Project management report

Roberto Casadei
roberto.casadei12@studio.unibo.it

September 22, 2014

Contents

Glossary

Board of Directors Also known as board of governors, board of managers, board of regents, board of trustees, board of visitors, or simply "the board", it is a body of elected or appointed members who jointly oversee the activities of a company or organization, it provides direction and management for the project. viii

COS Criteria by which the outcome of a contract, program, or project may be measured. 3

POS Document that succintly describes what the project is about.. 3

Project Board Also known as the Steering Committee, it provides direction and management for the project. viii

Project Sponsor Also known as the Executive Sponsor or the Senior Responsible Owner, the Project Sponsor is ultimately accountable for the success/failure of the project and has to ensure that the project is focused on achieving its business objectives. The sponsor owns the business case for the project. . viii, 3

RAM Matrix that shows how the project participants are mapped onto the project activities.. 22

Steering Committee See the Project Board.. viii

Acronyms

CEO Chief Executive Officer. vii

CIO Chief Information Officer. 74

COS Conditions of Satisfaction. 3, 5, 17

CTO Chief Technology Officer. viii

EVA Earned Value Analysis. 25

HR Human Resources. 15

IBPP Integrate Business Planning Process. 11

JPPS Joint Project Planning Session. 3, 11, 12

KPI Key Performance Indicator. 26

PDS Project Description Statement. 11, 12

PMLC Project Management Life Cycle. 3, 5–7

PMO Project Management Office. 3, 11, 17, 18, 20, 22, 23, 75

PMP Project Management Plan. 19

PND Project Network Diagram. 13, 17, 19

POS Project Overview Statement. 3, 9, 12, 13

QA Quality Assurance. 12, 22

R&D Research and Development. 2, 6

RAM Responsibility Assignment Matrix. 22

RBS Requirements Breakdown Structure. 3, 5, 8, 12, 17

RsBS Resources Breakdown Structure. 17, 18, 20

TTM Time-To-Market. 4

WBS Work Breakdown Structure. 12, 13, 17–19, 26

WIP Work In Progress. 9

0 0
0

Preface: a meta-report

This is a report about the report itself.

It is difficult to show how project management works in both depth and breadth and, at the same time, clearly describing it from different **points of view**.

As a consequence, I have made some trade-offs, choices, and I have focused more on certain aspects than others.

Here are some considerations about how this work has been carried out:

- The work is representative of the iterative nature of management activities and I do not pretend it to be considered "complete" as long as it delivers what it is supposed to transmit (i.e., my understanding, both practical and theoretical, of project management).
- The structure of this report **reflects the terminology and the guidelines suggested by the PMBOK[2] standard** (see the Table of Contents as well as Section 6.1 for mappings to PMBOK's Knowledge Areas). This choice allows me to cover my project endeavour within a well-defined viewpoint and stress the importance of following a systematic (rather than unmethodical/indiscriminate/random) and standard approach.
- The report contains a "Strange Loop" (see *GEB* ☺) in the sense that it tries to deliver what it is trying to describe for the chosen fictional project (e.g., the use of English, the systematicity of the approach, the use of standards, the traceability of artifacts/decisions)

Instead, here are some aspects about Project Management which I would like to stress:

- **Complexity of a real-world scenario**: through the choice of a "complex" project (strategic, R&D, multi-phase) developed by a "complex" organization (big, distributed)
- **Organizational context**: the project manager works within an organization, so I think it is important to give a sense of what it is all about (e.g., its structure, its roles, ...)
- **Use of a systematic approach to project management**: organization and planning apply to the management activity itself
- **Importance of linking decisions, principles, artifacts**

Introduction

This document represents **the report of a fictional project management effort** carried out by Roberto Casadei in the context of *Project Management* - a course within the Master Degree in Computer Science and Engineering at the University of Bologna.

0.1 The conception

Edu@Home is an **ICT organization operating in the field of Education**. Its goal is to provide software-based services and solutions for students all around the world. It is located in Italy, with the corporate headquarters in Milan and 5 branches across Europe and Asia.

The Chief Executive Officer (CEO), while discussing corporate strategies for the new year with the senior management, sketched **the vision of an innovative e-learning eco-system aimed at providing students with a platform supporting many of their day-to-day study activities**. This would also endorse and increase the value of the solutions delivered by the projects completed in the last 5 years.

In the next weeks, the Marketing department of the company in Oslo carried out an **in-depth market analysis** looking for actual opportunities. The research pointed out many interesting facts

- students using software-based systems seems to be far more effective with respect to those who prefer traditional approaches
- students often underestimate the actual time they need to fullfil their homework and study activities
- students in general, and especially brilliant ones, notice how little they retain of what they learn while preparing school works
- typically, students working in group obtain better results with respect to the average

As a result, the senior management decided to start a project with the goal of **studying the market in order to define a set of requirements and a high-level architecture of the solution. Ideally, a mockup (prototype) of the system should also be built.** Moreover, the senior management identified the following aspects/properties as being essential for an (innovative) e-learning system:

- *multi-platform*: desktop, Web, and mobile applications should provide access to the services
- *flexibility & customizability*: recognizing and adapting to the peculiarities/differencies of students across the world
- *semantics*: Semantic Web technologies should support the activities
- *sharing & collaboration*: recognizing the importance of interaction in learning

The organization has strong expertise in mobile/Web development, while there is a lack of competencies regarding Semantic Web technologies.

Edu@Home foresees the possibility to apply for a grant support within the European Union funds.

0.2 Project commencement

After a meeting of the Board of Directors of Edu@Home, the executive management resolves to start a Steering Committee (aka the Project Board) with the goals of taking strategic decisions about a new project.

The Steering Committee is the project governance committee and consists in the Project Sponsor, the Chief Technology Officer (CTO) and the senior managers from Research & Development, Planning & Engineering, and Marketing departments.

The committee meets and decides to **launch a project** which purpose is to gather information and sketch a preliminary architectural solution to the problem. Such a project is expected to justify the birth of an entire program of projects and also provide the inputs and the constraints for the other projects in the program, thus determining whether such projects satisfy all the prerequisites for their launch (according to the *phase-gate model*[1]).

For the purpose, a **project manager is elected in the person of Roberto Casadei**. He is **hired externally** as decided by the steering committee because of the gap found between the consolidated strategic management layer and the management inexperience of the architects (which are however very strong technically). Because this new project is strategically important and requires a strong tactical manager which must keep the project aligned with the organizational direction and has to bridge the gap between technology and business, the success of Roberto Casadei in the field brought the committee to choose an external person for the project manager role. The initial overhead resulting from the need of Roberto Casadei to familiarize with the new environment has been evaluated and is considered to be worth the case.

Project Decision Point 1
The project is launched with the aim of collecting and analyzing information in order to establish if it represents a "good" endeavour. Once the project scope is better defined, we will be able to decide if it is worth to be executed.

I made this report follow the Traceability Principle2: it contains cross-reference links which create followable path from management actions/decisions/events to project artifacts, organizational artifacts, and principles/facts/techniques.

See more about the organization (e.g., the Organization Chart) in Appendix A
See the Steering Committee Charter Template at Section B.1
See the Steering Committee Charter at Section 7.1

[1] http://en.wikipedia.org/wiki/Phase-gate_model

Part I

Project Management Documentation

Chapter 1

Initiating / Scoping: Management Documentation

1.1 The first days of the project manager [1]

As a newly elected project manager, **I need to get acquainted with the organization (its structures, processes, policies), with the people (at least at levels directly above and below), and with the business problem at hand**.

Let's start in order. I need to know the organization in order to set the context for everything I do. My activities and interactions are affected not only by the organizational structure but also by the organizational culture and policies.

In practice

- the Administrative Office gives me some documentation about the organization (see Appendix A) (such as the organization chart A.1.1, the charts of the functional areas where I am going to work with, and high-level descriptions of the ongoing business processes)
- I am given a person who presents me to the groups and guides me through the departments for the first days
- an office has been already prepared and is operative, with a workstation which I can readily use to launch communications e do some initial stuff (bureaucratic and not).

I arrange **meetings** with the CTO and the managers from the Planning&Engineering, R&D, and Marketing departments in order to better define our mutual expectations and to gain insights about how much the strategic goals are visible as well as how the work is organized at a high-level. Then I ask them for feedback about business analysts, requirements engineers (plus architects, engineers, and testers for later stages) who might be included in the project team.

Insight 1

It is not accidental that what I do as a project manager and what I report about this management endeavour is more about people than about technology. See Fact1 and Fact2.

1.2 Definition of the Conditions of Satisfaction

Insight 2

Let's remember that **the "customer" for this project is the organization itself**, which desires to invest its gains to integrate old and new solutions into a new, unified, and comprehensive e-learning platform.
The Conditions of Satisfaction (COS) should define *what* has to be achieved together with its expected *benefits* and *detriments* (if any).

As the project manager, **I am involved in the process of agreement of COS**. The COS is defined by the Project Sponsor together with the **key stakeholders**, including the CEO and members from the Board of Directors. The COS states what has to be achieved and within what conditions. So, I have to negotiate and, when the COS is established, I have to abide by it.

See the COS at Section 8.1

1.3 Project scoping meetings

A lightweight plan for project scoping has to be defined.

I and the project sponsor, with the help of a member of the Project Management Office (PMO), set up a **provisional schedule for the project scoping meetings**, which is then communicated to all the attendees:

July 21, 2014	Introduction/discussion of the COS and start of the works
August 4, 2014	Collective discussion and analysis of results from market analysis and definition of high-level requirements
August 12, 2014	First Joint Project Planning Session (JPPS) (see Section 2.1.1)
August 18, 2014	Collective discussion and analysis of results from market analysis and definition of high-level requirements
September 1, 2014	Project classification and choice of an appropriate Project Management Life Cycle (PMLC) model
Septembre 8, 2014	Presentation of the business case
September 15, 2014	Collective discussion and analysis of results from field studies and from requirements gathering
September 29, 2014	Collective discussion and analysis of results from field studies and from requirements gathering
October 13, 2014	Collective discussion of results from requirements analysis – construction of the Requirements Breakdown Structure (RBS)
October 27, 2014	Collective discussion of results from requirements analysis – construction of the RBS
November 3, 2014	Collective discussion of results from requirements quality assessment – refinement of the RBS
November 10, 2014	Collective discussion of results from requirements analysis – refinement of the RBS
November 17, 2014	Collective discussion and analysis of results from feasibility studies
December 8, 2014	Collective discussion and analysis of results from feasibility studies
January 12, 2015	Definition of the Project Overview Statement (POS)

This is the most important phase of the project and is expected to take a lot of time and effort. There is no stringent Time-To-Market (TTM) requirement, and I believe in the long-term benefits that result from carrying out this phase effectively. It does NOT mean that the outputs from this phase are immutable.

Insight 3

The logic behind this agenda is the following:

- The **market analysis provides motivation** (the WHY) for the project: it allows to understand if the project is relevant from a business point of view and what business opportunities and constraints have to be considered
- The **high-level requirements establish the most important objectives/features**: they provide loose boundaries that help to set the focus without hindering creativity
- The **requirement gathering activities provide input for requirement analysis** and **include field studies** to provide concreteness and to better represent the matter from multiple points of view
- The **requirement analysis transforms the collected information into requirements and constraints** which also have to be checked and revisited against quality checkpoints (**requirement quality assessment**)
- Such knowledge should provide enough inputs for choosing a **lifecycle model** for the project
- Finally, the **feasibility studies** determine, by comparing the scope, the constraints, and the available resources what **strenghts and weaknesses** exist in the project as it is currently defined

See the template for the reports of Project Scoping Meetings at Section B.4

1.3.1 Identify Stakeholders

The agenda of the first scoping meeting includes the definition of the project's stakeholders [1] . First of all, a stakeholder analysis method has to be identified. Then, the method is applied in order to identify the stakeholders and their core characteristics. Finally, during planning, we have to determine which level of stakeholder engagement (how much time, etc.) is more appropriate for the different activities (see Section 2.2.10).

A Stakeholder Definition Report is produced, because we need to **make explicit** WHO our stakeholders are and WHAT their profile/expectations are. The formal identification of the stakeholders allows to link them to requirements, thus supporting traceability (see PrinciplePrinciple2).

Note that some of this information is potentially subject to change, therefore multiple revisions of the report may be issued in a Stakholder Management process.

I suggest a **stakeholder analysis method** consisting in the following steps:

1. Brainstorm the list of potential stakeholders
2. Define a set of stakeholder characteristics (analysis dimensions) of interest within the project
3. Discuss each stakeholder along the analysis dimensions and draw a profile
4. Define the relevance of each stakeholder throughout the project

It is important to identify stakeholders early in the project so that *i*) a better vision of the project objectives and needs is delivered *ii*) stakeholders can be involved from the beginning.

See more about Stakeholder Management at Section 2.2.10.

[1] An interesting article: "Stakeholder analysis for R&D project management" (`http://www.fcmfmpep.org.br/disciplinas/turma1/MB-721/Aula03/stakeholder-analysis-for-rd-projects.pdf`)

See the Stakeholder Definition Report at Section 8.2

1.3.2 Market analysis

This process is carried out by people from the Marketing department. In particular, the Edu@Home branches in Europe contribute for the European e-learning market, whereas the branches in Asia contribute for the Asian e-learning market. The American and African e-learning markets have to be studies as well. We may seriously consider to **employ consultants**.

These activities are expected to provide the following output[2]:

- General description of the market in relevant business terms: size, trends, growth rate, profitability, industry cost structure, distribution channels, key success factors, key risks
- Identification and description (both qualitative and quantitative) of the **costumers and users**, together with their preferences, customs, and characteristics
- Description of the market research
- Description of the **current situation**, together with typical revenues and profits, by pointing out how the organization responds to the needs identified in the research
- Identify the **competitors**, together with their strengths and weaknesses
- Provide a **predictive analysis** of future growth / trends of the market, and describe what place will be covered by the organization
- Identify the **weaknesses in the business model** of the organization and how they will be addressed

Some results may be reused by past market researches.

Project Manager Action 1
I delegate the responsibility for these activities to the Market Research Team Leader, which also has to manage the communications with the other dislocated teams. I make it clear what my expectations are. He/She will report to me about the status of work, on a weekly basis, and will notify me when significant issues arise.

1.3.3 High-level requirements

These requirements (the top levels of the RBS) derive from the project conception (see Section 0.1), from the COS, from the market analysis, and from the first sessions of requirement gathering.

I felt the necessity to distinguish at the process-level between high-level and detailed requirements because **breaking the initial uncertainty is prominent**. I deem that a core set of requirements and objectives is essential and, as a consequence, they have to be **gathered very promptly** in order to allow us to *i*) build an initial plan in which we detail only the scoping activities, *ii*) classify the project, and *iii*) propose a business case for its formal acceptance.

The output of this activity consists in the upper levels of the RBS, which is split into two parts: **project requirements** and **product requirements** (where the "product" is the prefigured e-learning ecosystem).

See the High-Level RBS at Section 8.4

[2] Adapted and extended from `http://www.wikihow.com/Write-a-Market-Analysis`

1.3.4 Project classification

Project classification is important for choosing the approach to be used and for activating an adequate set of management processes. Multiple characteristics might be considered for the purpose.

A project scoping meeting is devoted to project classification and to the choice of an appropriate PMLC model. In particular, the following decisions have to be taken:

- Which **method for project classification** to be used
- Which **variables/characteristics** to be consider in the classification
- How to assign **values** (e.g., when they require to be estimated) to the classification dimensions

Of course, the project size (along the different dimensions), the level of risk, the level of uncertainty, etc. are elements that must be included in the process of defining the project profile as well as the management strategy that most fits.

See the choices and the results from Project Classification at Section 8.5

1.3.5 Selection of a suitable Project Management Life Cycle model

The results from project classification (see Section 8.5) provide the main input for choosing a PMLC model that fits the project by business, technical, and management perspectives.

This choice is strongly affected by how much the requirements and the solution are clear (or uncertain).

This project is considered a Research and Development (R&D) project. **The goals are not completely clear**: what we know is that these goals have to be aligned with respect to the organizational strategic objectives, which demand for integrating old products and new ideas into a comprehensive e-learning ecosystem. So, **there is a vague idea of the solution**, but it still needs to be better defined. The situation is depicted in Figure 1.1.

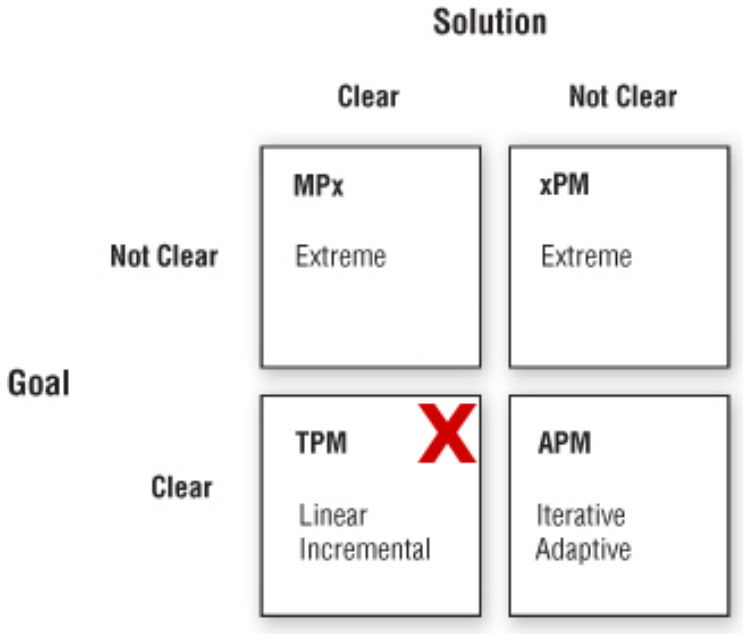


Figure 1.1: How much are the goal and solution uncertain?

Both the goal and the solution exhibit a certain degree of (un)certainty. Thus, the project consists of four main phases:

1. **Initiation** phase: the project is started; market analysis and requirement gathering are carried out just enough to be able to classify the project and prefigure the extension of the project scope

2. **Research/Discovery** phase: where we want to better define our goals and draw the main requirements from extensive business analysis and research
3. **Development** phase: where, starting from a sound core of goals and requirements, we want to derive an architectural solution, accompanied by a prototype
4. **Completion** phase: where testing, artifact delivery, and closout takes place

Each phase should employ the lifecycle model that is most appropriate. These considerations and the discussion at the meeting result in the application of a lifecycle model that is tailored: it is mainly linear with some influence from the emertxe model in the first two phases and from the agile model in the two last phases.

See the PMLC model at Section 8.6

1.3.6 Business case

Once the scope is better defined in its main elements, an **initial plan** is built (see Section 2.1.1). The initial plan indicates roughly the amount of resources that should be allocated. Based on this initial plan and on the information collected during market analysis and requirement gathering, a **business case** is proposed by the steering committee. It **outlines how the project is justified by a business point of view**.

Note that **two main versions** of the business case are defined:

1. A first version, based on the initial planning, which has to be accepted to allow the beginning of the Research/Discovery phase
2. A second version, based on the detailed planning, which has to be accepted in order to proceed with the Development phase

See the Business Case template at Section B.2
See the Business Case at Section 8.3

1.3.7 Requirement gathering and field studies

We should seriously consider to **collaborate with universities, high-schools, and primary schools**. Moreover, it's prominent to carry out **field studies by involving students** and studying how they carry out real-world learning activities. The universe of students has to be segmented (for example by sex, age, nationality, income bracket, etc.), and from each segment a sample of students (who have accepted to collaborate) is extracted. It's important to not limit the scope of requirement processes to students only. Instead, **all kinds of "learners"** and **teachers** as well should be involved.

