SL - ST Software Configuration and Management System Project

Implementation Phase

Project Definition Report
PDR/MS Word 97/Issue 1 - Revision 1 - June 15, 1998

<table>
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<td>June 98</td>
<td>First review by project team.</td>
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Document prepared by: E. Hatziangeli, H. Sobczak
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1. Preface

The Project Definition Report (PDR) is the outcome of the Project Definition Workshop (PDW) between the project sponsor, the project team and the immediate supervisors of the members of the project.

The purpose of the workshop was:

- to clarify and define precisely the purpose, the scope and the final objectives of the project amongst the project stakeholders,
- to identify the project team and,
- to gain the commitment of the project team.

This document contains a clear description of the domain of the project, the problems to be solved and the final goals to achieve that were discussed and agreed in common by the attendees.

Part of the workshop was devoted to:

- the planning of the work in terms of intermediate attainable goals (milestones),
- the estimation of completion dates for certain important intermediate milestones, as well as the end of the project,
- the identification of the available resources, including their level of commitment to the project,
- the identification of other parties or projects which are interested in the outcome of this project.

2. Management Summary

The outcome of this project will be a new Software Configuration Management (SCM) system that will replace and add new functionality to the existing SLAPS [R1] software management system.

The new system will be a set of tools and procedures that address the entire software lifecycle identifying, managing and controlling software and software related components as they change over time. This process will ensure that, at all times, the status and the locations of all versions of all deliverables are known. The status of shared objects is carefully controlled and all unauthorised changes are prevented. It will provide a controlled and managed environment for software development and it will automate the tasks of code and lifecycle management.

In May 1997, a PDW was held to define the start of the overall Software Configuration and Management (SCaM) system project. The main aim of the SCaM project was defined to be:

Find a software management system, after conducting an in-depth market survey and evaluation, port all existing projects, using SLAPS, in the new system and remove the need of the SLAPS system.
The project was separated in two phases:

- the survey phase,
- the implementation phase.

The survey phase was completed by March 1998 and a technical proposal with the evaluation of the recommended SCM systems was documented in the project's evaluation report [R2].

This PDR refers to the implementation phase, which will mainly be devoted to:

- Define a minimum standard SCM solution, which will be acceptable to all the project stakeholders (SL, ST, PS, LHC),
- Purchase or implement a tool to support the new SCM system,
- Install the SCM system into operation and make it available for use,
- Port projects using SLAPS inside the system, and encourage non-SLAPS users to incorporate their software in this system,
- Remove the need for the SLAPS system.

There are two teams participating in the implementation phase:

- The primary project team is dedicated to work exclusively on this project and it is composed of:
  
<table>
<thead>
<tr>
<th>Name</th>
<th>Position/Code</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hubert Sobczak</td>
<td>SL/CO</td>
<td>until Jul. '98</td>
</tr>
<tr>
<td>Technical student</td>
<td>SL/CO</td>
<td>after Nov. '98</td>
</tr>
<tr>
<td>Roberto Bartolome</td>
<td>ST/MC</td>
<td>until Jun. '98</td>
</tr>
<tr>
<td>Jose Luis Patino Esteban</td>
<td>ST/MC</td>
<td>from Aug. '98</td>
</tr>
<tr>
<td>Eugenia Hatziangeli</td>
<td>SL/CO</td>
<td>Project Leader</td>
</tr>
</tbody>
</table>

  SCoM primary project team

- The secondary project team is available for advice and consultation. Work will not be formally attributed to any member of the secondary team, but they agreed to volunteer their time when it is available. The members of the secondary team are:
  
<table>
<thead>
<tr>
<th>Name</th>
<th>Position/Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roberto Bartolome</td>
<td>ST/MC</td>
</tr>
<tr>
<td>Jannes de Vries</td>
<td>SL/BI</td>
</tr>
<tr>
<td>Alessandro Risso</td>
<td>PS/CO</td>
</tr>
<tr>
<td>Isabelle Laugier</td>
<td>LHC/VAC</td>
</tr>
</tbody>
</table>

  SCoM secondary project team

The PDR also contains the definition of the project purpose, scope and objectives for the Implementation phase.

In addition, it contains the strategic milestone plan and the overall project responsibility chart for this phase. These documents are techniques defined by the Goal Directed Project Management (GDPM) method [R3].
3. Background

The present SLAPS software management system was developed in CERN in the late '80s for in-house software development on the Apollo/DOMAIN system. It is based on C-shell scripts, C programs and a specific directory structure repository. The main objectives of the system were to:

- retain the current and previous versions of the control system, and versions of all source files,
- maintain a development environment for all software development,
- maintain a testing environment that is separate from the running control system software.

