Planning & Plan tool

K. Foraz EN-MEF

PLAN
Methodology
Schedules
1 step - Announce what you have to do

• PLAN tool & documentation

• Machines committees: IEFC & LMC
  executive committee concerned with all technical and performance aspects of the CERN accelerator

• Long Shutdown Committee: LSC
  executive committee concerned with all technical and organisational aspects of the YETS and Long Shutdown
Prior to the start of an LS, we need to define which works will be achieved and which are the potential options, based on priorities given to activities and the resources we have.

**PLAN** = A unique repository gathering all activities for a certain period of time with a simple approval process to harmonize the method to give decision makers and the support group a clear picture of the different requests, and their impacts.
PLAN- Activity Process

Group creates activities, adds scheduling and requests contributions

- Created
  - Group submits activity for prioritization
    - Prioritization
      - Plan coordinator prioritizes and schedules all activities
        - Resource allocation
          - Group allocates resources to the activities
          - Group confirms validity of its contributions
            - Under approval
              - Plan coordinator submits activity to final state
                - Finished
                - Approved
                - Postponed
                - Cancelled

Courtesy: E. Reguero Fuentes
Plan version 1
«Released»

Plan version 2
«Open»

Activities carried to the new version:
• Draft, waiting prioritization, Waiting resources allocation, Waiting approval, Approved, postponed
• Canceled, finished

Activity 1
Activity 2
Activity 3
Activity 4
Activity 6

Stages

Plan version 2
«Released»

Archive

Courtesy: E. Reguero Fuentes
PLAN- Version 1 key dates

- Initialization: 16th September – 31st October
- Prioritization: 1st November – 15th November
- Resource Allocation: 16th November – 15th December
- Final Approval: 16th December – 15th January
# PLAN- Roles

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<tr>
<td>Plan Leader</td>
<td>J. Miguel Jimenez</td>
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<td>Plan Coordinator</td>
<td>Katy Foraz</td>
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<td>Quality Assurance Manager</td>
<td>Rachel Decreuse-Michaud</td>
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<td>Group Coordinator</td>
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<td>Group Plan Officer</td>
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| Viewer                       | Org Unit, Plan, Project, Facility, …  
  - Department Heads  
  - Section Leaders  
  - Facility Coordinators  
  - Project Leaders |
PLAN- Which activities to introduce

- **All** the activities which:
  - Can have an impact on Performance of the facilities
  - Need the support of Other groups in term of resources: studies, designs, manufacture, tests, infrastructure modification
  - Need to be scheduled by facility coordinators
  - From 2016 to end of LS2
  - *Experiments : to be discussed*
PLAN - What does it look like?
What do you intend to do?
PLÄN- Fields (2/4)

When do you intend to do?

- **Preparation**
  - Proposed Period: 2015, 01-01-2015 / 31-12-2015
  - Duration: 12 Weeks

- **Installation**
  - Duration: 9 Weeks

- **Commissioning**
  - Accepted Period: Select the accepted period...
What do you expect from others?

- Will my activity have an impact on performance?
  - *ABP might need to do some checks*

- Do I need another group to prepare my equipment (manufacture, test..)?

- Do I need the infrastructure to be modified?

- ....
Specify what you intend to do?

Please insert any documentation which can help the others to understand what you intend to do.
Methodology

“Essential steps during preparation period”
Can my equipment be installed?

• **Pre-studies:** Integration office designs the 1st draft and determine the volumes for the design offices ➤ Space reservation

• **Studies:** during ICL meetings, these pre-studies are discussed, and evolves w.r.t space & installation constraints & your detailed studies
  • Wednesday mornings (LHC even weeks, injectors odd weeks)

⚠️ Volume of transport
⚠️ Volume for the survey
Functional and Engineering Specifications to make people describe their requirements, their interfaces, their engineering

Engineering Change Request/Order to ensure the information is up-to-date at a given time, and shared with all those participating to the project to control changes through validation and update impacted specifications

CDR (Conceptual Design Report), TDR (Technical Design Reports), Schematics, 2D-Drawings, 3D-Mockups, Technical Notes, Technical Reports, Technical Datasheets, various lists, BoMs, Procurement Documents (TD, TQ, QC, TS, TF), Scientific Publications, illustrations, sketches, photos, videos
From Space reservation to ECR

Space reservation

1. Existing situation and introduction
2. Reason for the change
3. Detailed description
4. Impact on other items
5. References

ECR

1. Existing situation and introduction
2. Reason for the change
3. Detailed description
4. Impact on other items
   1. Impact on items/systems
   2. Impact on utilities and services
5. Impact on cost, schedule and performance
6. Impact on operational safety
   1. Elément(s) important(s) de sécurité
   2. Other operational safety aspects
7. Worksite safety
   1. Organization
   2. Regulatory tests
   3. Particular risks
8.References
Hardware baseline & layout configuration

- **The hardware baseline** contains all the information needed to re-build the machine, *including* Engineering Specifications, Drawing Folders, ECR, Procurement Documents.