Insight 4

Techniques for requirement gathering include:

- **One-on-one interviews**: e.g., to go really deep into an interviewee's experience/needs/issues...
- **Informal questionnaires**: e.g., to listen the voice of hundreds or thousands of students
- **Focus groups**: where a moderator interviews several people at a time
- **Brainstorming**: to generate creative and innovative ideas
- **Observations**: to describe processes, practices, behavioral patterns, expectations, tools used by learners and teachers "in the field"
  - Jot notes, field notes proper, methodological notes, journals & diaries, video-based recordings, shadowing ...
- **Self-observations**: asking the people to self-describe what they do

Different techniques for gathering requirements should be considered, evaluated and possibly applied. For the purpose, I meet with the person responsible for requirements, I let him/her briefly explain the tactic, and we together try to figure out if there are gaps or improvements to be considered.

Moreover, it is also essential to gather and analyze the **opinions** about the pros and cons of the products delivered by Edu@Home in the past.

Project Manager Action 2
I delegate the responsibility for the requirements-related activities to the Business Analysis & Requirements Team Leader. I make it clear what my expectations are. He/She will report to me about the status of work, on a weekly basis, and will notify me when significant issues arise.

1.3.8 Requirement analysis and definition of the RBS

The Requirement Analysis process produces a preliminary set of requirements that is further collectively **discussed and prioritized** during the project scoping meeting (see Section 2.1.3). This discussion results in the creation of the RBS.

We have to investigate both **functional** and **non-functional** requirements.

Insight 5

The following techniques for expressing requirements may be considered:

- (Traditional) Contract-style requirement lists
- Affinity diagrams
- Personas / Scenarios: story or narrative—a thought experiment that is used to help you explore the set of tasks and interactions required for your design [a]
- User stories: one or more sentences in the everyday or business language of the end user or user of a system that captures what a user does or needs to do as part of his or her job function [b]
- Use cases: using actors, use cases, and use case scenarios; they may be semi-formal (UML) or written in natural language, and express the actions taken by the user when interacting with the system

[a] See http://graphics.cs.columbia.edu/courses/csw4170/useScenariosAndPersonas.htm
[b] See http://en.wikipedia.org/wiki/User_story

Different techniques for specifying requirements may be considered at different stages of the endeavour or for different kinds of requirements. For example:

- Contract-style requirement lists can be used for high-/medium-level requirements (e.g., not for aspects focused on user-system interaction); however, we must be aware of the pitfalls of such a specification technique (poor structure, inaccuracies, ambiguities, difficult retrieval)
- User stories should be employed from the beginning to immediately get a sense of what we would like to achieve
- Use cases would probably be used to express user-system interactions (when we will be designing the architecture and building the prototype)

Requirement quality assessment and control

It is essential to work on high quality requirements: how is it possible to build something good when our idea of what has to be built is not good?

For example, good requirements should [3] be unitary/cohesive (i.e., follow the Single Responsibility Principle), complete, consistent, atomic (non-conjugated), current, unambiguous, verifiable, and prioritized.

[3] See http://en.wikipedia.org/wiki/Requirement#Characteristics_of_good_requirements

Insight 6

These and other characteristics should support at least the following practices:

- Testing: checking for correctness
- Progress tracking: monitoring the Work In Progress (WIP)
- Traceability: linking decisions/tasks up to their motivation

See more about Quality Management Planning in Section 2.2.4.

1.3.9 Feasibility Study

The Feasibility Study consists of activities aimed at determining if the project if feasible and what are the main **constraints and risks** to be accounted. There are five areas of feasibility to be considered[4]:

1. Technical
2. Economical
3. Legal
4. Operational
5. Scheduling

Project Manager Action 3
I delegate the responsibility for the Feasibility Study activities to the Feasibility Study Team Leader. I make it clear what my expectations are. He/She will report to me about the status of work, on a weekly basis, and will notify me when significant issues arise.

See the Feasibility Study Report at Section 8.7

The results from Feasibility Study have to be discussed in a dedicated meeting. First of all, we have to evaluate the quality of the feasibility report [5]: is it complete? Is it ambiguous? Does it focus on relevant issues? Then, we have to decide about the project viability as a whole and in its parts.

1.3.10 Project Overview Statement

It should provide a quick, general overview of the project, outlining its goals, business problem, risks, assumptions as well as the approach.

A meeting (attended by the Project Sponsor, the Management Team and the editor) is dedicated to the definition of the POS.

I and the Project Sponsor sign each revision of the POS, which is then propagated to the senior management by the office.

See the POS Template at Section B.6
See the POS at Section 8.8

[4] See http://en.wikipedia.org/wiki/TELOS_(project_management)
[5] See http://www.extension.iastate.edu/agdm/wholefarm/html/c5-64.html

1.4 Issues

1.4.1 A first issue: geographical distribution

As the organization is geographically distributed (see Section A.1.2), all communications and project artifacts – both verbal and non-verbal – must use the English language. The Project Website (see Section 2.2.7 provides collaborative features that allow dislocated teams to work together and communicate.

When the meetings involve people which are geographically distributed, **call-conferencing** is the way. For the purpose, I ask the IT Department to set up and check (periodically) the network/software infrastructure so that we are not stuck by non-working technology.

Also, for each branch a **project manager representative** is elected. He/she has to report to the project manager and is responsible for the enforcement of the project manager's directives.

1.4.2 Formality level for the project

The organization itself does require all the projects to be carried out with a minimum degree of formality.

Moreover, the size of the project (as estimated in Section 1.3.4) demands for more formality with respect to small projects. In this project, several teams, people, and departments (also geographically distributed) are involved, so **I enforce some formality** with (for example):

- Explicit meetings
- Explicit communication channels (e.g., to be used in problem escalation)
- Extensive use of *written* reports
- Use of the standard PMBOK framework (adequately adapted to the project's needs)

Chapter 2

Planning: Management Documentation

2.1 Joint Project Planning Sessions

The JPPSs are meetings where the **project plan** is developed/refined. They are attended by me, the project sponsor, and the team leaders. A external facilitator is also engaged.

I, the project sponsor **and the functional managers** (as they have a complete vision of the labour force and productivity of their respective area), with the help of a member of the PMO, set up a **provisional schedule for the JPPSs**, which is then communicated to all the attendees.

August 5, 2014	Definition of an initial plan
August 19, 2014	Review of the initial plan
September 1, 2014	Detailed plan for scoping activities
September 15, 2014	Review of the detailed plan for scoping activities
December 16, 2014	High-level plan for the Development phase
January 13, 2015	Development of the Project Description Statement (PDS)
January 19, 2015	Review of the high-level plan for the Development phase

Insight 7

Note how the planning activities are **concentrated at the beginning** of the project's phases. Moreover, note that after the definition of an "initial plan", a **review meeting** is always set at a temporal distance that should be short enough to provide a timely feedback but also long enough to actually provide sufficient information about the course of work

Concerning the project's Development phase, the JPPS focuses on the definition of a **high-level** plan, **for the detailed plan is built iteratively (in a more agile way)**. The high-level plan is necessary so that the business case can be revisited.

The planning sessions are also influenced by the organizational **Integrate Business Planning Process (IBPP)**, which provide inputs that I as a project manager have to pick up in order to **keep the project strategically aligned**. For example, if the organizational strategy significantly changes, I may require to set an extraordinary JPPS to revise previous project planning decisions.

See the template for the reports of JPPSs at Section B.5

2.1.1 The First JPPS

The first JPPS is fixed at the very beginning of the project with the goal of defining an **initial plan**. The initial plan is necessary

1. to organize the work for project scoping, and
2. to roughly estimate the project size so that the business case can be presented (see Section **??**)

Here, the focus is the **project scope** (rather than the product scope).

Moreover, only the plan of the first two project phases (Initiation and Research) has been detailed. The initial plan for the Development and Completion phases is more high-level, but it should be enough detailed to support an order-of-magnitude estimate of the project cost (for the business case). However, it should be noted that the level of detail and precision of the plan also depends on how much the scope has been defined, so the first JPPS has to be scheduled accordingly to the progress of scoping activities.

2.1.2 Project Description Statement

The POS (see Section 1.3.10) provides an overview of the project and is written for the senior management. The PDS, instead, is targeted at the project teams. It extends the POS and provides an authoritative description of the project which has to be shared by the whole team.

Insight 8

If a common view of the project is not enforced, there is the risk of jeopardizing the system's conceptual integrity (see Principle3).

See the PDS at Section 9.1

2.1.3 Prioritization of Requirements

The requirements are prioritized in meetings attended by the Project Sponsor, the Management Team, and the key stakeholders (identified as discussed in Section 1.3.1). The actual participants will be those who have a voice with respect to the subject portion of the RBS.

Such an activity is important because it would allow to "cut" some of the estimated effort (for example in case of insufficient budget or resources) by pruning the less "important" requirements.

The approach for prioritization[1] makes use of three dimensions:

- **Business priority** (Factor=0.6): it can be set using the **MoSCoW** approach

  Must $\Rightarrow$ 1
  Should $\Rightarrow$ 0.8
  Could $\Rightarrow$ 0.4
  Won't $\Rightarrow$ 0.0

- **Urgency** (Factor=0.8): expresses how much the requirement is compelling (e.g., a feature that has to be included in the very next software increment should have the precedence with respect to a feature with greater business value but planned on a next iteration, maybe because it belongs to another part of the system yet to build). Possible values:

  Very urgent $\Rightarrow$ 1
  May become urgent $\Rightarrow$ 0.5
  Not urgent $\Rightarrow$ 0.0

[1] Inspired by `http://www.projectmanagement.com/blog/Voices-on-Project-Management/8232/`

- **Severity** (Factor=1.0): expresses the impact of a non-observance (e.g., a risk mitigation activity may have a greater severity with respect to a development activity). Possible values:

  Critical ⇒ 1
  May become critical ⇒ 0.5
  Not critical ⇒ 0.0

Note that, for a given requirement, any of these priority dimensions can change over time.

2.1.4 Work Breakdown Structure

The Work Breakdown Structure (WBS) is developed from the RBS. It specifies the units of work (tasks, activities) that have to be carried out to implement a certain requirement item.

Different parts of the WBS have to be built by different groups. Roughly, the logic is the following:

- The WBS for Project Requirements is defined by me together with the entire Management Team
- The WBS for the Architectural Solution is defined by the architects together with some senior Quality Assurance (QA) team members
- The WBS for Functional Requirements of the prototype is defined by the Development Team and some architects
- The WBS for Non-functional Requirements of the prototype is defined by the architects together with some senior engineers from the Development Team

See the WBS at Section 9.5

2.2 Project Planning

2.2.1 Plan Scope Management

The scope is defined and developed as discussed in the Scoping part of the report (see Chapter 1). The formal scope documentation consists in the POS (see Section 1.3.10) and the PDS (see Section 2.1.2).

A **formal acceptance process** is in place. First of all, the scope deliverables are subject to quality reviews. If their quality is adequate, they have to be approved by the project manager, the project sponsor, and (for the POS) by the senior management.

In addition, the Scope Management Plan has to establish how the scope is managed, monitored and controlled.

Scope Bank Management

A time desosit is maintained in the so-called **scope bank**. The scope bank contains:

- tasks that have not been completed
- activities related to scope change management

Scope Change Management

The Scope Change Process is activated once **change requests** are processed. The change requests are reviewed by the Control Team and an **impact study** is carried on. When the results from the impact study are delivered, the management team has the responsibility to **approve or reject** the scope change.

The time needed to implement these activities is taken from the scope bank.

See the Scope Change Request Template at Section B.8
See the (Scope) Impact Statement at Section B.9

Scope Monitoring and Controlling Plan

We do not want just to avoid the **scope creep**, but also summarily ensure that activities and deliverables are linked to the scope items (traceability, see Principle2).

Scope changes or improvements to the Scope Management Process may be suggested by the analysis of scope issues (see the Issues Log in Section 4.1.3). Similarly, the (formal) quality reviews of certain deliverables may provide useful feedback in this respect.

Moreover, the scope bank has to be monitored (how many items are added to the scope bank and when) in order to foresee the rate of its saturation as well as to estimate how much the scope is unstable.

2.2.2 Plan Schedule Management

My approach to schedule management consists in the following steps:

1. Determine the **activities** to be done ($\Rightarrow$ WBS, see Section 2.1.4)
2. Determine the **units of measure** for effort, durations, and other resources
3. Estimate the required **effort** for the activities to be completed (see Section 2.3.1)
4. Estimate the **resources** that are available (see Section 2.3.2
5. Estimate the **durations**/time required to accomplish the effort with the given resource availability (see Section 2.3.3)
6. **Review** the estimates and make trade-offs (see Section 2.3.5
7. Build the **schedules (for management)**: Gantt, Project Network Diagram (PND)s (see Section 2.4)
8. Build the **project baseline** (see Section **??**)
9. Build the **detailed schedules (for execution/work)** at the beginning of iterations or during the kick-off meetings

The Estimating Process has to define the **level of accuracy** that fits the current status of the project. Moreover, some input for the Monitoring and Controlling activities has to be provided:

- Schedule control/performance metrics

  Schedule Variance: $SV = EV - PV$
  Schedule Performance Index: $SPI = \frac{EV}{PV}$

- Schedule control thresholds: the schedule performance values that result in a notification (and their respective seriousness level)

  Low risk: $1 < SPI < 0.95$
  Moderate risk: $0.95 \leq SPI \leq 0.90$
  High risk: $SPI < 0.9$
  (Note however that these threshold values may be set looser/tighter depending upon the project phase or ongoing activities.)

2.2.3 Plan Cost Management

My approach to cost management consists in the following steps:

1. Estimate the costs based on the estimates of durations and resource allocations
2. Develop the overall expected cost of the project from the bottom-up (**project budget**)
3. Develop the **cost performance baseline** (the "S curve") to show how the costs evolve in time
4. Monitor and control the actual costs with respect to the baseline

   The chosen cost control metric is the **cost performance index**:
   $CPI = \frac{EV}{AC} = \frac{BCWP}{ACWP}$

The Estimating Process has to define the **level of accuracy** that fits the current status of the project.

It should be noted that, being this a R&D Project, the cost control activities must not be underestimated. **Cost controlling is essential to mitigate risks such as overspending**.

The cost control thresholds are the following:

Low risk: $1.05 < CPI < 0.95$
Moderate risk: $0.95 \leq CPI \leq 0.90$
High risk: $CPI < 0.9$

2.2.4 Plan Quality Management

This project **requires a high quality level** because it is crucial for the future of the organization. Its research activities are expected to create knowledge that will be essential to set the strategy. Moreover, the project could represent the foundations for a new program of projects that would allow Edu@Home to breakthrough growth.

The **risk of an insufficient quality** in the project deliverables has to be identified, assessed, mitigated, and controlled within the Risk Management process.

Quality Management consists in two main parts:

1. **Quality Assurance**: is about taking *preventive* measures aimed at ensuring certain quality levels (see in Section 3.4.1)
2. **Quality Control**: is about monitoring quality and taking corrective actions (see in Section 4.2.3

Project Manager Action 4
I delegate the responsibility for quality-related activities to the Quality Manager. I make it clear what my expectations are. He/She will report to me about the status of work, on a weekly basis, and will notify me when significant issues arise.
The Quality Manager will interact frequently with the Control Manager.

See the Quality Management Plan at Section 9.2

2.2.5 Quality Standards and Deliverable Compliance

(Almost) Every project deliverable and process has to be associated with a set of **quality metrics** that can be used to evaluate its quality.

Moreover, threshold values for the quality metrics have to be clearly defined as well as the actions that should be done if those values are not respected.

Multiple **compliance levels** may be defined, with respect to the quality metrics, for project artifacts.

2.2.6 Plan Human Resource Management

Two main things have to be identified: *what* the Human Resources (HR) requirements are and *how* they are to be met.

I have to identify the **roles** that are indispensable for this project as well as their responsibilities, authority, required skills, and reporting relationships.

Once we know what people we need, the hiring process can start and the teams can be formed (see Section 3.1). Last but not least, the development needs for the teams have to be satisfied so that they can perform at their best.

See the Human Resources Management Plan at Section 9.3

2.2.7 Plan Communications Management

Two main things have to be defined regarding communications:

(A) WHAT: the communication needs for all the stakeholders (identified in Section 1.3.1) and project participants

(B) HOW: timing / content / channels for the communications

In particular, it is essential to regulate with precision the way in which reports, deliverables, and in general project artifacts are delivered to their target people. Meetings as well need to be (formally) communicated.

The **problem escalation strategy** is another significant part of the communications framework that needs to be clearly defined. In general, the issues bubble up from lower to higher levels:

> Engineer ⇒ Team Leader ⇒ Sub-manager / Functional manager ⇒ Project Manager Representative ⇒ Project Manager

(Remember that the organization follows a Strong/Project Matrix structure)

If an issue cannot be solved at one level, it is routed to the upper level. The timing of it depends on the seriousness and the need for promptness of the problems. For example, the notification for moderate-level issues can be delayed until the next report meeting (I regularly meet with my subordinates).

See the Communications Management Plan at Section 9.4

The Project Website

A project website is available on the Intranet. It is a significant part of the Project Management Information System (PMIS) and represents the main medium to access information about the project (including plans, reports, schedules, issues, ...). It is built using a proprietary Content Management System (CMS) that has been verticalized by a specialized company some years ago.

The following features are available:

- Collaborative features: communication tools (conferencing, instant messaging), coordination tools (calendars, document sharing)
- Issue tracking
- Scheduling
- Time management
- Resource management
- Document management
- Reporting system

As there are many dislocated teams, the project website is an important enabler.

2.2.8 Plan Risk Management

Here we have to:

- Define and document a risk management strategy
- Choose the most appropriate methods to execute that strategy
- Allocate resources for the risk management strategy execution

I consider this project **risky** because it is an R&D project and exhibits some uncertainty in both the goals and the solution. As a consequence, I do pay attention to risk management. My intention is to define a **strategy** that would allow us **to identify risks early**.

> **Project Manager Action 5**
> I delegate the responsibility for coordinating the Risk Management Process to the Control Manager. I make it clear what my expectations are. He/She will report to me about the status of work, on a weekly basis, and will notify me when significant issues arise.

See more about risks in Section 3.5.

Plan Risk Analysis

A *qualitative* risk analysis has to be performed in order to provide input for project classification, while a first *quantitative* risk analysis is planned to be performed in the context of the Feasibility Study (see Section 1.3.9).

2.2.9 Plan Procurements Management

The first step of Procurements Management consists in **identifying the gaps**: what capabilities of the organization are missing or not sufficient? What capabilities would be more convenient/effective to delegate to 3rd-parties?

The domain of this project is the very **core domain** of the organization – so there is **no need for extensive subcontracting**. However, certain aspects of the project scope cannot be managed effectively by Edu@Home. The field studies are an example: these will be subcontracted to a specialized party operating in the Education domain .

Briefly, the Procurements Management Process consists in the following steps:

> Gaps identification ⇒ vendor solicitation ⇒ vendor evaluation ⇒ vendor selection ⇒ vendor contracting ⇒ vendor management

2.2.10 Plan Stakeholder Management

The strategy for stakeholder management is depicted in Figure 2.1.