With the move to HP-UX as the main development platform and the use of PCs and Power PCs running LynxOS, the system was extended to allow multiple platform compilation via the use of environment variables. We are now at the point where the limitations of the present system are reached. The maintenance of the system itself is very taxing to the software administrators and extensions of its functionality are difficult to implement. This, in addition to the lack of proper procedures to allow the introduction of externally developed software, has led to the creation of this project.

The first phase (survey) of the project was completed in March 1998. It has:

- Revised the functionality of the present SLAPS system,
- Identified all users and captured their User Requirements (URs) [R4],
- Conducted an in depth evaluation of CERN, commercial and public domain solutions,
- Identified and evaluated the impact of the possible solutions on the present software development,
- Produce a technical proposal with the evaluation of the recommended SCM systems [R2].

The PDW for the final phase (implementation) achieved the commitment of the primary project team and the identification of a secondary team with direct interests in the outcome of the project.

Common agreement on the purpose, scope and objectives of the project was reached between everyone involved. Therefore, this PDR marks the start of the project lifecycle.
4. Purpose, Scope and Objectives

4.1 Purpose

The purpose of the implementation phase of the project is to provide a complete software configuration and management system capable of supporting:

- Software in the present SLAPS system,
- Software outside the domain of the present SLAPS system,
- Present and future software development for SPS, PS, LHC/VAC and for the control of CERN technical infrastructure,
- Future software development by external contractors,
- Future technology trends (JAVA).

The new system will solve the following problems:

- Documentation management,
- Software Problem Reporting,
- User working shell (csh, bash, ksh, etc.) independence,
- Common software repository, which will facilitate the exchange of software between SL/CO and PS/CO [R5],
- Software Management system for the future LHC software,
- Rationalisation of software management practices,
- Properly supported software management service.

The benefits of the new system will be:

- A simpler system to be maintained by SL and ST,
- A single software configuration and management environment, which will ease the exchange of personnel and the software development,
- Development of thorough guidelines concerning the construction, integration and installation of operational software and the introduction of software modifications,
- Transparency of software and information,
- Platform independent development.
4.2 Scope

The work necessary to achieve the purpose outlined above includes:

- Review of the User Requirements [R4] collected during the survey phase and the recommendations [R2] made in the end of this phase, in the light of:
  - Future technology trends (JAVA, Microsoft Development environment),
  - "Services for computing at CERN" project [R6],
  - New project stakeholders:
    1) SL/BI
    2) LHC/VAC
    3) PS/SL convergence project [R5].
- Run a prototype solution based on the revised recommendations,
- Obtain agreement amongst all the stakeholders on which solution to choose from the recommended ones,
- Identify a minimum standard SCM solution (tool set-up and CM procedures), which is applicable to all the stakeholders,
- Identify training needs for the team members, end users and future system administrators,
- Identify the necessary resources for the day-to-day operation and user support of the SCM system,
- Purchase or implement a SCM tool to support the minimum standard solution,
- Install the minimum standard SCM solution,
- Port SLAPS software into the new system,
- Evaluate the relevance of porting the LEP software in the new system, in view of the short LEP lifetime,
- Make minimum standard SCM solution available to the users,
- Remove the need for SLAPS,
- Develop guidelines and documentation for end users and future system administrators,
- Advertise the new system in CERN.

The work of this project does not cover:

- The day-to-day operation and user support of the new system after the facility is delivered and the project is formally terminated,
- The introduction of new software projects in the SCM system, which remains the responsibility of the software owners,
- The development of guidelines for good software development, for testability and for operability of production software.
4.3 Objectives

Identify a minimum standard SCM solution and gain its acceptance from:

- SL/CO,
- SL/BI,
- ST/MC,
- PS/CO,
- LHC/VAC

Install the minimum standard solution, make it available for use and eliminate the need for SLAPS.

A list of different service scenarios (CERN, Russian collaboration, commercial companies, etc.) could be used to bring all concerned software in the new management system.

Non-SLAPS users will be encouraged to incorporate their software inside this system.

5. Work Breakdown Structure

<table>
<thead>
<tr>
<th>PHASE</th>
<th>END DATES</th>
<th>OBJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Definition Workshop</td>
<td>May 1998</td>
<td>Production of the project definition report</td>
</tr>
<tr>
<td>Implementation</td>
<td>June 1999</td>
<td>New SCM system operational and available for use. No need for SLAPS.</td>
</tr>
</tbody>
</table>

5.1 Project Definition Workshop

The milestone plan was defined during the project definition workshop and it was further refined by the primary and secondary project teams.

The responsibility chart was drawn after the workshop and all the people involved in the project agreed upon it.

The milestone plan and the responsibility chart are found in the appendices A and B.

5.2 Implementation phase

This project phase will be completed when the new SCM system is operational and available for use and the need for SLAPS is eliminated.

It was agreed that this objective should be reached by the end of June 1999.