- **Layout Database**
  - Stores the sequence (layout) of accelerator and transfer line components.
  - Equipment types and details
  - Functional positions for mechanical and electrical layouts
  - Asset names – functional position is exported to MTF database and associated to an asset. Layout just shows the result.
  - Expert name – optional, alternative functional name
Procurement

Procedures summarized at https://quality.web.cern.ch/procurement
Technical auditing - ATS

• **Aim**
  - Reduce the discrepancy along the lifecycle,
    - from the real need to the delivered supply
    - passing by the expressed need, the required supply, the designed supply, the manufactured supply, the installed supply
  - Review the tendering documents so that this real need is correctly expressed, and the way to get it is sufficiently defined
  - Ensure that the procurement rules are complied with

*Don’t be like those blind (wo)men Think it also as an elephant!*
Review and review again

Non exhaustive list

• Detailed design review
• Product readiness review
• Technical review
• Interface specifications

Suggestions for equipment/process improvement

Objectivity & fresh point of view

Maturation of your project w.r.t. facilities schedule

Quality

Risks

Better understanding of issues

Advices

Best practices (or at least good)
Coordination & Schedule

! Another puzzle to solve!

- Preparation Coordination meetings are held by the different facility’s coordinators to plan your activities during YETS and LS2.

- Groups announce their activities, technical aspects are discussed
Coordination & schedule

- Facility coordinators gradually will refine the schedule and the organization
  - From big schedule to detailed schedules
  - From a line in a schedule to a Work Package Analysis

- Schedule of Preparatory works (at CERN premises)
  - We need to understand your needs in order to evaluate resources ► Added value
  - First discussions with BE-BI, do other groups have the same expectation ??
Global picture
Schedule

- Increase intensity/brightness in the injectors to match HL-LHC requirements
- Increase injector reliability and lifetime to cover HL-LHC run (until ~2035) closely related to consolidation program
- Perform major maintenance
- Anticipate HL-LHC work
Schedules
Length of YETS & EYETS

This is a proposal for the Year-End Technical Stops and the Extended Year-End Technical Stops before the Long Shutdown 2. It defines the length of the Technical Stops in the PS, PSB, SPS and LHC accelerators. Start and end dates of the YETS and EYETS might evolve in time, but lengths need to remain unchanged.
Length of YETS & EYETS

Under approval
Injectors decabling project

- **To identify and remove obsolete cables** within the injector complex, until end of LS2.

- **First priority:** Identification of obsolete cables in the PS Booster
  - Partial / total removal must be decided by end September 15’
  - Triggered by LIU needs (room in cable containment)

- **Second priority:** SPS (BA3 and BA5)

- **Third priority:** Identification of obsolete cables in the PS, TT2, LINACs

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**Courtesy:** S. Evrard
LS2 in injector’s complex

- **Linac4**:
  - 7 months for the connection + 3 months for beam tests in the LBE line + 6.5 months of shutdown (=no work) + 5 months of beam commissioning = **21.5 months**

- **PSB**:
  - 1.5 months of RP cooling + 15.5 months of work in the machine + 5 months of hardware tests and cold check out = **22 months**
  - + 2.5 months of beam commissioning (LHCPROBE)

- **PS**:
  - 1.5 months of RP cooling + 11.5 months of work in the machine (+ 3 months of machine closed because of the Linac4 beam test in the LBE line) + 3 months of extra-time + 3 months of hardware tests (11 weeks) and cold check out (2 weeks) = **22 months**
  - + 1.5 months (6 weeks) of beam commissioning (LHCPROBE)

- **SPS**:
  - 1.5 months of RP cooling + 4 weeks of magnets tests + 18 months of work in the machine + 5 months of hardware tests (2 months + 2 months of extra-time) and cold check out (4 weeks) = **28.5 months**
  - + 1.5 months (6 weeks) of beam commissioning (LHCPROBE)

// DSO tests for the SPS = +1 week
Global view (1/3)

**Yets15**
- PSB & SPS: identification of obsolete cables
- LIU anticipating work
- ATLAS AFP installation
- CMS: cryo consolidation
- Consolidation: NA….
- ...

**EYets16**
- PSB & SPS: decabling campaign
- LIU anticipating work
- CMS: replacement of Inner tracker
- Consolidation: NA….
- ...

**Yets17**
- PSB & SPS: decabling campaign
- Consolidation: NA….
- HL-LHC: crab cavities in SPS
- ...

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**LS2**
- LIU
- LHC experiments upgrade, especially LHCb & ALICE
- HL-LHC: CE, P4 cryo, collimation…
- Consolidation: EA, accelerator complex….
Global view (2/3)

Beam Commissioning:
- 50MeV: Q4-2015
- 100MeV: Q2-2016
- 160MeV: Q3-2016

Reliability run

Connexion work

Beam start up

Half sector tests
Global view (3/3)

+ all the other approved projects during this period

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Thank you !