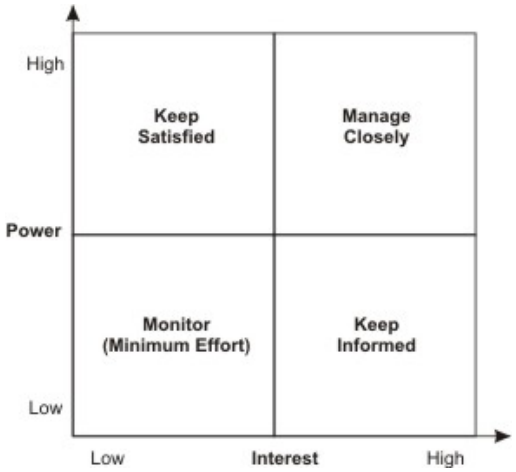


Figure 2.1: The stakeholder management strategy.

Moreover, stakeholders have to be engaged in project activities because their input and feedback allow us to move in the right direction (see the "car driving" metaphor by Kent Beck). Their level of involvement may be different depending upon the ongoing project phase and activities.

In particular:

- During project scoping, the identified stakeholders have to actively cooperate so that the gaps in the goals and the solution can effectively be filled. Indeed, when performing requirement gathering and analysis, we should pay attention to the voices of several different kinds of stakeholder.
- During execution, while the architecture design process may not need extensive stakeholder engagement, it may be essential throughout the development of the prototype
- During project closing, the stakeholders may provide final considerations about the project as well as useful insights to be analyzed in retrospective meetings

For example, when the prototype of the e-learning platform is working, some real-world students can be selected to cooperate on a weekly basis to provide feedback about accessibility/usability/interaction as well as other non-functional requirements (e.g., performance or flexibility).

2.3 Estimating

The Estimation process is performed at four main stages:

1. Only high-level requirements are available (⇒ order of magnitude estimate)
2. Initial work plan is available (⇒ budget estimate)
3. High-level work plans are available (⇒ budget estimate review)
4. Detailed work plans are available (⇒ definitive estimate)

The stages – of increasing level of detailedness and precision – and consequently the techniques to be used may be different depending upon which part of the project/product the estimate is focusing.

The high-level estimates are performed by the team leaders, **with the involvement of functional managers**. I may participate in these activities for sensible parts of the project. More detailed estimates involve the team (senior) members as well; in this case, the team leaders have to promptly report to me about any issue encountered in this process.

My directives suggest that Estimation activities have to

- Determine the desired **accuracy** of the estimates (e.g., order-of-magnitude vs. intermediate estimate)
- **Define a method/technique for estimates**, based on *WHAT* is going to be estimated and *HOW MUCH information and uncertainty* we have to deal with
- **Create and document a link between the work to be done and their respective estimate** (e.g., by enriching the WBS) so that we can *monitor* the progress – which in turn makes it possible, at the first stages, to *evaluate* how much our estimates are precise
- Produce one or more documents showing at a glance the use of resources within the project: time (⇒ PND), human/material resources(⇒ Resources Breakdown Structure (RsBS)), and money (⇒ project budget)

Insight 9

When the estimates have been made, costs can be allocated/assigned to WBS tasks (**cost budgeting**) and **cost control** processes can be activated.

Budget constraints exist. The investiment is included within the 5-15 million €range.

Human resource constraints exist as well. The amount of human resources is bound to the organizational size and constrained by the budget upper bound. It is true: new people can be hired, but the organization cannot excess its structural dimension.

2.3.1 Effort Estimation

Effort estimation is the first step and starts from the WBS (or from th RBS if the WBS is not available).

The effort is measured in **man-hours**.

In practice, the process is the following:

- The WBS is logically divided into categories of expertise (e.g., management, quality, control, architecture, development)
- For each category of expertise, a set of experts are called (e.g., the entire Management team for the "management category", or a handful of distinguished engineers for the "development category")
- A set of Estimation Meetings are scheduled; each meeting involves one group of experts, a manager (depending from the area), and a facilitator (e.g., a member from the Helper Team)
- The meetings will produce a set of estimates that are integrated into an "enriched" version of the WBS

In the meetings, the participants have to establish the accuracy of the estimates and, as a consequence, an appropriate technique. For example, in some cases it is possible to **reuse estimates** from past projects, possibly adapted by expert judgement. Then, if one or more experts express scepticism for the "historical" estimates, or if no estimates are available, the group can use a consensus-based technique (such as the Delphi technique).

As an advice, the group should remember to:

- Explicitly document all the assumptions
- Consider the activities from all the points of view (e.g., if training is needed, if consultants are engaged, if stakeholder collaboration is needed)
- Consider rework (people are not infallible)

Last but not least, consider to include a certain amount of "effort contingency" (see more on Section 4.2.5).

2.3.2 Resources: Human / Materials / Equipment

I ask the PMO for two sets of data

- data about **resource usage in projects of similar nature and similar size**
- data about **available resource in the organizational**

Based on this information and effort estimates, we can estimate the resources needed for the project and produce when RsBS.

Once we have the resource estimates, we (I, with the help of functional managers and team leaders) can form a **preliminary allocation** of resources.

See the RsBS at Section 9.6.2

2.3.3 Time: Durations

The time for activities can be estimated by considering their required effort and resource allocation.

The process proceeds **bottom-up from the WBS**.

Insight 10

Here we have to be careful as the progress does not vary as the product of the number of men and the number of work hours! See Fact3

2.3.4 Money: Project Budget

Once effort, duration, and resource allocations have been defined, costs can be calculated.

See the Project Budget Estimation at Section 9.6.5

2.3.5 Review

Once we have the estimates, we can review them and potentially make **trade-offs**. We should remember that scope, budget, schedule, and resources are not independent from one another (see Figure 2.2).

Figure 2.2: The Scope Triangle.

Moreover, based on the very nature of this project, the main project constraints are thus prioritized:

Priority / Variable	Critical (1)	(2)	(3)	(4)	Flexible (5)
Scope				X	
Quality			X		
Time				X	
Cost	X				
Resource availability		X			

- The budget of the investment defines clear boundaries around the cost of the project
- The human resources cannot be freely allocated
- The project is strategically relevant so quality is important
- Scope and time are more flexible

Figure 2.3: The prioritized triangle.

2.4 Scheduling

Once we have both the activities and the durations, a sequence or a more complex network of activities can be developed.

Probably, for the activities that are planned to start "far away in the future" (e.g., 1 month or more), the lowest level activities in the WBS (i.e., the work packages) are not available. If they are available, we tend not to build the detailed schedule as it can be better defined by the project teams at their kick-off meeting or at the beginning of an iteration.

Moreover, in addition to the activities on the WBS, the Risk Mitigation Process (see Section 4.2.5) has identified some **time reserves** which may be represented as activities.

See the Gantt charts at Section 9.6.3 and the PNDs at Section 9.6.4

2.4.1 Project Baselining

After estimating and scheduling have been performed, a **project baseline** is defined in order to simplify performance measurements, earned value analysis, and other monitoring & controlling activities. Moreover, **checking the actual progress against the baseline creates a feedback that can be used to review and correct the estimates**.

The project baseline consists in the following information:

- Scheduled start/finish dates for all the project activities (except work packages which are too low-level)
- Planned effort
- Planned/budgeted cost

2.4.2 Project Milestones

I desire to set a few milestones in order to split the schedule into more manageable chunks. They work more or less as "phase gates" and are set in correspondence of the delivery/approval of important artifacts.

I recognize the following milestones:

- **Project Milestones**
  1. Approval of the High-Level Requirements Documentation
  2. Approval of the Feasibility Study report (*Research/Development phase phase*)
  3. Approval of the Architectural Design of the e-learning platform
  4. Approval of the Prototype of the e-learning platform (*Development/Completion phase gate*)
- **Project Management milestones**
  1. Approval of the Initial Plan (*Initiation/Research phase gate*)
  2. Approval of the Project Management Plan

2.5 Project Management Plan

The Project Management Plan (PMP) is a single formal document that describes how the project is executed, monitored and controlled. *It consists in the information that is collectively described in this very management report.*

Chapter 3

Launching / Execution: Management Documentation

3.1 The Project Teams

At this stage we have to compare

- the human resources available in the organization (we can ask the PMO for this info)
- the human resources needed by the project (see about RsBS construction in Section 2.3.2)

in order to **identify the gaps**.

Once the gaps are identified, we can either **re-allocate** the human resources (e.g., moving them from a project to another, or splitting their time among multiple projects) or **hiring** new manpower.

3.1.1 Teams: what and when

The following teams have to be formed.

- Project-wide engagement
  - Management Team
    - Project manager
    - Project manager representatives in the different Edu@Home branches
    - Control manager
    - Quality manager
  - **Stakeholder Team**
  - **Helper Team**
- Mainly engaged during Initiation & Research phases
  - Market Research Team
  - Quality Assurance Team
  - Business Analysis & Requirements Team
  - Feasibility Study Team
- Mainly enagaged during Development & Completion phases
  - Architecture Team
  - Development Team
  - Testing Team
- Temporary/Ad-hoc/Dynamic Teams

– Recruiting Team

> **Insight 11**
>
> The metaphor of the *Surgical Team*[3] is here in my mind to remember me to look at *all* the needs of a project team when thinking about the people and the roles you need.

3.1.2 Hiring

Two kinds of Recruiting Teams are formed. One Recruiting Team (in which I also participate) focuses on hiring managers, team leaders or architects. The other Recruiting Team focuses on hiring engineers, analysts, and technical people in general.

In practice, our approach for hiring is the following (adapted from [1]). First of all, we try to analyze with precision what we need by a technical point of view (but not only). Then, we use many different sources and channels to look for candidates (other in-house teams, universities, partner companies, job offers on networks such as LinkedIn etc.). Finally, the selection activities start:

- Phone screening to filter applications
- In-person interview where three main implicit questions[1] need to be answered:
  1. Can the candidate do the job?
  2. Does he/she really want the job?
  3. Does he/she fit into the organization culture?

  Remember to avoid or wisely evaluate "A-ha!" interview questions (see *Joel on Software*).
  Discuss, share and record impressions on the spur of the moment.
- Development of an audition to actually test for the candidate's competencies

As an advice, we should try to **balance** the teams in both technical and non-technical aspects: "technical coverage" is good for learning and finding solutions to problems, and "behavioral coverage" supports the working mechanism in all of its stages.
Finally, once a candidate is chosen, we work with the Human Resource Office to build an adequate offer.

3.1.3 Team operating rules

There are three levels of operating rules:

1. Organization-wide operating rules
2. Project-wide operating rules
3. **Team-specific operating rules**

In my view, the teams are **self-organising**, within certain limits which depend on organization policies and project characteristics. As a consequence, I need to be quite **precise and formal regarding my expectations** about both the work that have to be carried out and its quality. Then, the team can choose its preferred approach and organization of work, as long as it delivers what I expect. The **team leader is responsible for that**: he/she periodically reports to me about the status of the work and should keep the team aligned to the tactic which we have together discussed and established.

See the Project-Wide Operating Rules at Section 10.2.1

[1] See `http://www.roberthalf.com/in-person-interview-candidates`

3.1.4 About the Helper Team

The **Helper Team** consists of in-house, part-time members whose goal is that of making the other teams work at their best.

For this purpose, the Helper Team members have to be problem solvers and provide support by:

- Observing the teams' work, looking for effectiveness/efficiency limiters or bottlenecks
- Monitoring the teams' morale and energy
- Listening to the issues yielded by the team workers
- Working to accelerate or promote the solution to the problems
- Recording the encountered issues with the respective solution (important for retrospective analysis, see Section 5.2.1)

The Helper Team periodically informs me about the morale and the effectiveness of the teams.

3.2 Meetings

3.2.1 Kick-off Meetings

Each project phase is started with a **kick-off meeting** in which the project participants get acquainted with one another and with the team operating rules. Moreover, I and the project sponsor update the participants about the project status and its main objectives.

The kick-off meeting is also the right time to build the high-level Responsibility Assignment Matrix (RAM), which shows the mappings between the main project players (managers and teams) and the activities of the period. Then, **each team is asked to produce a detailed RAM**.

The responsibility matrix uses the **RASCI model** (Responsible, Accountable, Support, Consulted, Informed).

See the high-level RAM at Section 10.1

3.3 Direct and Manage Work

3.3.1 About the Execution of Initiation and Research Phases (Linear/Emertxe PMLC Model)

In the first two phases of the project (Initiation and Research), **some portions of the project scope are considerably unstable**. In fact, even though we know more or less what has to be done – we have to perform a market research, gather requirements, analyse them, perform a feasibility study, and develop the architecture of a solution – there is still some uncertainty to be mitigated.

For example, the following aspects have to be investigated:

- How can we monetize our e-learning ecosystem?
- Is the e-learning ecosystem feasible in all its aspects?
- Who is the key target of our platform? Schools? What schools: universities or primary schools? Free learners?
- Can our platform help to solve problems not directly related to education (see Duolingo)?

Our objective in these two phases is to acquire knowledge about our goals and understand whether the anticipated solution is actually worthwhile and represents the right response to the organization's strategic transformation. For the purpose, the work proceeds in **iterations** that collectively contribute in the definition

of the scope for the following project phases.

Note that our research might point out that our pre-identified solution (the e-learning platform) is not profitable at the present time, in the current market context. As a consequence, we adopt a **phase-gate model** where the results of each phase may potentially interrupt the project continuation.

3.3.2 About the Execution of Development and Completion Phases (Linear/Agile PMLC Model)

While in the previous phases was the *project scope* to be uncertain, in these two phases is the *product scope* that demands for some agility. In fact, both the architecture of the e-learning platform and, especially, the system prototype are subjected to several degrees of freedom. As a consequence, we plan for a **major stakeholder engagement**.

The Development Team uses the Scrum framework for prototyping. In fact, Scrum has been used within the organization in many projects – so there is strong expertise in its implementation.

3.4 Execution

3.4.1 Quality Assurance

Different measures are taken in order to ensure that **both project artifacts and processes satisfy organizational and project-specific quality standards**:

- I consult with team leaders and the QA Team for the minimum quality levels for project artifacts
- The need to follow high-quality processes can be enforced in the team operating rules (see Section 3.1.3)
- The management team does not neglect quality activities during planning (a couple of people from QA can participate in planning meetings)
- The QA Team provides the other teams with a brief overview of their works' required quality (possibly with suggestions about how to achieve it)
- The PMO provides the teams with quality checklists for both deliverables and processes

Moreover, **in case of quality risks with high impact**, specific standards or methods may be dictated.

> This may be the case for the architectural design of the e-learning ecosystem and for the prototype as well in case the latter is intended to actually be the product from which the actual platform can evolve.

3.4.2 Communications Management

The communications proceeds and are checked (see Section 4.2.4) as indicated in the Communications Management Plan (see Section **??**).

The description of how communications happen within a team is described in its team operating rules (see Section 3.1.3).

All formal communications (meeting agendas, deliverables, reports) pass through a section of the PMO which makes them available and notify to all the recipients as indicated in the Communications Management Plan (see Section 2.2.7).

3.4.3 Manage Stakeholder Engagement

Each team, at the beginning of a new development, is asked to make a plan describing *what* stakeholders they need to involve, *how much*, *when*, *where* (e.g., in a company department, in the field, ...), and *how* (e.g., face-to-face, call conference, ...). Such a plan is then passed to a section of the PMO which is responsible of managing the communications and the convocations.

3.5 Risk Management Execution

Here are some details about the execution of the risk management strategy which has been planned in Section 2.2.8.

3.5.1 Identify Risks

This activity is executed in the context of the Feasibility Study.

For the purpose, a **focus group** is formed. I consult with the Feasibility Study Team Leader to determine a suitable method for risk identification. We come up with an approach that integrates the following practices [2]:

- **Risk source analysis**: where the potential *sources* of risks are identified
- **Problem analysis**: where the potential *effects* of risks are identified
- **Objectives-based risk identification**: we analyze each objective trying to think about the events which may hinder its accomplishment
- **Scenario-based risk identification**: once some scenarios are produced from requirement analysis, they can be investigated in order to look for risks
- **SWOT analysis**: where the project **s**trengths, **w**eaknesses, **o**pportunities, **t**hreats are evaluated

Moreover, I ask the offices a copy of the Risk Assessment Reports for similar previous projects so that a quick review can be perfomed (e.g., to identify misses).

3.5.2 Qualitative Risk Analysis

Once a risk is identified, two main information have to be determined (see Figure 3.1):

1. its **probability** of occurrence
2. its **impact**

At this stage, the values are qualitative (Low, Medium, High). The evaluation is perfomed using the **Delphi technique**.

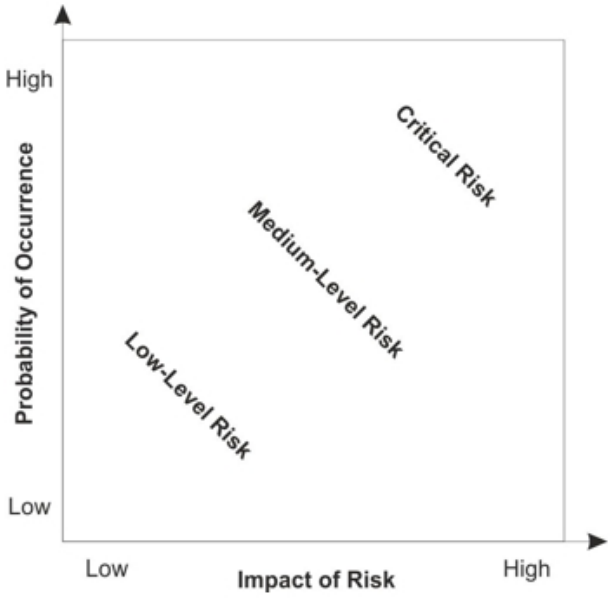


Figure 3.1: Two main dimensions to assess risks.

[2] Based on http://en.wikipedia.org/wiki/Risk_management#Identification

See the Qualitative Risk Assessment Report at Section 10.3

3.5.3 Quantitative Risk Analysis

By quantitatively quantifying the risks, we can justify the cost of implementing those monitoring and control activities aimed at mitigating the risks.

The following method is applied:

1. A quantitative measure of *impact* ($\Rightarrow$ loss in €) and *probability* ($0\% - 100\%$) is estimated for each risk
2. The risk esposure directly follows: $E = I * P$
3. The Single Loss Expectancy (SLE) for project assets is calculated using: $L = V * E$ (where V is the value of the asset)

Examples of project assets include operating rules, procedures, techniques, WBSs, plans, schedules, and deliverables.

Chapter 4

Monitoring & Control: Management Documentation

4.1 The Project's Monitoring System

The monitoring activities have to deal with **three kinds of audience**, each one with different goals and needs. The reports may contain different information and be issued with different frequencies.

The following approach makes sense to me:

1. At the highest level, the **senior management** of the organization wants to be informed about how the project is performing by a business point of view – for corporate and financial goals
   ⇒ The monitoring period is the month.
   ⇒ Information/metrics of interest include: completion %, budget utilization %, resource utilization % per department/branch, quality level, ...

2. At the middle level, **I and the project management team** want to receive feedback about the project execution effectiveness and efficiency – for management purposes
   ⇒ The monitoring period is the week.
   ⇒ Information/metrics of interest include: outputs from Earned Value Analysis (EVA), budget utilization, resource utilization, quality level, # of issues, # of change requests, ...

3. At the lowest level, the **project teams** desire to know how they perform so that they can adjust the way they work or yield an issue
   ⇒ The monitoring period is the day.
   ⇒ Information/metrics of interest include: tasks, issues, defects, change requests, ...

4.1.1 Project Status Reports

At intervals defined by the **monitoring period**, the data of interest about the project are collected and performance measures are calculated. This information is formatted into a **project status report** which is made available to the target project participants.

4.1.2 Dashboards

Some information have to be present in the mind of the project participants on a **daily basis**.

For the purpose, a part of the project status is made **visible** (see Principle4) through effective **dashboards** (see Technique1) placed in the offices/rooms as well as in the Intranet spaces.