5.2.1 Milestone Plan

The milestone plan represents a logical network for the project. It is the framework, which defines the intermediate results to be achieved in order to reach the final objective of the project.
5.2.1.1 Result Paths

The milestones are grouped into areas of work that are called Result Paths. The result paths, found in the milestone plan, are the following:

M: Management decisions,
I: Implementation,
T: Training and communication.

5.2.1.2 Milestones Definition

The circles on the milestone plan represent the milestones and the lines joining them represent the logical dependency between the milestones. Each milestone is an event in time. They represent the packages of work to be done and are defined by the results they deliver. The work in a milestone can be started before the previous milestone has finished, but the end of one milestone depends on the end of the previous one (end-to-end dependency).

6. Project Organisation

The project organisation of the implementation phase is defined by the Project Responsibility Chart (Appendix B). It defines the roles and responsibilities to achieve the milestones described in the milestone chart (Appendix A).

7. Project Management System

7.1 Project Planning Procedures

The technique for planning and controlling the project will follow the "Goal Directed Project Management" approach [R3]. This includes the use of the following techniques:

- The PDR which defines the precise project purpose, scope and objectives,
- The project milestone plan and the responsibility chart for each phase of the project,
- The activity chart or status report for each milestone of the project,
- The project status reports.

There will be regular project reviews, where all the technical and managerial decisions for the project will be taken by the project team.

Each review will be organised with:

- Objective(s) to be reached,
- Agenda,
- Special preparation by the members of the project team (if applicable).
A list of open issues will be maintained throughout the duration of the project and it will be reviewed during each project review.

Decisions at the functional management level (including the amount of work each project member can devote to the project, additional staffing if necessary, and objectives) will be taken jointly by the following people:

- project leader,
- SL/CO/AP and ST/MC/IN section leaders,
- SL/CO and SL/MC group leaders.

### 7.2 The Project Team

At the project launch time, the primary project team is composed of:

- 2 members of the SL/CO/AP section,
- 1 member of the ST/MC/IN section.

The primary team will participate fully in the work involved in the project and it will follow the project till the completion.

The secondary team is composed of:

- 1 member of the SL/BI/SW section,
- 1 member of the PS/CO front end software section,
- 1 member of the LHC/VAC/IN section.

The secondary team will participate in all the project reviews up to the completion of the M4 milestone (*definition of the minimum standard solution*). Each member of this team has agreed to volunteer part of his/her time to the work involved to reach this milestone.

Representatives of the users and experts from other divisions of CERN will be involved at appropriate times during the execution of the work.

The project leader will manage and control the evolution of the project as well as participate in the work inside the project.

The work distribution for the primary project team and the involvement of the secondary team will be defined in the responsibility and activity charts.

### 7.3 Tools and Documentation

All project information will only be available on the WWW. This is the only place where documentation is guaranteed to be up-to-date. The project WWW address is:

http://venice.cern.ch/~slaps/hot/SCAM_II/index.html

The GDPM V1.0 software will be used to manage the project and to produce the GDPM milestone plans, responsibility charts, activity charts and milestone reports for each phase of the project.
There will be minutes produced from each project review.

All the above documents will be posted to the WWW.

8. Project Budget

A budget of 15000 SF is set aside for this phase. It will be used:

- to buy licences for the recommended SCM system to run the prototypes,
- to obtain consultancy from SCM experts,
- to finance the additional manpower required to port the SLAPS software into the new system.

9. Acknowledgements

This PDR is the outcome of the Project Definition Workshop. Many thanks to Bernard Denis for heading the workshop and introducing the ideas behind Goal Directed Project Management.

10. References


Appendix A

The Project Milestone Plan

The project milestone plan identifies the various milestones that must be met in order to reach the end result. Milestones are identified by circles and the lines between them show the time dependency between milestones (end-to-end relation). End dates for the most important milestones are also provided.
## Appendix B

### The Project Responsibility Chart

The project responsibility chart identifies the different entities, in CERN or outside, that will be involved in the activities required to meet the milestones.

<table>
<thead>
<tr>
<th>Task</th>
<th>Milestone</th>
<th>X</th>
<th>D</th>
<th>d</th>
<th>P</th>
<th>T</th>
<th>C</th>
<th>I</th>
<th>A</th>
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<tr>
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<td>PDR approved</td>
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<tr>
<td>M2</td>
<td>Revises URS's exist</td>
<td>X</td>
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<tr>
<td>M3</td>
<td>SCM prototypes develop</td>
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<td>Support &amp; reviews approved</td>
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</table>

Below are the different roles and the abbreviations used on the responsibility chart:

- **X** - executes the work
- **D** - takes decision solely
- **d** - takes decision jointly
- **P** - manages progress
- **T** - provides tuition on the job
- **C** - must be consulted
- **I** - must be informed
- **A** - available for advice