; more than the same amount shall be accounted for the preparation and all the support given by the Business Computing and Accelerator Coordination groups.

Figure 2: PLAN concepts.

Phase 1

The development phase 1 was driven by the time needed for the first full process exercise, the first planned stop to be taken into account by the Run3-LS3 installation team and the time needed for the LS2 closure process. The LS2 experience showed that several months are needed to go through the full process for the first time. Hence, to have timely decisions for the YETS2022-23, PLAN for Run3-LS3 installation would have to be available by November 2021 [5, 6]. Considering this deadline and the evaluation of the development time needed for the different changes, it was decided to include in this deliverable package only changes required for the declaration of activities and left out other developments needed only for a later stage. For this first deliverable package the following goals were defined:

- LS2 Closure - PLAN does not allow to have multiple active PLANs, and developing this tool possibility would require a development effort that was not compatible with the available resources and the deadline. To overcome this limitation, it was decided to declare the LS2 Closure process finished in November 2021, freeze the data, make the PLAN Run3-LS3 available and import in the new PLAN all LS2 activities (432) not declared as finished or cancelled;
- Streamlining of the activity form - The analysis of the LS2 data and the feedback received from the groups allowed identifying ambiguous or rarely used fields in the activity form. In addition, the Run3-LS3 Installation Coordinator considers that some information available in the form for the LS2 period was too detailed and being the responsibility of the groups once they validate the contributions. These three criteria allowed to identify changes in the "General" tab of the form, mainly on the "Resources" tab.
  - The "Work Breakdown Structure" field was redefined and converted in "Project/Study" with a list of values defined by the Run3-LS3 Installation Coordination team;
  - The "Breakdown structure" field was judged to be redundant with the "Type" field and removed from the form;
  - A "Location" field was added to allow extra filtering criteria;
  - Remove the resources split between "Staff and Fellow" and "Associated Personnel - Collaboration Agreement, Contractor, Students, ...", and group them all in one single field;
  - Training sessions for the PLAN users and update of the help information - group PLAN coordinator (Group Leader), group PLAN officers (nominated by the Group Leader), and PLAN viewers.

Phase 2

The phase 2 development targeted mainly the tool functionalities required for the "Prioritization" and "Resources Allocation" stages in PLAN and to continue implementing features identified as needing changes. As for the development phase 1, this phase was driven by a deadline, that in this specific case, was the start of the prioritization stage in PLAN on 15.03.2022. For this second deliverable package the following goals were defined:

- Configuration of the priority field with the new list of values;

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- Quality control gates - Add some extra fields mandatory to ensure the critical information for this phase is available in the prioritization stage;
- Read-only view to the LS2 activities - Only 432 out of the 1257 LS2 activities were converted in Run3-LS3 activities in November 2022; it was decided a read view to all LS2 activities was needed to profit from the LS2 experience;
- Contribution enhancements - To improve quality and provide better filtering functionalities to the groups on the contributions that are requested of them, some custom drop-down fields were suggested during meetings with the support groups, and the implementation of some was requested already for the first exercise;
- Readiness for the next phase - Give the possibility to the users to move activities to the Prioritization phase or to the Resources Allocation phase, by implementing extra quality control gates.

Phase 3

The phase 3 development was devoted to the changes required for the final approval stage that would start 6th June 2022, and changes in the workflow and PLAN lifecycle. For this third deliverable package the following goals were defined:

- New activity workflow - The LS2 experience showed that some extra flexibility together with new activity status were needed. The extra flexibility was needed to allow the Run3-LS3 team to be more autonomous in moving activities back from some given status;
- Changes to the PLAN lifecycle - Configure a new list of values compatible with the Run3-LS3 installation period and introduce two new PLAN stages (Execution and Report);
- Reports - Evaluate the usage of reports during LS2 and decide on the new approach towards reports compatible with the resources available.

Phase 4

The phase 4 development was devoted to the changes required in the versioning mechanism to make the Run3-LS3 PLAN version 2 available on the 15.03.2023.

FUTURE / BACKLOG

A considerable amount of development effort was allocated to the PLAN tool during 2021 and 2022 to make it available for the Run3-LS3 period, to integrate some changes requested from the LS2 lessons learned, and to simplify the tool. Nevertheless, the Run3-LS3 experience during this first exercise shows that further modifications or new functionalities are still needed. Development resources are very limited at the moment, so a priority on the backlog list is under discussion, and a possible new roadmap under definition.

FIRST RUN3-LS3 EXERCISE

The first Run3-LS3 exercise was launched in November 2021, and aimed at collecting activities from the YETS2022-2023 up to the end of LS3 (2029). The tool was not new for the CERN groups, but few training sessions were organised to explain the goals of these new PLAN, and the different modifications added to the tool. In addition to the training sessions, several meetings were organised to support the groups in the declaration and later in contribution validation process. The declaration phase in this first exercise was also used to standardize the messages passed from the different projects to the groups regarding the PLAN activities declaration ; this helped improving the data quality in the tool. This first exercise allowed to collect 1850 installation activities and 11416 contributions, and to identify some difficulties in the workflow process due to the long time span covered by this new PLAN (from 2022 to 2029) and the link with some other parallel decision committees that themselves are also experiencing other difficulties (e.g. energy crisis, ...). In March 2023, this first Run3-LS3 PLAN exercise was completed with the transition to version 2, and thanks to the group reporting, 476 activities were left in version 1 as they were declared as FINISHED and CANCELLED.

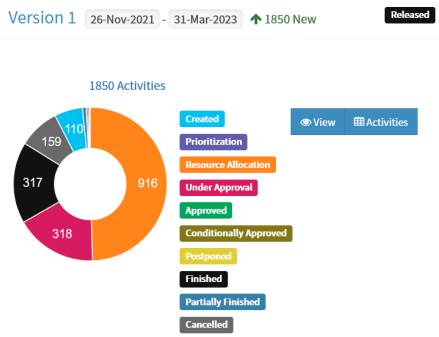

Figure 3: Run3-LS3 PLAN Version 1

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CONCLUSION

Adapting the PLAN tool for the Rum3-LS3 usage was a demanding process. The challenges were numerous, ranging from the LS2 feedback, the tool simplification, revision of functionalities, the definition of the needs, features, principles, implementation of new data quality gates, feature validation, and support to users. Having the development ongoing while using the tool for the LS2 closure and the first Run3-LS3 exercise added some constraints but also allowed correcting some issues not identified during the test phase or not identified as needed. The first Run3-LS3 exercise, completed in March 2023, was very fruitful to define single approaches among project messages, and to collect an enormous amount of installation activities (1850) and contributions (11416).

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