Usually, the dashboards are developed to show two main kinds of information:

1. Important information which should always be remembered (e.g., the project goals, the organizational strategy goals, the work plan, ...)

2. Critical information which requires prompt intervention (e.g., serious issues, extraordinary meetings, ...)

See an example of a Dashboard at Section 11.1

4.1.3 Issues Log

We keep track of all the issues the are encountered during the work. Any issue is prioritized and added to the Issues Log. When a team decides to solve an issue, the issue is **mapped to an activity** (scheduled) and assigned to a team member.

Countermeasure is taken so that unsolved issues are not neglected for a long time. For example, the size of the Issues Log is continuously visible in the dashboards. In addition, the Control Team sends notifications to the teams when there are very old issues which are not closed yet.

See the Issue Log Template at Section B.7

4.2 Controlling

These activites are delegated or performed in conjunction with the **Control Manager**.

4.2.1 Control Schedule

Variance analysis ($\Rightarrow$ *Schedule Variance*) is performed in order to identify the discrepancies between the planned schedule and the actual work executed. The details of the schedule control process have been defined during Schedule Management Planning (see Section 2.2.2).

The execution of schedule controlling activities and corrective planning are simplified by the use of scheduling software.

If intervention is needed, the most appropriate corrective actions have to be identified and actualized (e.g., through change requests to schedules and plans). For example:

- Resources can be re-allocated from a task to another (**resource leveling**)
- New resources can be requested (**schedule crashing**)
- Different resources (e.g., more efficient ones) can be requested
- Schedules can be compressed by parallelizing critical path activities (**fast tracking**)
- Scope changes can be issued (e.g., to discard or delay low-priority activities)

Of course, some **what-if** analysis should be performed in order to evaluate the effectiveness of different alternatives.

4.2.2 Control Costs

As planned in Section 2.2.3, the actual costs are compared to the planned/budgeted costs. More precisely, the *Cost Performance Index* is checked against the threshold values.

The *Cost Variance* and the *Budget Variance* are weekly checked by the project management team so that previsions of bad trends or actual **cost overruns** can promptly trigger the planning of countermeasure actions. The senior management also takes a look at those Key Performance Indicator (KPI) on a monthly basis to oversee the project by a financial/business value point of view.

These cost controlling activities are **started as soon as possible** in the project so that any recurring/significant discrepancy between planned and actual costs can **feedback** the planning process in order to adjust the estimates. It would also suggest us to think at why the estimates have been missed for both estimation process improvement and more awareness of this aspect during risk analysis.

Examples of countermeasure derive from the application of the **Lean principle "Eliminate waste"**:

- Reduction of useless work (e.g., by limiting the scope to the most prominent requirements)

- Better efficiency through continuous improvement (e.g., by performing retrospectives regularly throughout the project execution, by implementing good communication management, by reducing the amount of bureaucracy, ...)
- Explicit meetings (regular or extraordinary) to discuss project bottlenecks or identify processes carried out with insufficient quality

4.2.3 Quality Control

The deliverables (or increments) are subject to **quality review processes** which collect information about quality as defined in the Quality Management Plan (see Section 2.2.4). Then, the Quality Team produces a report with the quality issues that have been encountered. If the number and seriousness of quality issues is above the thresholds defined in the quality plan, a number of corrective actions may be taken, such as:

- Rejection of the artifact (or a part of it)
- Acceptance of the artifact with registration of the **quality debt** as activities to be added to the schedule
- Leveling of the project triangle (see Principle1), in order to add quality at the expense of scope/cost/resources/time (of course, by escalating the problem up to the project manager and possibly further)

4.2.4 Communications Control

The goal of this process is to ensure that the information needs are met for all the stakeholders.

Particular procedures are in place in the project website so that soft copies could require a "signature of acknowledgment" for certain people/roles – triggering notifications in case of no acknowledgment.

Instead, the informal communications are monitored by the Helper Team which may also suggest particular interventions to improve environmental factors or suggest process enhancements in order to reduce slow/inefficient communication.

4.2.5 Risks Control

The entire Risk Management process has to be regularly checked, very frequently at the beginning of the project (almost continuously), less frequently at the end (e.g., on a 2-weeks basis).

As the project proceeds and more knowledge is collected, new (before invisible) risks could be found. For the purpose, the Risk Identification process is repeated, focusing on the areas suggested by the Control Team.

Moreover, for the risks that have been previously identified (see Section 3.5.1, the Control Team develops and updates the **risk response plans**.

Risk Mitigation

We should work to reduce our exposure to the risks that have been identified.

The following techniques are in place:

- **Contingency reserve**: time reserve for the management of known risks
- **Management reserve**: time reserve for the management of unknown risks (unforeseeable situations in general)
- **Scope bank** see Section 2.2.1

4.2.6 Control Stakeholder Engagement

The goal of this project is to adjust the strategy and the plans of stakeholder engagement. The PMO and the Helper Team can point out issues (as well as the team themshelves) that can be tackled by the project team (or even the management team).

In general, controls have to be made in order to ensure that

1. *Sufficient* stakeholder engagement is in place
2. Stakeholder are *effectively* engaged

For example, if a team has not developed a good plan to regulate its interaction with the stakeholders, the process may proceed in an unefficient manner that reduces the expected value of the activity. Or, the use of bad communication media may result in ambiguous communication and, as a consequence, in poor quality. Or, again, the plan was correct but the team needs with respect to stakeholder engagement have changed.

4.2.7 Monitor and Control Project Work

Once the Project Management Plan has been defined (see Section 2.5), we have to check that works proceeds as established. Many of these activities are performed by the Control Team and the Helper Team, which report to the me on a weekly basis.

In this project, **the way people work is not controlled in the very details**. This is due to two main reasons:

- I believe that **micro-management** is not good – it may negatively influence the way people work and, in the long run, ruin the relationships within and among the teams
- Many of the teams in this project are **self-organising** – I, as the manager, set the boundaries and work as a facilitator

4.2.8 Integrated Change Control

We have to ensure that every change to the project is managed in a consistent and integrated way. For example, related documentation and plans have to be updated, and the updates have to be propagated to the project teams.

Moreover, in this process the **actual impact** of a change is evaluated against the entire project organization. When the impact of a change has been assessed, it is compared against the associated impact statement. This would provide useful information for retrospective meetings so that the precision of impact studies could be improved.

4.3 Precautions

4.3.1 Avoiding creeps

A first tool against creeps is given by the Monitoring process. The dashboards and monitoring reports provide **visibility of bad trends**. It would be great if we could make a monitoring system to automatically alert team leaders and managers whenever certain thresholds are reached.

A second tool against creeps is represented by a traceability system which links activities to requirements. In fact, as this is a R&D project, it is prone to scope and feature creeps.

A watchful Monitoring & Controlling process helps in unmasking effort creeps and hope creeps.

Chapter 5

Closing: Management Documentation

5.1 Closing

5.1.1 Closing Project Phase

The Closing Project Phase process is activated in order to reduce the amount of closing activities that have to be carried out at the very end of the project, including *post review*, *closing procurements* etc.

At the end of each project phase (see Section 1.3.5), we meet to review what has been done hitherto and how. It includes retrospective analysis (see Section 5.2.1), documenting the lessons learned (what worked and what not). The project has to be evaluate against project objectives, budget, quality requirements, and schedule. Every area of management is briefly inspected, including risk management and stakeholder engagement.

5.2 Project Review

5.2.1 Retrospective Analysis

When a team finishes its work, it gathers up one more time for a **retrospective meeting** where its members discuss about the effectiveness of the team itself. The Helper Team members who have supported the team also participate to the meeting and are responsible or producing a retrospective report.

In addition, one **integrated meeting** (involving the management team, the team leaders, the helper team) is held in order to share knowledge and advice among different teams and areas of expertise.

See the Retrospective Report Template at Section B.10

5.2.2 Post Project Review

Similarly to retrospectives, an analysis of the discrepancy between the project plan and the actual execution provides a significant input for improving the management process and also represents a precious organizational asset that might be useful in future undertakings.

It requires looking at the baselines as well as at the older plan revisions. Data such as the number of quality issues, risks, scope change requests should be compared, for example, against the project classification report (see Section 1.3.4), the feasibility study report (see Section 1.3.9), etc. .

5.3 Project Artifacts

5.3.1 Deliverables Acceptance

The main project deliverables (the requirement specifications, architectural design of the e-learning platform and the prototype) have to be formally accepted in order to procede with project closure.

It requires a signature by the project sponsor as the result of the meeting of an ad-hoc committee.

5.3.2 Project Documentation

A section of the PMO is responsible of storing and organizing all the project documentation. This is simplified by the use of a project management web application (which has the project website as the front-end).

5.4 Final Report

The Final Report formally reviews the project execution with respect to project goals, COS, and requirements. It is developed by the Steering Committee with the participation of the entire Management Team.

See the Final Report at Section 12.1

5.4.1 Project Acceptance

The project has to be formally accepted. It requires the Project Sponsor to sign the final report.

Chapter 6

Other points of view

6.1 PMBOK's Knowledge Area

1. Project Integration Management
   (a) Develop Project Charter: see Section 1.3.10
   (b) Develop Project Management Plan: see Section 2.5
   (c) Direct and Manage Work: see Section 3.3
   (d) Monitor and Control Project Work: see Section 4.2.7
   (e) Perform Integrated Change Control: see Section 4.2.8
   (f) Close Project Phase: see section 5.1.1
   (g) Close Project: see Chapter 5
2. Project Scope Management
   (a) Define Scope: see Section 1.3
   (b) Collect Requirements: see Section 1.3.7
   (c) Plan Scope Management: see Section 2.2.1
   (d) Create WBS: see Section 2.1.4
3. Project Time Management
   (a) Plan Schedule Management: see Section 2.2.2
   (b) Define Activities: see Section 2.1.4
   (c) Sequence Activities: see Section 2.1.4
   (d) Estimate Activity Resources: see Section 2.3.2
   (e) Estimate Activity Durations: see Section 2.3.3
   (f) Develop Schedule: see Section 2.4
   (g) Control Schedule: see Section 4.2.1
4. Project Cost Management
   (a) Plan Cost Management: see Section 2.2.3
   (b) Estimate Costs: see Section 2.3.4
   (c) Determine Budget: see Section 2.3.4
   (d) Control Costs: see Section 4.2.2
5. Project Quality Management
   (a) Plan Quality Management: see Section 2.2.4

(b) Perform Quality Assurance: see Section 3.4.1

(c) Perform Quality Control: see Section 4.2.3

6. Project Human Resource Management

(a) Plan Human Resource Management: see Section 2.2.6

(b) Acquire Project Team: see Section 3.1

(c) Develop Project Team: see Section 3.1

(d) Manage Project Team: see Section ??

7. Project Communication Management

(a) Plan Communications Management: see Section 2.2.7

(b) Manage Communications: see Section 3.4.2

(c) Control Communications: see Section 4.2.4

8. Project Risk Management

(a) Plan Risk Management: see Section 2.2.8

(b) Identify Risks: see Section 3.5.1

(c) Perform Qualitative Risk Analysis: see Section 3.5.2

(d) Perform Quantitative Risk Analysis: see Section 3.5.3

(e) Plan Risk Analysis: see Section 2.2.8

(f) Control Risks: see Section 4.2.5

9. Project Procurement Management

(a) Plan Procurements Management: see Section 2.2.9

(b) Conduct Procurements: see Section ??

(c) Control Procurements: see Section ??

(d) Close Procurements: see Section ??

10. Project Stakeholder Management

(a) Identify Stakeholders: see Section 1.3.1

(b) Plan Stakeholder Management: see Section 2.2.10

(c) Manage Stakeholder Engagement: see Section 3.4.3

(d) Control Stakeholder Engagement: see Section 4.2.6

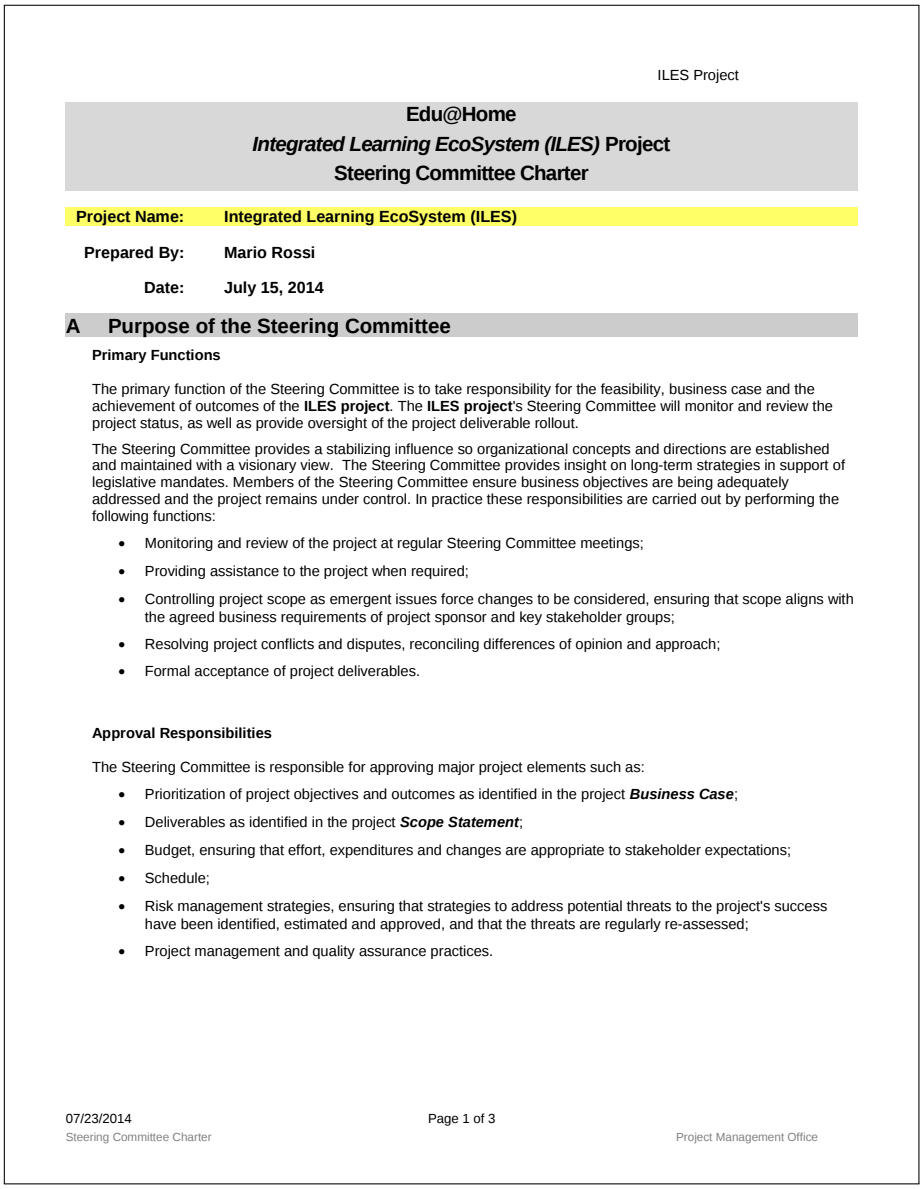
Part II

Project Documentation

Chapter 7

Project Organizational Documentation

7.1 Steering Committee Charter



ILES Project

Edu@Home
***Integrated Learning EcoSystem (ILES)* Project**
Steering Committee Charter

Project Name:	**Integrated Learning EcoSystem (ILES)**
Prepared By:	**Mario Rossi**
Date:	**July 15, 2014**

A Purpose of the Steering Committee

Primary Functions

The primary function of the Steering Committee is to take responsibility for the feasibility, business case and the achievement of outcomes of the **ILES project**. The **ILES project**'s Steering Committee will monitor and review the project status, as well as provide oversight of the project deliverable rollout.

The Steering Committee provides a stabilizing influence so organizational concepts and directions are established and maintained with a visionary view. The Steering Committee provides insight on long-term strategies in support of legislative mandates. Members of the Steering Committee ensure business objectives are being adequately addressed and the project remains under control. In practice these responsibilities are carried out by performing the following functions:

- Monitoring and review of the project at regular Steering Committee meetings;
- Providing assistance to the project when required;
- Controlling project scope as emergent issues force changes to be considered, ensuring that scope aligns with the agreed business requirements of project sponsor and key stakeholder groups;
- Resolving project conflicts and disputes, reconciling differences of opinion and approach;
- Formal acceptance of project deliverables.

Approval Responsibilities

The Steering Committee is responsible for approving major project elements such as:

- Prioritization of project objectives and outcomes as identified in the project ***Business Case***;
- Deliverables as identified in the project ***Scope Statement***;
- Budget, ensuring that effort, expenditures and changes are appropriate to stakeholder expectations;
- Schedule;
- Risk management strategies, ensuring that strategies to address potential threats to the project's success have been identified, estimated and approved, and that the threats are regularly re-assessed;
- Project management and quality assurance practices.

07/23/2014 Page 1 of 3
Steering Committee Charter Project Management Office

B Steering Committee

Membership

In addition to the project sponsor as *ex-officio* member, the Steering Committee will consist of the following core stakeholder members:

Name	Role
Luca Grandi	CTO
Roberto Casadei	**Project Manager**
Alessandro Bianchi	Program Director
Brendan Smith	Vice President of Engineering
Venkat Subramaniam	Chief Architect
Mario Rossi	Technical Editor
Enrico Neri	Research & Development functional manager
Marco Righi	Marketing functional manager
Riccardo Borgia	Planning & Engineering functional manager

Stakeholder members will be identified by the project sponsor.

Role of a Steering Committee member

It is intended that the Steering Committee leverage the experiences, expertise, and insight of key individuals at organizations committed to building professionalism in project management. Steering Committee members are not directly responsible for managing project activities, but provide support and guidance for those who do. Thus, individually, Steering Committee members should:

- Understand the strategic implications and outcomes of initiatives being pursued through project outputs;
- Appreciate the significance of the project for some or all major stakeholders and represent their interests;
- Be genuinely interested in the initiative and be an advocate for broad support for the outcomes being pursued in the project;
- Have a broad understanding of project management issues and approach being adopted.

In practice, this means they:

- Review the status of the project;
- Ensure the project's outputs meet the requirements of the business owners and key stakeholders;
- Help balance conflicting priorities and resources;
- Provide guidance to the project team and users of the project's outputs;
- Consider ideas and issues raised;
- Check adherence of project activities to standards of best practice both within the organization and in a wider context;
- Foster positive communication outside of the Team regarding the project's progress and outcomes;

- Report on project progress to those responsible at a high level, such as agency executive management groups, heads of agencies, or Governor's Cabinet; and
- Progress any whole-of-Government issues associated with the project.

C Steering Committee Meetings

Meeting Schedule and Process

The Team will meet monthly or as required to keep track of issues and the progress of the project's implementation and on-going statewide support to its stakeholders.

The Project Sponsor chairs the Steering Committee and facilitates the Steering Committee Meeting. The Team will follow modified Roberts Rules of Order in the conduct of meetings, motions, discussion and voting.

Meeting Agenda

At each meeting, project status will be reported to the Team by the project manager using an agenda outline such as the following:

A. Introductory Items such as:
   - Introductions
   - Review Agenda
   - Minutes from last meeting
   - Review of actions arising from previous Steering Committee meetings.

