Software Engineering Group Projects – Project Management Standards

Author: C. J. Price
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Department of Computer Science
Aberystwyth University
Aberystwyth
Ceredigion
SY23 3DB

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1. INTRODUCTION

1.1. Purpose of this Document

This document specifies the major tasks that have to be carried out by the Project Leader with the assistance and advice of the Project Manager.

1.2. Scope

This document specifies organisational roles, identifies major tasks, naming conventions for tasks, project planning including task allocation, milestone and deliverable specification, and management activities.

This document should be read by all project members.

It is assumed the reader is already familiar with the QA Plan [1]. This document also references QA document SE.QA.08, *Operating Procedures and Configuration Management* [2], and readers concerned with Configuration Management should also read that document. Interesting general information on project management is available in [3] and [4].

1.3. Objectives

The objective of this document is to provide a frame of reference for project management activities. It should aid the Project Leader in

- identifying tasks to be executed during the project
- planning those tasks
- ensuring the tasks are monitored and assessed

such that the project is completed successfully (i.e. it is on time, to budget, and meets the client's specified requirements).

2. ORGANISATION

Each project will have a member of staff as a *Project Manager*, and a student from the group as *Project Leader*. The method of appointment and duties of the Project Leader are described in section 2 of the QA Plan [1].

The quality assurance activities of the project will be overseen by the *Quality Assurance Manager* (QA Manager) who is responsible for adherence to the QA Plan, for writing QA procedures where appropriate, and for conducting reviews and audits of the project tasks and deliverables. The QA Manager will also take minutes at meetings. It is thus the QA Manager's job to make sure that all members of the Project Group are aware of the QA procedures that apply to their tasks, and to ensure that those procedures are carried out.

The Project Leader and the QA Manager roles are the two major supervisory jobs taken by Project Group members. QA Manager is a fairly full-time activity, but the Project Leader should also have time to take on some technical or documentation task.

Various other major activities are carried out by the Project Group, and it is common for one group member to carry out several of these activities. The Project Leader is responsible for allocation of project members to specific activities, including the appointment of the QA Manager.

3. MAJOR ACTIVITIES

The major activities which must be carried out are outlined below, but it should be remembered that other minor activities will occur that are not listed in this document.

Project management – monitoring and directing progress on the project.

Quality assurance - all activities and functions concerned with the attainment of quality; includes the dissemination of QA standards to all group members, writing of extra QA procedures where necessary, conducting reviews.

Spike work - Exploratory coding to select and establish the suitability of specific techniques, libraries, or other technologies for specific aspects of the product and to develop expertise in their use. These aspects will be the high-risk ones, taking into account the expertise of the team members, and the desired product capability. The spike work will prepare the team to produce a design document, and will give confidence that they are able to deliver the final system.

Designing the system - working from the provided requirements specification to produce a design specification document detailing how the facilities will be implemented. This will be achieved through doing spike work to de-risk the design.

Writing the code - working from the design specification to produce source code that matches that design.

Testing the system – the specification and execution of tests designed to demonstrate that the system satisfies the requirements of the customer; this may involve writing test harnesses and the execution of several levels of testing, from unit to module to subsystem to full system testing, ending with acceptance testing carried out in conjunction with the client.

Producing maintenance information - the development of documents (e.g. a maintenance manual) and tools (e.g. Shell scripts, Makefiles) which will provide instructions or automated facilities regarding how modifications can be made to the software, and how to rebuild it.

Producing the end-of-project report - the development of a report summarising the activities and final state of the project, identifying the activities carried out by each group member and describing their experiences of the project.

4. PROJECT PLANNING

The Project Leader will develop and maintain a list of project tasks throughout the project. The list will be used to make explicit all the activities of the project, to identify milestones and deliverables, and to enable the assessment of the state of progress of the project.

4.1. Project Plan

The Project Leader will produce a bar chart for the duration of the project. This will be done after week 3 of the project, when the project leader will be appointed, and after a good deal of early investigation has been done. It will indicate the main tasks that need to be done in order to produce a working system by the end of integration week.

4.2. Deliverables

The list of project tasks for all group projects must include production of the documents listed in the *DOCUMENTATION* section of the QA Plan [1] as deliverables. The software and associated tools (e.g. shell scripts, makefiles) should also be included as deliverables. Listings of all software items must be delivered as well as the software itself, and the team should make clear how the software can be rebuilt.

Each deliverable must be given a unique reference on the list of project tasks, which should be the configuration reference allocated according to the procedure detailed in QA document SE.QA.08, Operating Procedures and Configuration Management [2]. This matches the relevant task identifier. For example, the Test Specification might be SE_B_TEST_01.

The software will comprise many individual items (e.g. a collection of package specifications and package bodies plus one or more subprograms). The deliverable reference used for the software delivery will denote a script or batch file which will extract from the configuration management system the "appropriate" versions of the software items comprising the final system, and compile the code into an executable system. The appropriate versions of software items are the versions of the software items which comprised the system that passed the acceptance tests. Use of this script file is described in QA document SE.QA.08, Operating Procedures and Configuration Management [2].

5. PROJECT MONITORING

5.1. Weekly Tutorial Meetings

The Project Manager will meet regularly with the group in order to:

- monitor progress, and confirm work for the following week;
- detect potential schedule slippage;
- adjust plans associated with later development phases in the light of current circumstances;
- discuss project management techniques.

5.2. Progress Reporting

All team members must keep a blog for their work on the project, and provide a link to the blog to the other members of their tutorial group. The blog should report each time they worked on the project - what they did and how many hours it took. Time spent in the weekly tutorial should not be included in the blog. It is best if the blog is updated every time work is done, but it must be up to date by 5pm the day before the weekly tutorial. The Project Leader must collect information on time expended once per week and produce a summary progress report to present to the Project Manager and the team at the weekly meeting.

All blogs should be submitted as an appendix to the final report.

5.3. Reviews

A review is a formal meeting of relevant group members to scrutinise a deliverable. It is a detailed examination of an item, typically a specification, and is used to decide whether the item is complete. Any problems discovered will be recorded and changes needed will be initiated. A review is intended to detect but not correct, since its aim is to spot problems, and to note actions or changes that must be carried out subsequent to the review by the authors of the item being reviewed.

The procedures to be followed in conducting reviews are specified in QA document SE.QA.07, Review Standards [5].

The Project Leader should ensure that reviews are conducted at appropriate points in the project.

REFERENCES

[1] QA Document SE.QA.01 - Quality Assurance Plan.

[2] QA Document SE.QA.08 - Operating Procedures and Configuration Management Standards.

[3] F. P. Brooks, The Mythical Man Month, Addison-Wesley, 1975 (see ASPIRE reading list for module).

[4] I. Sommerville, Software Engineering, 10th Edition, Addison-Wesley, 2016.

[5] QA Document SE.QA.07 - Review Standards.

[6] QA Document SE.QA.02 - General Documentation Standards.

DOCUMENT HISTORY

Version	*CCF No.*	*Date*	*Changes made to document*	*Changed by*
1.6	N/A	18/11/09	Changed group letter to be group number to match present situation	CJP
2.0	N/A	11/05/12	Simplified process	CJP
2.1	N/A	21/12/16	Updated for single semester projects	CJP