B. Review Project Status
   - Overall Status
   - Scope status
   - Schedule status
   - Budget status
   - Reason for deviation from green
   - New issues arising since the last Team meeting
   - Review and approval of project change orders
   - Budget
   - Milestone review
   - Formal acceptance of deliverables
   - Accomplishments against last meeting's plans
   - Plans for the next reporting period
   - Outstanding issues, open points, project conflicts
   - Specific requests for assistance of the Steering Committee

C. Consideration of other items relevant to the project

D. Review and summarize new actions from this meeting

E. Plans, date and location for next meeting

Chapter 8

Initiating / Scoping: Project Documentation

8.1 Conditions of Satisfaction

Edu@Home

***Integrated Learning EcoSystem (ILES)* Project**

Conditions of Satisfaction

General Conditions of Satisfaction	Expected benefits	Expected detriments (if not achieved)
Carry out field studies, perform market analyses, gather and analyze the requirements for the conceived learning platform	The organization should have enough information to determine if the project is strategically relevant and if an entire program of projects has to be activated in order to deal with the complexity and the scope of the effort.	In addition to the waste of resources, the organization is unable to establish if the conceived e-learning platform is worth the case and what is the scope of the effort.
Determine the feasibility and the constraints for both the project and the solution	The organization and the project board have access to enough information to establish a high-level plan for the project.	The organization is unable to predict if the project can actually be carried out.
Define an architectural solution and a prototype for the conceived learning ecosystem	The organization receives value from a product which is well-defined with respect to both technical and business aspects.	In addition to the waste of resources, the organization has not enough elements to proceed with the integration and implementation of the platform as its components and relationships are not clearly defined.

Particular Conditions of Satisfaction	Expected benefits	Expected detriments (if not achieved)
The e-learning platform has to employ Semantic Web technologies.	- Expertise in the Semantic Web technologies - Use of cutting edge technologies to enable Web 3.0 scenarios - Ability to realize advanced applications	- Opportunity loss with respect to competitors
...		
...		

8.2 Stakeholder Definition Report

Revision #1 ILES Project

Edu@Home
***Integrated Learning EcoSystem (ILES)* Project**
Stakeholder Definition Report

Project Name: ILES **Date:** July 21, 2015

Prepared By: Mario Rossi **Authors:** Management Group members

A Introduction

This report represents the **authoritative reference** for the project's stakeholders.

Stakeholder Analysis Method

1. Brainstorm the list of potential stakeholders
2. Define a set of stakeholder characteristics (analysis dimensions) of interest within the project
3. Discuss each stakeholder along the analysis dimensions
4. Rank each stakeholder based on its relevance within the project

The analysis dimensions are the following:

- **Type**
  - **Primary**: directly benefiting from or affected by a particular business activity
  - **Secondary**: indirectly benefiting or affected by a particular business activity
  - **Key**: having a significant influence on the project
- **Interests in the project**
- **Involvement need**
- **Profile**
- **Impact**
  - **Scope Impact**
  - **Schedule Impact**
  - **Cost Impact**

Revisions

#1: The initial stakeholder definition is carried out during the scoping meeting on July 21, 2015.

21/07/2014 Page 1 of 2
Stakeholder Definition Report Project Management Office

B Stakeholders

Stakeholder	Type	Interests in the project	Profile (Context, expectations)	Involvement need	Impact		
					Scope	Sched	Cost
Investors	Primary	- ROI			Low	Low	High
Project staff	Primary				High	High	High
Senior managers	Primary			Low	Low	Med	Med
Customers	Key			High	High	Low	Low
Schools	Key			High	High	Low	Low
Students	Key			High	High	Low	Low
…	…	…	...				
Prospective customers	Secondary				High	Low	Low
Communities	Secondary			Medium	High	Med	Low
Media	Secondary			Low	Low	Med	Low
Competitors	Secondary				Med	High	Low

C Recommendations

We recommend a significant engagement of all the stakeholders throughout the project endeavour.

An insufficient engagement of the key stakeholders may significantly impact on the project's outcomes.

8.3 Business Case

Revision 1 ILES Project

Edu@Home
***Integrated Learning EcoSystem (ILES)* Project**
Business Case

Project Name: Integrated Learning EcoSystem (ILES)

Prepared By: Mario Rossi

Date: 09/06/2014

A Executive Summary

This project represents the best endeavor towards the accomplishment of the Edu@Home strategic objectives and we have estimated a significant ROI ...

B Introduction

Background and Strategic Context

Education is one of the biggest market in the world. We identified the need for a comprehensive platform able to assist learners around the world in their study and knowledge management activities.

Business Problem

…

Major assumptions

…

Market analysis

Our study of the e-learning market in different zones of the world has pointed out the following ….

C Options Analysis

SCENARIO A: PROJECT FEASIBILITY

Scope

...

Cost-Benefit Analysis

…

Risks

…

08/21/2014 Page 1 of 2
Business Case Project Management Office

SCENARIO B: PROJECT UNFEASIBILITY

Scope

...

Cost-Benefit Analysis

…

Risks

…

D Conclusion

Recommendations

...

8.4 Requirements Breakdown Structure

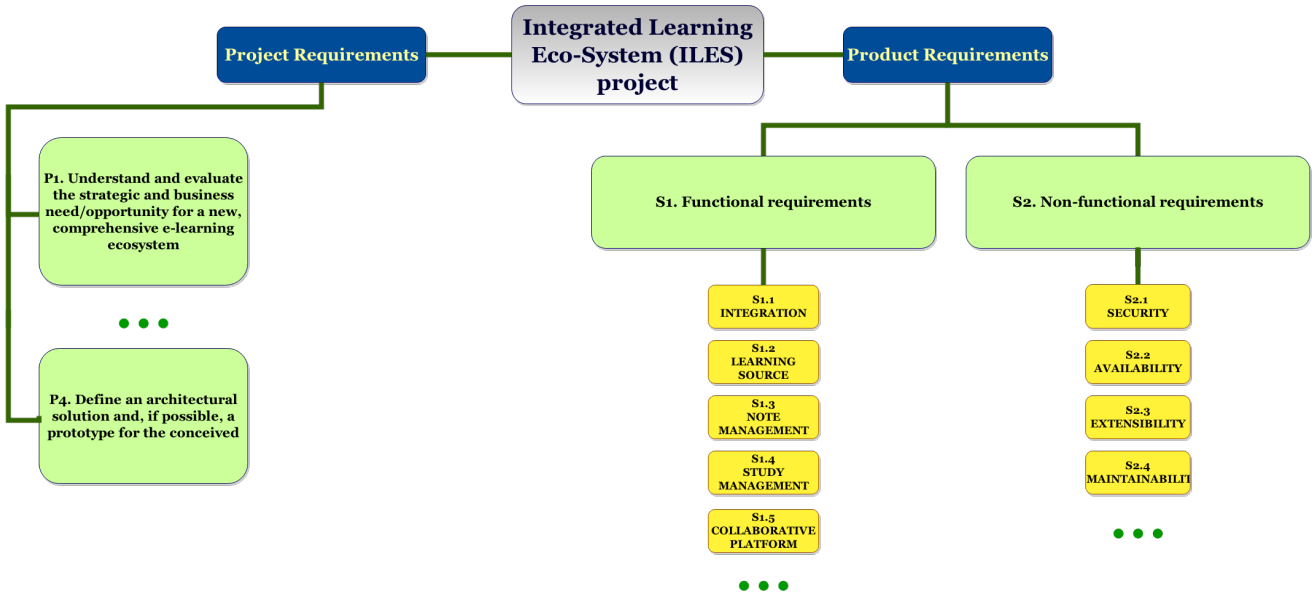


Figure 8.1: The graphical representation of the High-Level Requirement Breakdown Structure.

8.5 Project Classification

ILES Project

Edu@Home

***Integrated Learning EcoSystem (ILES)* Project**

Project Classification

Method for project classification: Ad-hoc

Application field: Software

Type of project: Research & Development Project

Expected business value: High

Project Phase	Complexity		Uncertainty		Project characteristics			
	Human	Technical	Goals	Method	Risk	Size	Cost	Time
PROJECT	HIGH	HIGH	HIGH	NORMAL	HIGH	VERY LARGE	5 – 15 million €	1 – 2 years
Initiation	High	Normal					≈ 1 million €	≈ 2 months
Research	High	Normal					≈ 4 million €	≈ 6 months
Development	High	Very High					≈ 4 million €	≈ 6 months
Completion	High	High					≈ 0,5 million €	≈ 1 months

Complexity scale: (1) very low – low – normal – high – very high – extreme (6)
Uncertainty scale: (1) very low – low – normal – high – very high – extreme (6)
Risk scale: (1) very low – low – normal – high – very high – extreme (6)
Size scale: (1) very small – small – medium – large – very large – huge (6)
Cost intervals: < 500.000 € ; 500.000 – 2.500.000 € ; 2.500.000 – 10.000.000 € ; 10.000.000 – 30.000.000 € ; > 30.000.000 €
Time intervals: < 6 months ; 6 – 12 months ; 1 – 2 years; > 2 years

11/10/2014 Page 1 of 1
Project Classification Project Management Office

8.6 Project Management Life Cycle Model

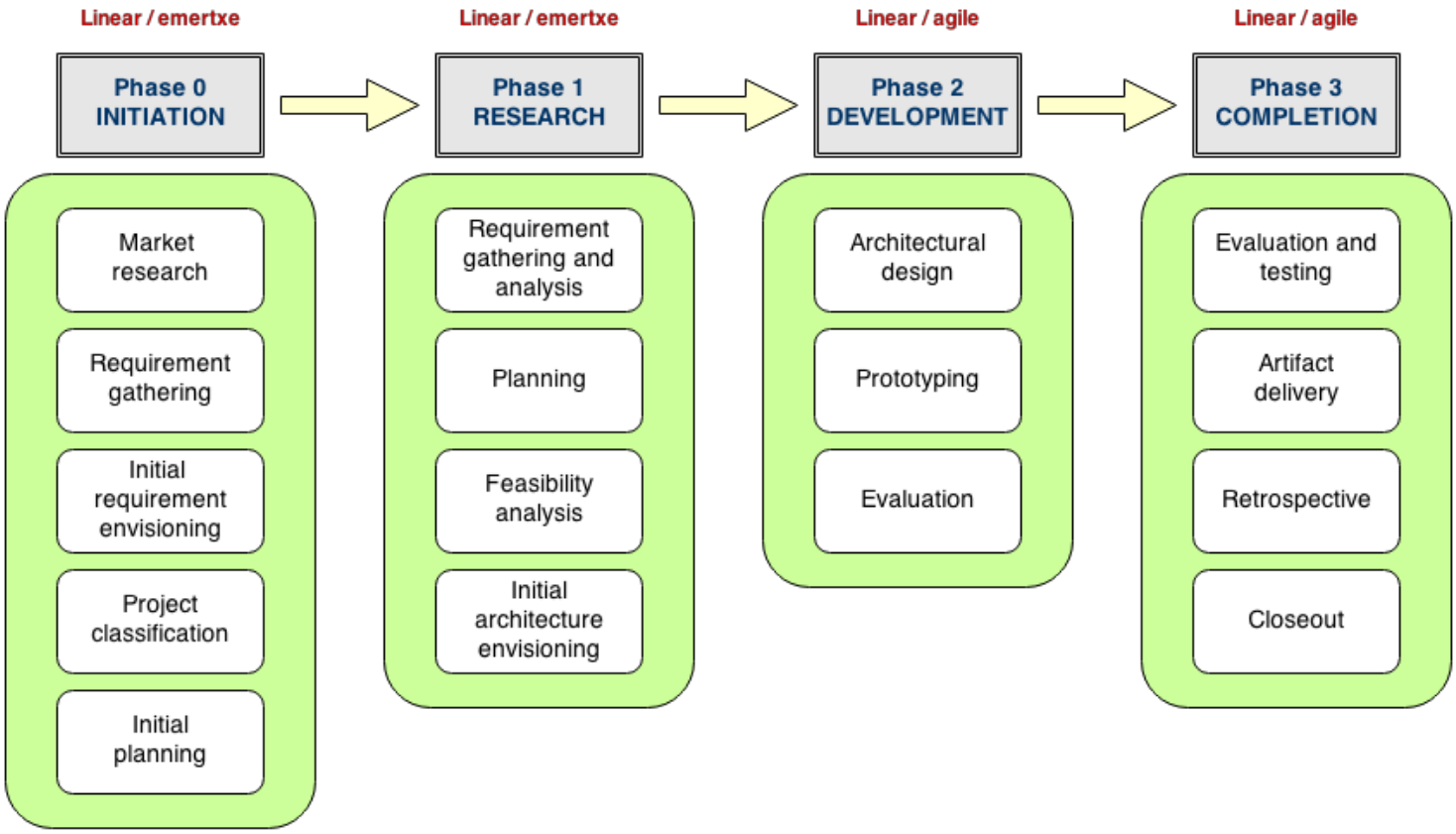


Figure 8.2: The Project Management Life Cycle Model for this project.

8.7 Feasibility Study Report

Final Draft - Revision 1 ILES Project

Edu@Home
***Integrated Learning EcoSystem (ILES)* Project**
Feasibility Study Report

Project Name: Integrated Learning EcoSystem (ILES) **Authors:** Feasibility Study Team Members

Prepared By: Enrico Guidi

Date: December 10, 2014

A Introduction

Purpose

The current document is a report of the Feasibility Study carried out within the context of the ILES Project. It provides the management with the results of such an effort and a set of recommendations that should be carefully evaluated in order to decide if the project can continue its course.
...

Project History

The ILES Project was started in 2014 as a response to the new Edu@Home strategy.

...

Methodology

Our Feasibility Study Group focuses on the TELOS (Technical, Economical, Legal, Operational, Scheduling) feasibility aspects of the project.

...

Elements excluded from the study

...

B Results and Analysis

AREA 1: Technical

Constraints

...

Risks

...

AREA 2: Economical

Constraints

...

Risks

…

AREA 3: Legal

Constraints

...

Risks

...

08/22/2014 Page 1 of 2
Feasibility Study Report Project Management Office
Taken and adapted from http://energy.gov/sites/prod/files/cioprod/documents/feas.pdf

AREA 4: Operational

Constraints

...

Risks

…

AREA 5: Scheduling

Constraints

...

Risks

...

C Evaluation and Main Findings

The Feasibility Study has proceeded well except for the following issues which have been encountered:

...

The following table reports the main findings, which need to be seriously considered by who reads this document:

ID	Description	Seriousness	Area
…	…	…	…
#5	The **full, worlwide internationalization** (i18n) of the platform is an obstacle which might require more resources than expected. Moreover, such an issue spans multiple areas.	**Very high**	Technical, Legal, Economical
…	…	…	...

Seriousness scale: (1) very low – low – normal – high – very high – extreme (6)

D Recommendations and Conclusions

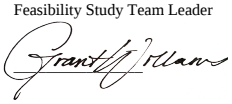
The study has found many aspects deserving careful attention.

…

We suggest the Project Board to revise the indicated parts of the project scope in order to keep the project on track and on budget.

…

Feasibility Study Team Leader



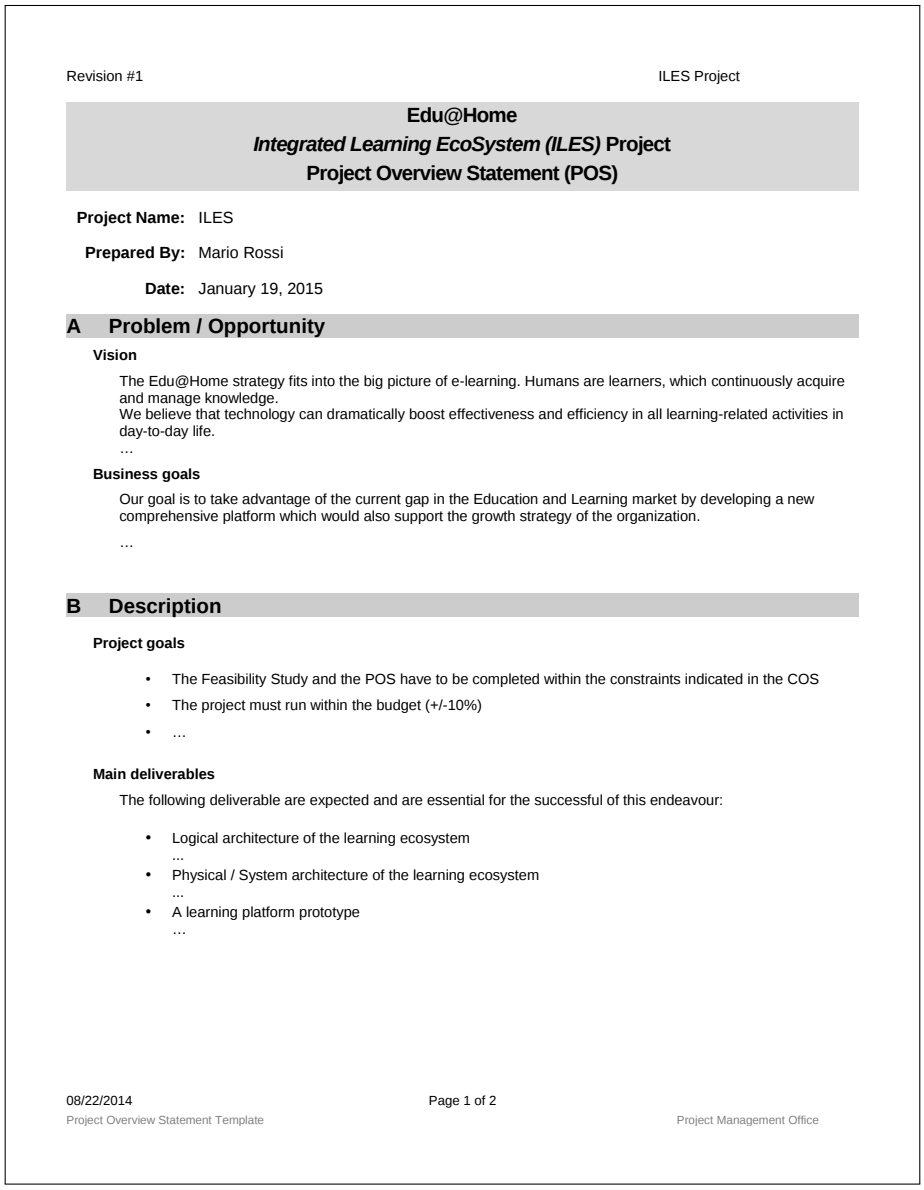
Approved by

_____

8.8 Project Overview Statement

Attachments

- Feasibility Study: including risk, cost-benefit, and financial analysis; see Section 8.7
- Business Case: see Section 8.3



Revision #1 ILES Project

Edu@Home
***Integrated Learning EcoSystem (ILES)* Project**
Project Overview Statement (POS)

Project Name: ILES

Prepared By: Mario Rossi

Date: January 19, 2015

A Problem / Opportunity

Vision

The Edu@Home strategy fits into the big picture of e-learning. Humans are learners, which continuously acquire and manage knowledge.
We believe that technology can dramatically boost effectiveness and efficiency in all learning-related activities in day-to-day life.
…

Business goals

Our goal is to take advantage of the current gap in the Education and Learning market by developing a new comprehensive platform which would also support the growth strategy of the organization.

…

B Description

Project goals

- The Feasibility Study and the POS have to be completed within the constraints indicated in the COS
- The project must run within the budget (+/-10%)
- …

Main deliverables

The following deliverable are expected and are essential for the successful of this endeavour:

- Logical architecture of the learning ecosystem
  ...
- Physical / System architecture of the learning ecosystem
  ...
- A learning platform prototype
  …

08/22/2014 Page 1 of 2
Project Overview Statement Template Project Management Office

C Success Criteria

- The increased cohesion and integration of Edu@Home products provides a **better service** for learners all around the world
- The expected ROI results in 20%-50% range
- …

D Assumptions, Risks, and Obstacles

For a detailed analysis of these aspects, please take a look at the attachment #1 – Feasibility Study Report

...

Project Manager	Approved by	On date
		

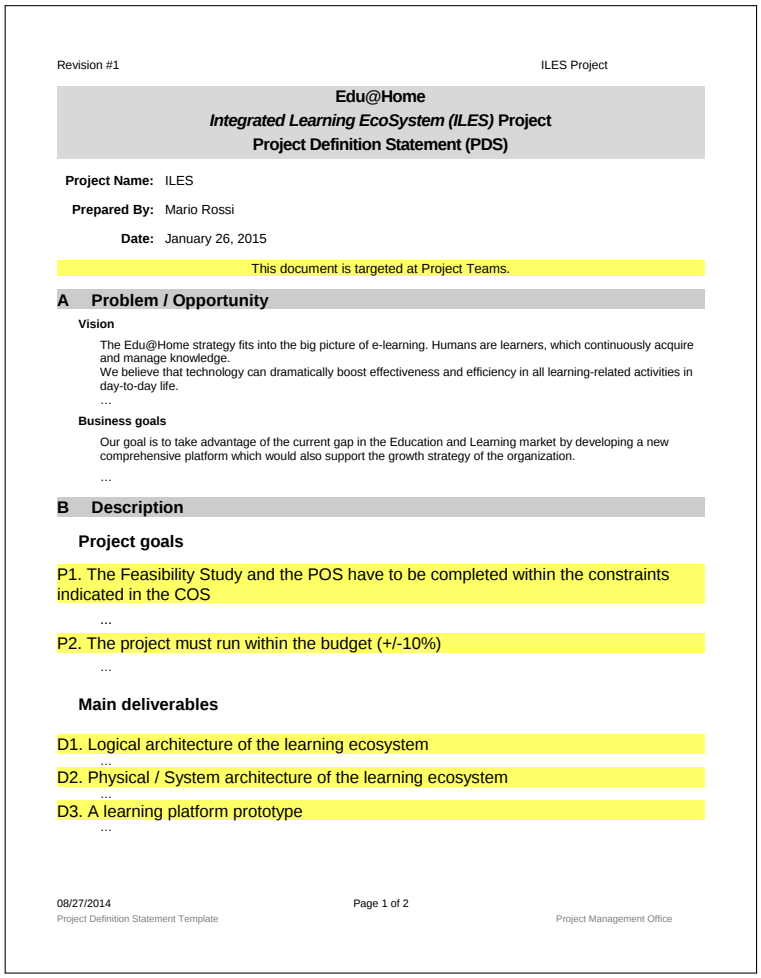
Chapter 9

Planning: Project Documentation

9.1 Project Description Statement

Attachments

- Feasibility Study: including risk, cost-benefit, and financial analysis; see Section 8.7
- Business Case: see Section 8.3



Revision #1 ILES Project

Edu@Home
***Integrated Learning EcoSystem (ILES)* Project**
Project Definition Statement (PDS)

Project Name: ILES

Prepared By: Mario Rossi

Date: January 26, 2015

This document is targeted at Project Teams.

A Problem / Opportunity

Vision

The Edu@Home strategy fits into the big picture of e-learning. Humans are learners, which continuously acquire and manage knowledge.
We believe that technology can dramatically boost effectiveness and efficiency in all learning-related activities in day-to-day life.
...

Business goals

Our goal is to take advantage of the current gap in the Education and Learning market by developing a new comprehensive platform which would also support the growth strategy of the organization.
...

B Description

Project goals

P1. The Feasibility Study and the POS have to be completed within the constraints indicated in the COS
...
P2. The project must run within the budget (+/-10%)
...

Main deliverables

D1. Logical architecture of the learning ecosystem
...
D2. Physical / System architecture of the learning ecosystem
...
D3. A learning platform prototype
...

08/27/2014 Page 1 of 2
Project Definition Statement Template Project Management Office

C Success Criteria

Business Success Criteria

- The increased cohesion and integration of Edu@Home products provides a **better service** for learners all around the world
- The expected ROI results in 20%-50% range
- …

Project Success Criteria

- The QA Group evaluates the quality of Requirements as HIGH
- ...

Technical Success Criteria

- The Architectural Solution covers the entire problem scope
- ...

D Assumptions, Risks, and Obstacles

For a detailed analysis of these aspects, please take a look at the attachment #1 – Feasibility Study Report

...

Project Manager Approved by On date

9.2 Quality Management Plan

Revision #1 ILES Project

Edu@Home
***Integrated Learning EcoSystem (ILES)* Project**
Quality Management Plan

Project Name: ILES **Date:** January 26, 2015

Prepared By: Mario Rossi **Authors:** Management Group and Quality Team members

A Introduction

Purpose

This document represents the plan which describes what the project quality requirements are and how they are intended to be satisfied.

B Quality Assurance

...

C Quality Control

...

D Quality Metrics and Standards for Project Deliverables

Metrics should always be clear, measurable, controllable, and reportable.

Deliverable / artifact	Formal review process	Quality metrics		Comments / Compliance levels
		Metric	Values	
Report	No	Standard format	Qualitative: (bad)1—5(good)	
		Completeness	Qualitative: (bad)1—5(good)	
		Clarity	Qualitative: (bad)1—5(good)	
		Significance	Qualitative: (bad)1—5(good)	
		Conciseness	Qualitative: (bad)1—5(good)	
Requirement Specification	Yes	Completeness	Qualitative: (bad)1—5(good)	
		Currently relevant	Qualitative: (bad)1—5(good)	
		Consistency	Qualitative: (bad)1—5(good)	
		Atomicity (non-conjugated)	Qualitative: (bad)1—5(good)	
		Ambiguity	Qualitative: (bad)1—5(good)	

09/17/2014 Page 1 of 2
Quality Management Plan Project Management Office

		Verifiability	Qualitative: (bad)1—5(good)	
		Prioritized	Qualitative: (bad)1—5(good)	
Architectural Design	Yes	Standard notation	Qualitative: (bad)1—5(good)	
		Clarity	Qualitative: (bad)1—5(good)	
		Conciseness	Qualitative: (bad)1—5(good)	
		Consistency	Qualitative: (bad)1—5(good)	
		Traceability	Qualitative: (bad)1—5(good)	
Prototype	Yes	Number of defects	Numerical	
		Testing coverage	Percentage %	

E Quality Metrics and Standards for Project Processes

…

F Recommendations about Quality to the Project Teams

…

9.3 Human Resources Management Plan

Revision #1 ILES Project

Edu@Home
***Integrated Learning EcoSystem (ILES)* Project**
Human Resources Management Plan

Project Name: ILES **Date:** January 26, 2015

Prepared By: Mario Rossi **Authors:** Management Group members

A Introduction

Purpose

This document represents the plan which describes what the HR requirements are and how they are intended to be satisfied.

Attachments

See the Stakeholder Report attachment for a more complete vision of the project participants.

B Project Roles

Role	Responsibilities	Authority	Required skills	Reporting relationship
Management roles				
Project sponsor	- Ensures the project is strategically aligned - Supports the Project Manager to successfully deliver the project			Reports to the Executive Management
Project manager	- Sets up the project organization - Manages the project plans - Manages the project teams			Reports to the Project Sponsor
Quality manager	- Ensures the project quality requirements are satisfied			Reports to the Project Manager
Control manager	- Ensure the project is effectively monitored and controlled - Manages the project risks			Reports to the Project Manager
Support manager	- Provide support to project execution			Reports to the Project Manager
Non-management roles				
Business researcher	- Performs market research - Performs field studies			Reports to the Business Analysis and Requirements Team

09/16/2014 Page 1 of 2
Human Resources Management Plan Project Management Office

				Leader
Business analyst	- Performs requirements gathering - Performs requirements analysis		Knowledge in the education/e-learning domain; analysis and modelling techniques	Reports to the Business Analysis and Requirements Team Leader
Enterprise architect	- Designs the system architecture		Enterprise application and system patterns; design methodologies	Reports to the Architecture Team Leader
Application architect	- Design the application architecture		Design and architectural patterns	Reports to the Architecture Team Leader
Software engineer (system & desktop)	- Implements the software infrastructure - Implements the software applications			Reports to the Development Team Leader
Software engineer (Web)	- Implements the web applications			Reports to the Development Team Leader
Software engineer (mobile)	- Implements the mobile applications			Reports to the Development Team Leader
Tester	- Perform functional tests - Perform non-functional tests - Perform integration tests			Reports to the Development Team Leader
Quality engineer	- Develops quality assurance recommendations - Performs quality reviews			Reports to the Quality Manager
Risk analyst	- Identify the risks - Evaluate the risks			Reports to the Control Manager
Project monitor	- Performs monitoring activities			Reports to the Control Manager
Project editor	- Develops and edits the written/multi-medial project deliverables			Reports to the Support Manager
Project helper	- Supports the project teams			Reports to the Support Manager

C Recommendations for Team Construction

...

D Recommendations for Team Development, Training, and Support

...

9.4 Communications Management Plan

Revision #1 ILES Project

Edu@Home
***Integrated Learning EcoSystem (ILES)* Project**
Communications Management Plan

Project Name: ILES **Date:** January 26, 2015

Prepared By: Mario Rossi **Authors:** Management Group members

A Introduction

Purpose

This document represents the plan which describes what and how communications take place throughout the project.

Attachments

See the Stakeholder Report attachment.

B Stakeholder Communications Needs

Stakeholder group	Communications needs	Frequency	Preferred vehicles
Investors	Earned value and financial project status	Quarterly	Board meetings
Executive managers	High-level project status reports	Monthly	Written, formal reports

C Project Team Directory

Name	Title	Organization/ department	Email	Phone
Richard Bassi	Project Sponsor	Executive Management	r.bassi@eduathome.com	+39 348 214352
Roberto Casadei	Project Manager	PMO	r.casadei@eduathome.com	+39 333 678132

09/16/2014 Page 1 of 3
Communications Management Plan Project Management Office
Adapted from http://www.projectmanagementdocs.com/project-planning-templates/communications-management-plan.html

D Communications Matrix

Vehicle	Purpose	Target	Frequency	Owner	Distribution vehicle
Requirements Quality Review	Quality assessment of the requeirement documentation	Business Analysis & Requirements Team	2-weeks	Quality Team	Project website "Quality" section

E Meetings

Communication Type	Objective of Communication	Medium	Frequency	Audience	Owner	Deliverable	Format
Kickoff Meetings	Introduce the project team and the project. Review project objectives and management approach.	Face to face	Once at every project phase	- Project sponsor - Project manager - Project teams - Stakeholders	Project manager	- Kickoff meeting report	Soft copy archived on SharePoint site and project website.
Joint Project Planning Sessions	Plan and estimate resources needed to satisfy work and requirements.	Face to face	As Needed	- Project manager - Management team - Project teams	Project manager	- Estimates - Plans	Soft copy archived on SharePoint site and project website.
Monthly Project Status Meetings	Report on the status of the project to management.	Face to face, Conference call	Monthly	- Executive management - Project sponsor - Project manager - PMO	Project manager	- Resource updates - Requests for changes	Soft copy and hard copy
Daily Team Meetings	Report on the status of the work to the team.	Face to face	Daily	- Team - Helper Team members	Team leader	- Work updates	Soft copy archived on SharePoint site and project website.

F Problem Escalation

Efficient and timely communication is the key to successful project completion. As such, it is imperative that any disputes, conflicts, or discrepancies regarding project communications are resolved in a way that is conducive to maintaining the project schedule, ensuring the correct communications are distributed, and preventing any ongoing difficulties. In order to ensure projects stay on schedule and issues are resolved, ABC Corp. will use its standard escalation model to provide a framework for escalating communication issues. The table below defines the priority levels, decision authorities, and timeframes for resolution.

Priority	Definition	Decision Authority	Timeframe for Resolution
Priority 1	Major impact to project or business operations. If not resolved quickly there will be a significant adverse impact to revenue and/or schedule.	Vice President or higher	Within 4 hours
Priority 2	Medium impact to project or business operations which may result in some adverse impact to revenue and/or schedule.	Project Sponsor	Within one business day
Priority 3	Slight impact which may cause some minor scheduling difficulties with the project but no impact to business operations or revenue.	Project Manager	Within two business days
Priority 4	Insignificant impact to project but there may be a better solution.	Project Manager	Work continues and any recommendations are submitted via the project change control process

Problem Escalation Matrix

Type of Escalation	1st Escalation Level	2nd Escalation Level	3rd Escalation Level	4th Escalation Level	5th Escalation Level	6th Escalation Level
Operational	**Team**	**Helper Team**	**Functional manager**	**Project manager**	**Project sponsor**	**Executive level**
Technical	**Team**	**Helper Team**	**Functional manager**	**Project manager**	**CTO**	**VP of Engineering**
Resource	**Team**	**Helper Team**	**Functional manager**	**Project manager**	**Project sponsor**	**Executive level**
3rd Party	**Team**	**Helper Team**	**Functional manager**	**Project manager**	**Project sponsor**	**Executive level**

9.5 Work Breakdown Structure

Revision #1 ILES Project

Edu@Home
***Integrated Learning EcoSystem (ILES)* Project**
Work Breakdown Structure (WBS)

Project Name: ILES **Date:** January 26, 2015

Prepared By: Mario Rossi **Authors:** JPPS Members

A Introduction

The present document, resulting from planning activities, extends the Requirements Breakdown Structure (RBS) into a Work Breakdown Structure (WBS).

The WBS provides a hierarchical view of the work that must be done in order to implement what is dictated by the specifications.

Legend

PR = Project Requirement
SR = Product/Solution Requirement
W = Work/Activity

B Project WBS

PR1. Understand and evaluate the strategic and business need/opportunity for a new, comprehensive e-learning ecosystem

- PR1.1. Market Research
  - W1. Hire a team for market research
  - W2. Make a plan for market research
  - W3. Execute market research
  - W4. Deliver the results of market research
  - W5. Review the results of market research
- PR1.2. Requirement Gathering
  - W1. Hire a team for requirement gathering
  - W2. Make a plan for requirement gathering
  - W3. Execute requirement gathering
  - W4. Deliver the results of market research
- PR1.3. Field Studies
- PR1.3. Requirement Analysis
- PR1.4. Feasibility Study

…..

08/27/2014 Page 1 of 3
Work Breakdown Structure (WBS) Project Management Office

.....

PR4. Define an architectural solution and, if possible, a prototype for the conceived e-learning platform

.....

.....

C Product/Solution WBS: Architectural Design of the E-Learning Ecosystem

Quality Requirements

SR1. Completeness of Architecture

W1. Evaluate the architecture for completeness with respect to the problem scope

SR2. Quality of Architecture

SR2.1. Respect of standards

W2. Evaluate the architecture for respect of organizational and/or technical standards

.....

.....

D Prototype of the E-Learning Ecosystem

Functional Requirements

SR1. Integration

SR2. Learning Source Management

SR3. Note Management

SR4. Study Management

SR5. Collaborative Platform

.....

.....

Non-functional Requirements

SR1. Security

SR2. Availability

SR3. Extensibility

.....

.....

E Recommendations and Summary

Recommendations for Estimation Activities

…….

…….

Project Manager	Approved by	On date
	_____	_____

9.6 Estimates

9.6.1 Effort Estimate

Attachments

- WBS (see Section 9.5)
- Resource estimates (see Section 9.6.2)

Revision #1 ILES Project

Edu@Home
***Integrated Learning EcoSystem (ILES)* Project**
Effort Estimate

Project Name: ILES **Date:** January 26, 2015

Prepared By: Mario Rossi **Authors:** JPPS Members

A Introduction

The present document, resulting from estimating activities, quantify the effort needed to carry out the activities in the Work Breakdown Structure (WBS).

METRIC: The effort is measured in **man-hours**.

Accuracy of estimation

Which?	Accuracy level	Project Definition Level	Purpose	Variance
	Rough Order-Of-Magnitude	0% to 2%	Screening	-50% to +150%
	Order-Of-Magnitude	1% to 20%	Feasibility	-25% to +75%
X	Preliminary	15% to 40%	Budget, authorization	-15% to +50%
	Intermediate	30% to 70%	Control	-10% to +30%
	Definitive	50% to 100%	Control, verify	-5% to +10%

Allocated resource estimates

See them in the attachments.

Assumptions

.....

B Effort Estimations

Task ID	Task Description	Allocated resources (men)	Effort (hours)
…	…	…	…
#X.Y.Z	Write the Market Research Report	2 Market Researchers 2 Business Analysts 1 Editor	8 8 8
…	…	…	...

.....

08/30/2014 Page 1 of 2

Effort Estimate Project Management Office

…….

C Considerations

…….

…….

Project Manager Approved by On date

_____ _____ _____

9.6.2 Resource Breakdown Structure

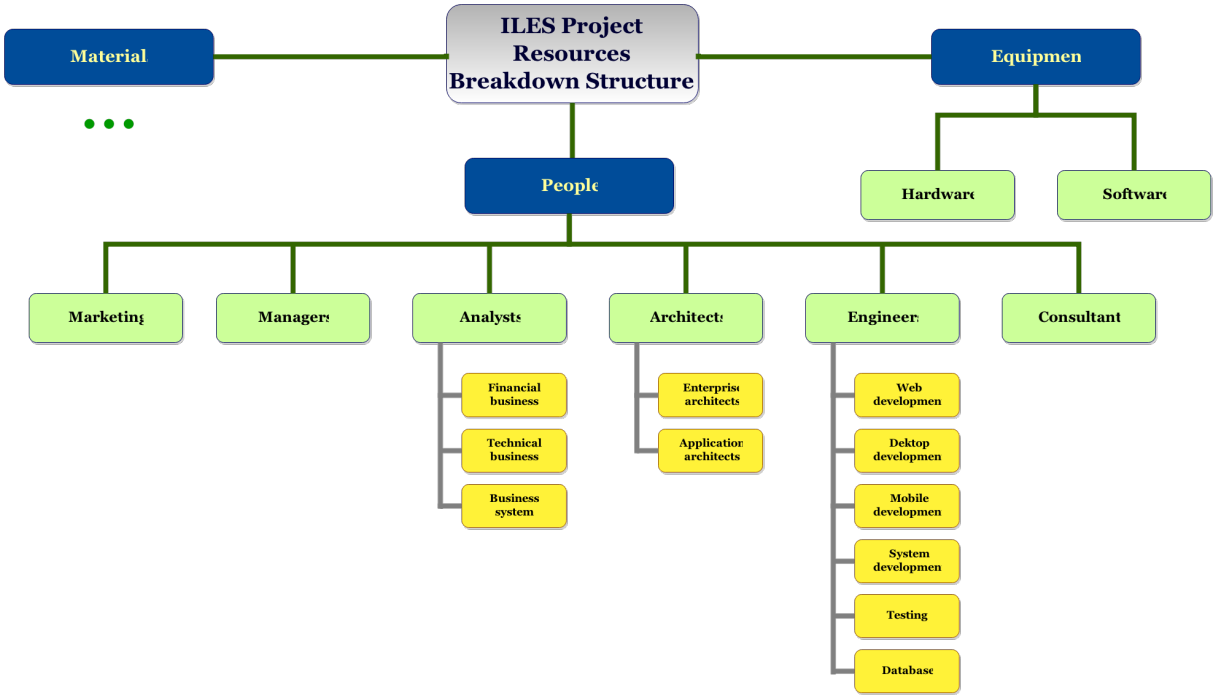


Figure 9.1: The Resources Breakdown Structure.

Each leaf node is given a numerical value.

9.6.3 Scheduling Estimates

Top-Level Project Schedule

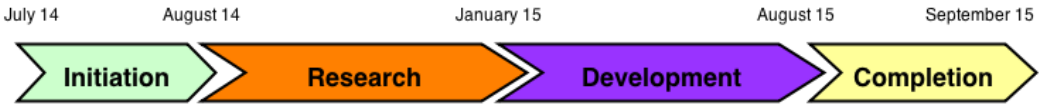


Figure 9.2: An high-level view of the project schedule.

Another representation, drawn using Tool2, is the following:

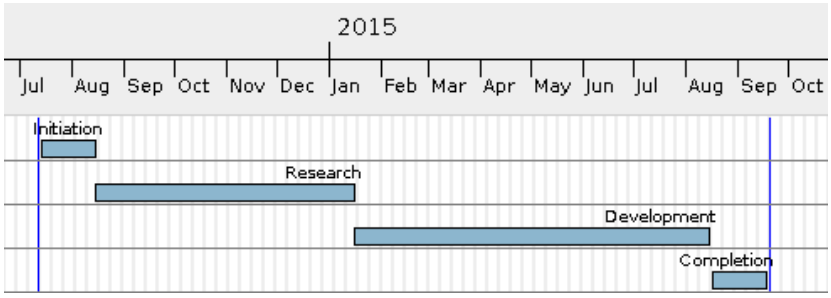


Figure 9.3: The Gantt chart for the project schedule.

9.6.4 Project Network Diagram

Project Requirements

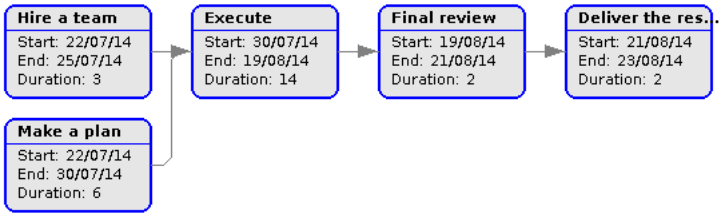


Figure 9.4: High-Level PERT Diagram: Market Research

...

Architectural Design of the E-Learning Ecosystem

...

Prototype of the E-Learning Ecosystem

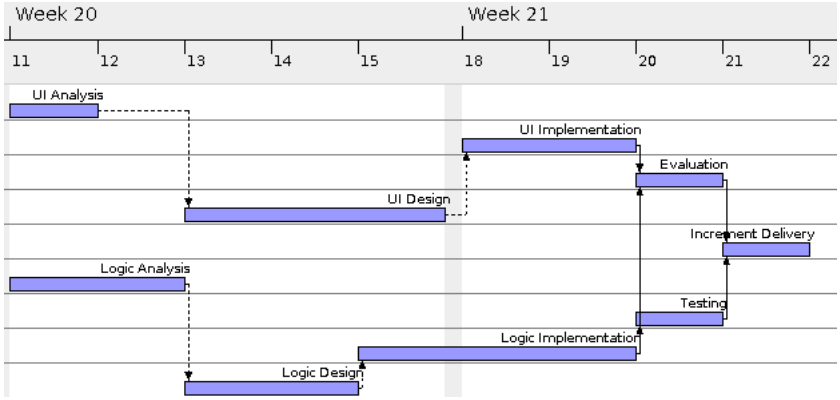


Figure 9.5: PERT Diagram: Initial iteration (note that the analysis and design activities have a significant time allocation) for a Web-based functionality (e.g., Note Taking)

...

9.6.5 Budget Estimates

Attachments

- Effort estimates (see Section 9.6.1)
- Scheduling estimates (see Section 9.6.4)
- Resource estimates (see Section 9.6.2)

Revision #1 ILES Project

Edu@Home
***Integrated Learning EcoSystem (ILES)* Project**
Budget Estimate

Project Name: ILES **Date:** January 26, 2015

Prepared By: Mario Rossi **Authors:** Management Group members

A Introduction

Accuracy of estimation

Which?	Accuracy level	Project Definition Level	Purpose	Variance
	Rough Order-Of-Magnitude	0% to 2%	Screening	-50% to +150%
X	Order-Of-Magnitude	1% to 20%	Feasibility	-25% to +75%
	Preliminary	15% to 40%	Budget, authorization	-15% to +50%
	Intermediate	30% to 70%	Control	-10% to +30%
	Definitive	50% to 100%	Control, verify	-5% to +10%

Effort, time, and resource estimates

See them in the attachments.

Assumptions

.....

08/30/2014 Page 1 of 2
Budget Estimate Project Management Office

B Estimation

Branch: MILAN (IT)

Cost Items	Phase 0 Initiation	Phase 1 Research	Phase 2 Development	Phase 3 Completion	Avg Cost	Total
Direct Costs						
Personnel Labor						
Managers						
Consultants						
Marketing Members						
Analysts						
Architects						
Engineers						
Team leaders						
Equipment						
Software						
Hardware						
Facilities and other costs						
Travel, meetings, and events						
Other costs						
Indirect Costs						
Overhead						
Total						

C Considerations

…..

Project Manager Approved by On date

Chapter 10

Launching / Execution: Project Documentation

10.1 High-Level Responsibility Assignment Matrix

Project phase: INITIATION/RESEARCH

RASCI model: (R)esponsible; (A)ccountable; (S)upport; (C)onsulted; (I)nformed

	Market research	Requirement gathering	Field studies	Requirement analysis	Feasibility study	Project classification	Project planning	Architecture envisioning
Project Manager	I	I	I	I	I	A	A	I
Management Team						R	R	
Market Research Team	R	C	C	C				
Requirement Team	I	R	R	C				
Business Analysis Team	I	S	S	R				C
Feasibility Study Team					R	C	C	
Architecture Team					C		C	R

Figure 10.1: High-Level Linear Responsibility Chart.

10.2 Team-Related Documentation

10.2.1 Project-Wide Operating Rules

Revision #1 ILES Project

Edu@Home
***Integrated Learning EcoSystem (ILES)* Project**
Project-Wide Operating Rules

Project Name: ILES **Date:** January 26, 2015

Prepared By: Mario Rossi **Authors:** Project Management Team

1. Introduction

The following rules apply to every project team.

They cannot be replaced by team-specific rules, except when explicitly stated.

When in contrast with organization-wide operating rules, the latter win.

2. Team Operating Rules

1. **Self-organisation**: the team can self-organise itself within the limits and expectations defined upon team constitution
2. **Documentation**
3. **Conflict resolution**
   - In case of any conflict, the general rule is majority wins. In case of a tie, the keeper of the document can make the executive decision.
   - If no owner is identified in case of a tie, the team leader is the person to consult.
4. **Team Leader**
   - The Team Leader is a team member which is responsible for the entire team
   - The Team Leader may be conferred of special powers within the team
5. ...

Project Manager On date

_____ _____

08/30/2014 Page 1 of 1

Project-Wide Operating Rules Project Management Office

10.3 Qualitative Risk Assessment Report

Final Draft - Revision 1 ILES Project

Edu@Home
***Integrated Learning EcoSystem (ILES)* Project**
Qualitative Risk Assessment Report

Project Name: Integrated Learning EcoSystem (ILES) **Authors:** Feasibility Study Team Members

Prepared By: Enrico Guidi

Date: December 10, 2014

A Introduction

Purpose

The current document represents the results of the risk assessment activities carried out in the context of the Feasibility Study for the ILES Project.
...

Risk Assessment Approach

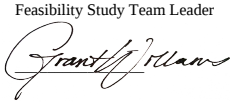
The risk assessment is performed using a consensus-based technique known as the **Delphi technique**.

...

B Risk Assessment

ID	Description	Risk source	Potential effect	Related project objectives	Related scenarios	Probability of occurrence	Impact
24	Estimates are inaccurate	Estimation process	- Incorrect schedule - Incorrect budget	- Develop a good project plan	#X.2.5 #Y.Z.1	MEDIUM	HIGH

Feasibility Study Team Leader



Signature of acknowledgment

_____

09/12/2014 Page 1 of 1
Qualitative Risk Assessment Report Project Management Office

Chapter 11

Monitoring & Control: Project Documentation

11.1 Dashboards

11.1.1 High-Level (Project-Wide) Dashboard

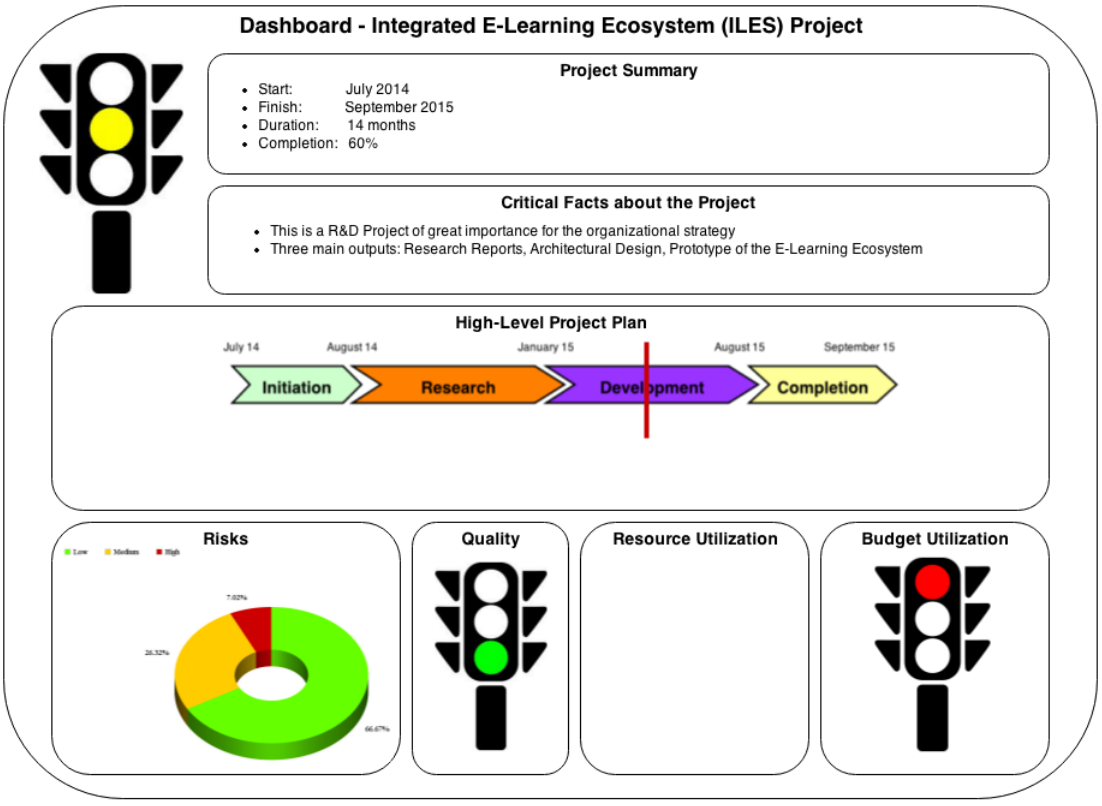


Figure 11.1: Project-Wide Dashboard.

11.1.2 Detailed (Team-Specific) Dashboard

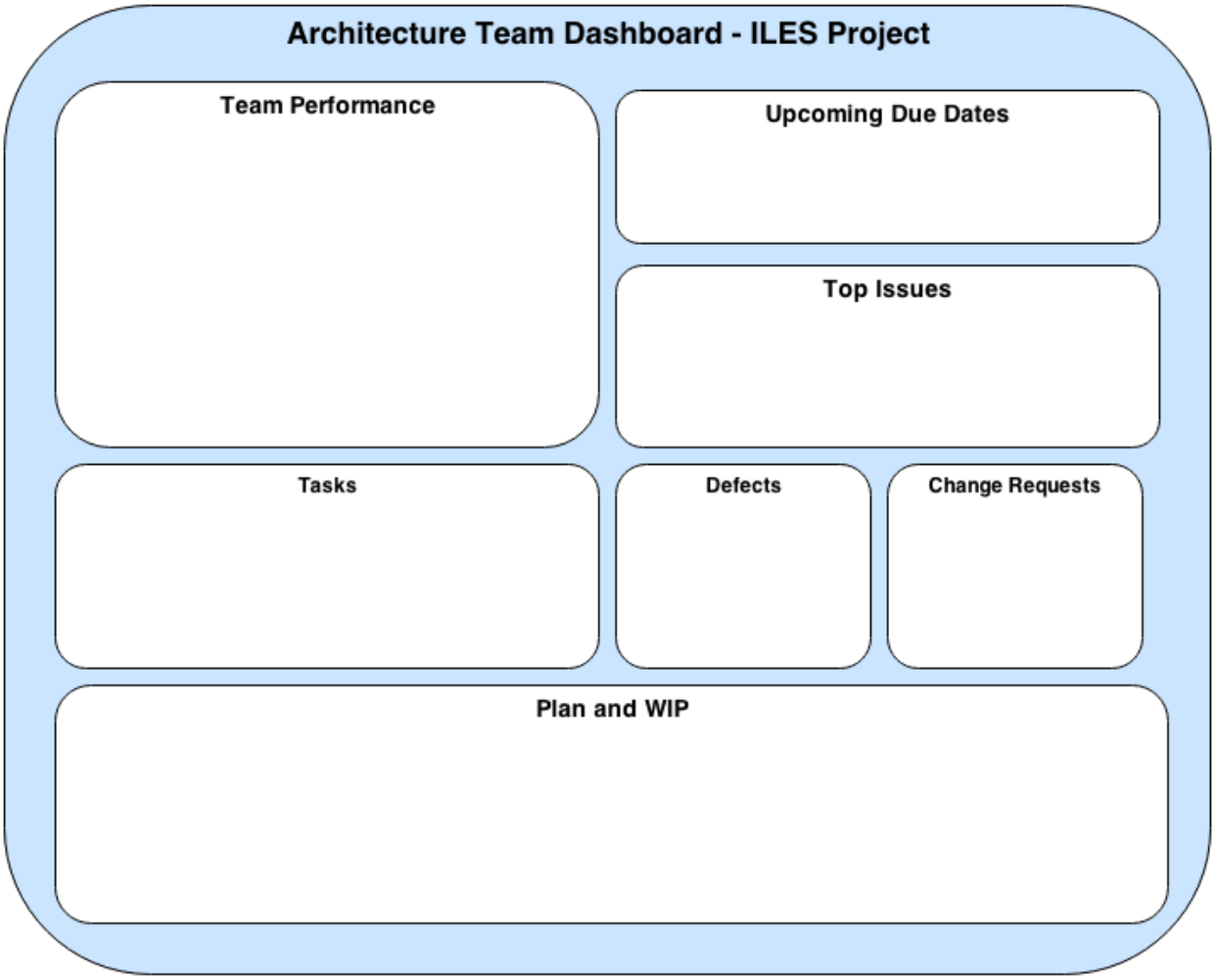


Figure 11.2: Team-Specific Dashboard for the Architecture Team.

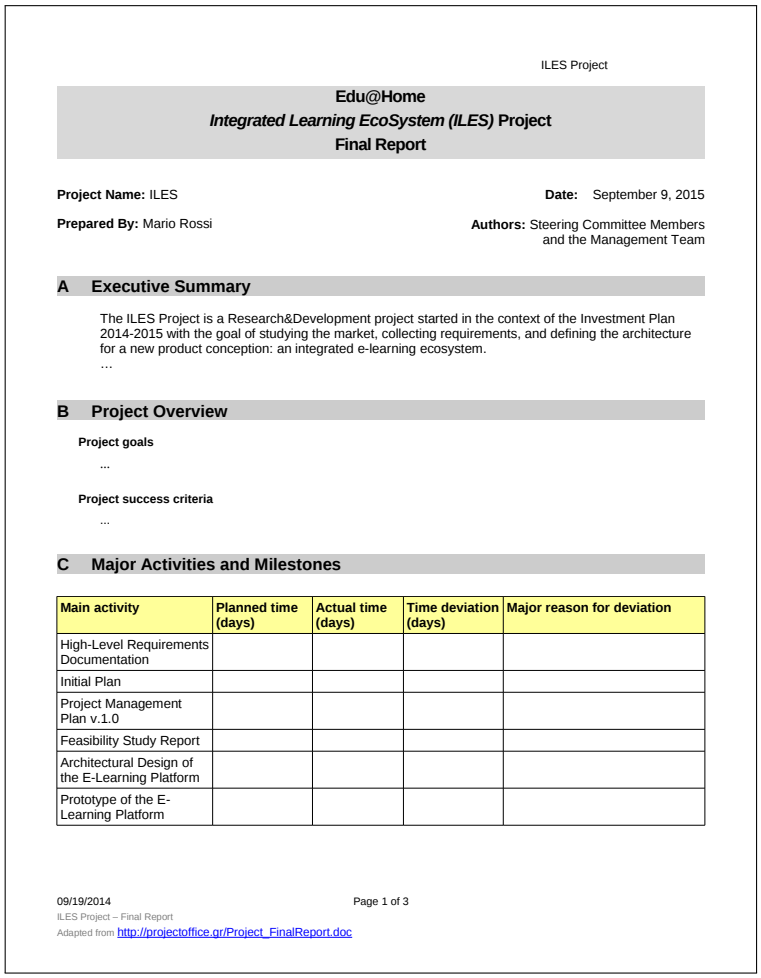
Chapter 12

Closing: Project Documentation

12.1 Final report

Attachments

- POS: see Setction 8.8
- Conditions Of Satisfaction: see Section 8.1



ILES Project

Edu@Home
***Integrated Learning EcoSystem (ILES)* Project**
Final Report

Project Name: ILES **Date:** September 9, 2015

Prepared By: Mario Rossi **Authors:** Steering Committee Members and the Management Team

A Executive Summary

The ILES Project is a Research&Development project started in the context of the Investment Plan 2014-2015 with the goal of studying the market, collecting requirements, and defining the architecture for a new product conception: an integrated e-learning ecosystem.
…

B Project Overview

Project goals

...

Project success criteria

...

C Major Activities and Milestones

Main activity	Planned time (days)	Actual time (days)	Time deviation (days)	Major reason for deviation
High-Level Requirements Documentation				
Initial Plan				
Project Management Plan v.1.0				
Feasibility Study Report				
Architectural Design of the E-Learning Platform				
Prototype of the E-Learning Platform				

09/19/2014 Page 1 of 3
ILES Project – Final Report
Adapted from http://projectoffice.gr/Project_FinalReport.doc

D Major Change Requests

Item #	Description	Date submitted	Date approved
#6	Scope reduction for the prototype	March 16, 2015	March 23, 2015

E Project Closure Synopsis

The project has been **closed as the result of the approval of the main project artifacts**: the requirements specification, the architectural design of the system, and the prototype.

F Project Performance Metrics

Goals and objectives performance

Success criteria performance

Milestones and deliverables performance

Schedule performance

Budget performance

Total Project Metrics performance

G Project Management Issues

Human Resource Management

Asset Management

Issue Management

Risk Management

Quality Management

Communications Management

Customer Expectations Management

LESSONS LEARNED

H Project Closure

Post-project tasks

Project closure recommendations

Project Manager	Approved by	On date
	_____	_____

Part III

Appendices

Appendix A

Organizational Documentation

A.1 Organization structure

The organization follows a **Strong/Project Matrix** structure where project managers have higher authority with respect to functional managers.

I have made this choice to give full powers to the project manager in order to be free of making choices and applying project management knowledge/techniques.

A.1.1 Organization Chart

The following Organization Chart represents a high-level, functional view of the organizational structure:

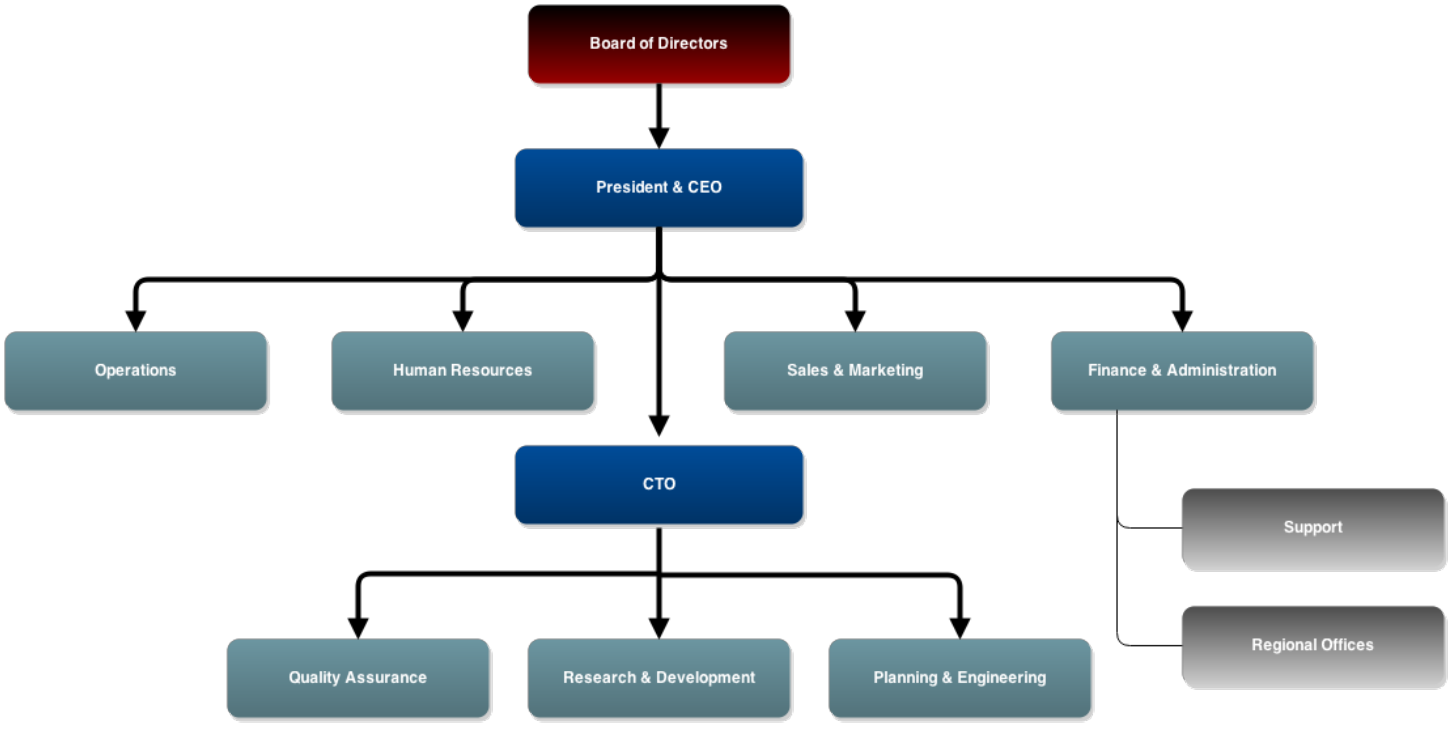


Figure A.1: The organization chart.

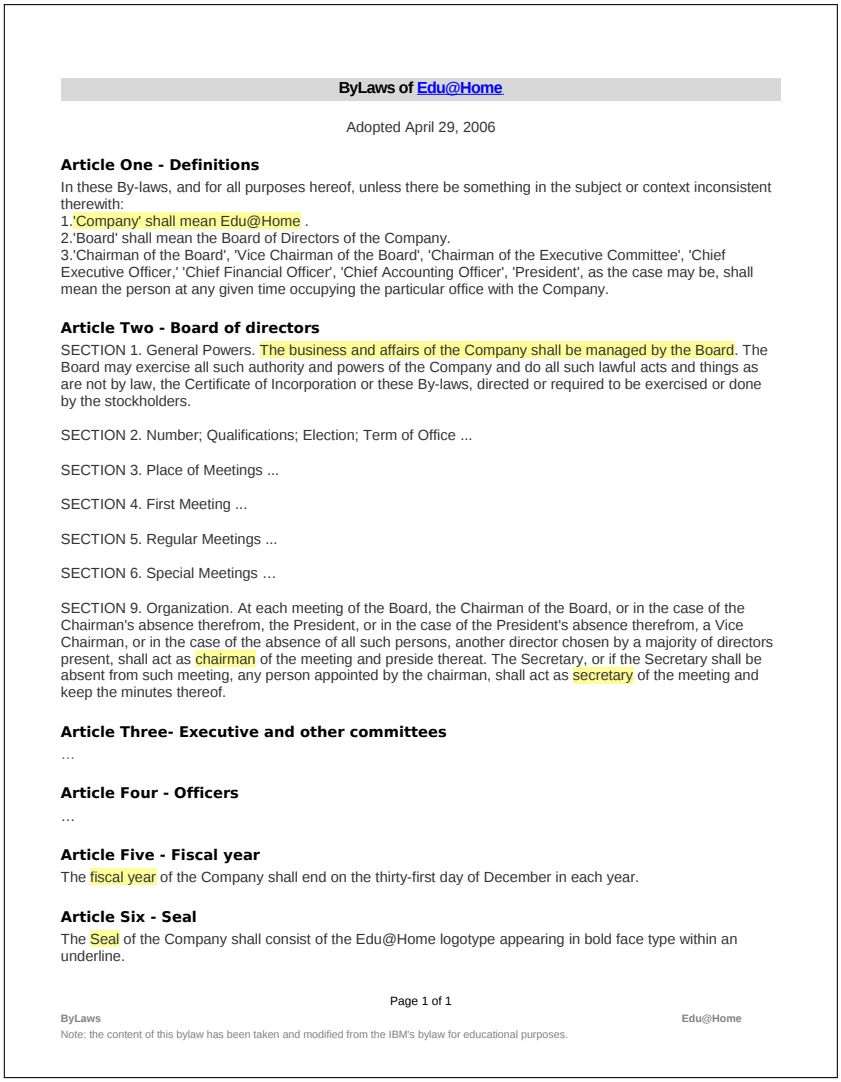
Note that projects span such a structure horizontally.

A.1.2 The grographical dimension

The company has branches across Europe and Asia. Some or all the functional areas are replicated to these geographical areas but may differ with respect to the extension of the single units.

For example, the Indian branch is strong for what concerns operations management and is mainly responsible for the organization's information system. The corporate Chief Information Officer (CIO) currently works there.

A.2 By-laws



ByLaws of Edu@Home

Adopted April 29, 2006

Article One - Definitions

In these By-laws, and for all purposes hereof, unless there be something in the subject or context inconsistent therewith:
1.'Company' shall mean Edu@Home .
2.'Board' shall mean the Board of Directors of the Company.
3.'Chairman of the Board', 'Vice Chairman of the Board', 'Chairman of the Executive Committee', 'Chief Executive Officer,' 'Chief Financial Officer', 'Chief Accounting Officer', 'President', as the case may be, shall mean the person at any given time occupying the particular office with the Company.

Article Two - Board of directors

SECTION 1. General Powers. The business and affairs of the Company shall be managed by the Board. The Board may exercise all such authority and powers of the Company and do all such lawful acts and things as are not by law, the Certificate of Incorporation or these By-laws, directed or required to be exercised or done by the stockholders.

SECTION 2. Number; Qualifications; Election; Term of Office ...

SECTION 3. Place of Meetings ...

SECTION 4. First Meeting ...

SECTION 5. Regular Meetings ...

SECTION 6. Special Meetings ...

SECTION 9. Organization. At each meeting of the Board, the Chairman of the Board, or in the case of the Chairman's absence therefrom, the President, or in the case of the President's absence therefrom, a Vice Chairman, or in the case of the absence of all such persons, another director chosen by a majority of directors present, shall act as chairman of the meeting and preside thereat. The Secretary, or if the Secretary shall be absent from such meeting, any person appointed by the chairman, shall act as secretary of the meeting and keep the minutes thereof.

Article Three- Executive and other committees

...

Article Four - Officers

...

Article Five - Fiscal year

The fiscal year of the Company shall end on the thirty-first day of December in each year.

Article Six - Seal

The Seal of the Company shall consist of the Edu@Home logotype appearing in bold face type within an underline.

Page 1 of 1

ByLaws Edu@Home

Note: the content of this bylaw has been taken and modified from the IBM's bylaw for educational purposes.

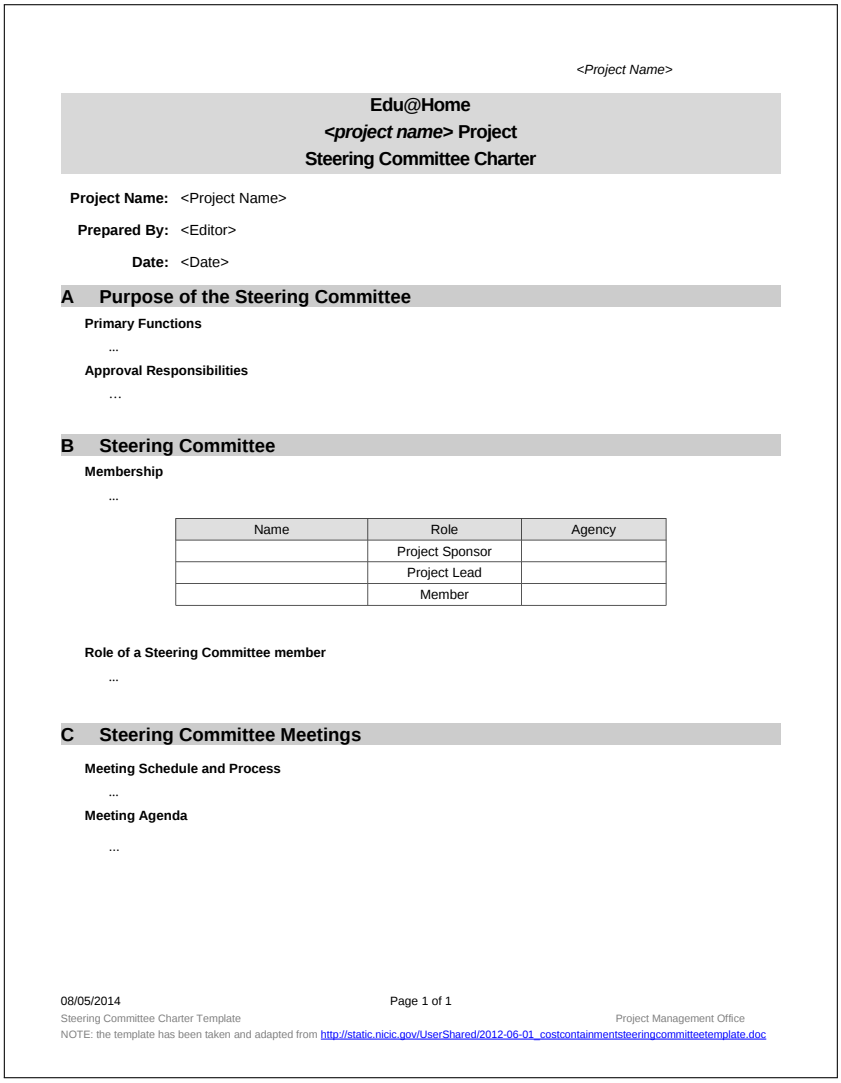
A.3 Organizational guidelines

Appendix B

Project management tools & templates

The following information is provided by the Project Management Office (PMO).

B.1 Steering Committee Charter Template



<Project Name>

Edu@Home
***<project name>* Project**
Steering Committee Charter

Project Name: <Project Name>

Prepared By: <Editor>

Date: <Date>

A Purpose of the Steering Committee

Primary Functions

...

Approval Responsibilities

…

B Steering Committee

Membership

...

Name	Role	Agency
	Project Sponsor	
	Project Lead	
	Member	

Role of a Steering Committee member

...

C Steering Committee Meetings

Meeting Schedule and Process

...

Meeting Agenda

...

08/05/2014 Page 1 of 1

Steering Committee Charter Template Project Management Office

NOTE: the template has been taken and adapted from http://static.nicic.gov/UserShared/2012-06-01_costcontainmentsteeringcommitteetemplate.doc

B.2 Business Case Template

Revision # *<Project Name>*

Edu@Home
***<project name>* Project**
Business Case

Project Name: <Project Name>

Prepared By: <Editor>

Date: <Date>

A Executive Summary

...

B Introduction

Background and Strategic Context

...

Business Problem

...

Major assumptions

...

C Options Analysis

FOR EACH OPTION:

Scope

...

Cost-Benefit Analysis

...

Risks

...

D Conclusion

Recommendations

...

08/21/2014 Page 1 of 1
Business Case Template Project Management Office

B.3 Generic Meeting Report Template

Report Template <Project Name>

Edu@Home
<Project Name> Project
Meeting

Date: <date>
Editor: <editor>

Attendees

Name (Organization Role)	Role
<Member Name>	<Role>
…	…

Roles:

- Chair
- Facilitator
- Editor
- Member

Agenda of the meeting

- <from time> - <to time>: …
- <from time> - <to time>: …
- ...

Verbal

- <time>: <topic of discussion>
- <time>: <decision>
- ...

Notes

- <Note #1>
- ...

08/25/2014 Page 1 of 1
Meeting Report Template Project Management Office

B.4 Project Scoping Meeting Report Template

Report Template <Project Name>

Edu@Home
<Project Name> Project
Project Scoping Meeting Report

Date: <date>
Editor: <editor>

Attendees

Name (Organization role)	Role
<Member Name> (Project Manager)	Chair
...	...

Roles:

- Chair, Facilitator, Editor, Member

Agenda of the meeting

- <from time> - <to time>: **Introduction, summary of last meeting, summary of project status**
- <from time> - <to time>: **Scoping activities and discussion**
- <from time> - <to time>: **Review**
- <from time> - <to time>: **Summary, definition of next meeting**

Verbal

- <time>: <topic of discussion>
- <time>: <decision>
- ...

Notes

- <Note #1>
- ...

08/25/2014 Page 1 of 1
Project Scoping Meeting Report Template Project Management Office

B.5 Joint Project Planning Session Template

Report Template <Project Name>

Edu@Home
<Project Name> Project
Joint Project Planning Session

Date: <date>
Editor: <editor>

Attendees

The Project Sponsor is a member ex officio.

Name (Organization Role)	Role
<Member Name> (Project Manager)	Chair
...	...

Meeting roles:

- Chair, Facilitator, Editor, Member

Agenda of the meeting

- <from time> - <to time>: **Introduction, summary of last meeting, summary of project status**
- <from time> - <to time>: **Planning activities and discussion**
- <from time> - <to time>: **Review**
- <from time> - <to time>: **Summary, definition of next meeting**

Verbal

- <time>: <topic of discussion>
- <time>: <decision>
- ...

Notes

- <Note #1>
- ...

08/25/2014 Page 1 of 1
Joint Project Planning Session Report Template Project Management Office

B.6 Project Overview Statement Template

Revision # *<Project Name>*

Edu@Home
***<project name>* Project**
Project Overview Statement (POS)

Project Name: <Project Name>

Prepared By: <Editor>

Date: <Date>

A Problem / Opportunity

Vision

...

Business goals

…

B Description

Project goals

… Goal statements should be SMART (Specific, Measurable, Assignable, Realistic, Time-Related) ...

Main deliverables

…

C Success Criteria

… Success criteria should be evaluated using the IRACIS model ...

D Assumptions, Risks, and Obstacles

...

Project Manager _____ Approved by _____ On date _____

08/21/2014 Page 1 of 1
Project Overview Statement Template Project Management Office

B.7 Issue Log Template

Issue #ID: <TITLE>	**Priority:** L|M|H	**Impact:** L|M|H	**Status:** U|A|S
Description: …			
Suggested solution: …			
Related requirements: …			
Problem owner:	**Assigned to:**		
Log date:	**Assigned in date:**	**Solved in date:**	

Priority: (L)ow – (M)edium – (H)igh
Impact: (L)ow – (M)edium – (H)igh
Status: (U)nsolved – (A)ssigned – (S)olved

B.8 Scope Change Request Template

ILES Project – Scope Change Request	
#ID: <TITLE>	**Priority:** L|M|H
	Impact statement: #REF
Description: …	
Business justification and benefits: …	
Implications of not making change: …	
Requested by: **Requested in date:**	**Authorized by:** **Authorized in date:**
	Approved by: **Approved in date:**

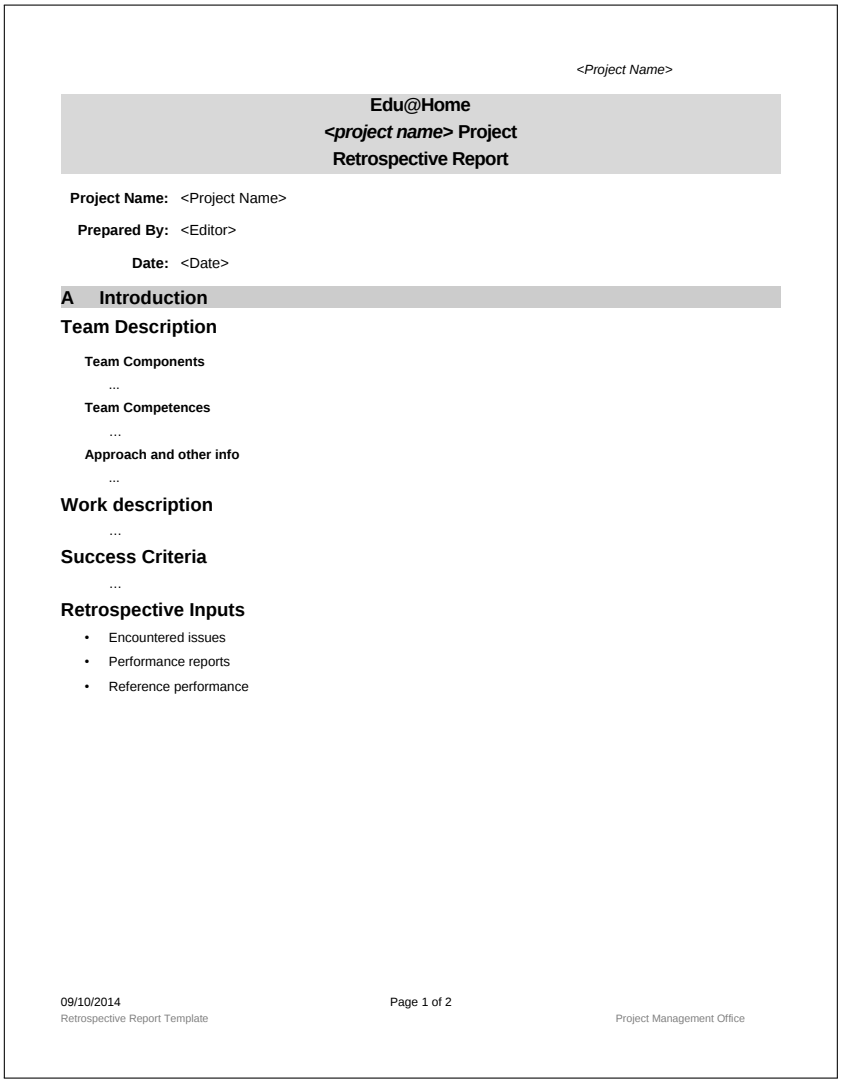
Priority: (L)ow – (M)edium – (H)igh

B.9 Project Impact Statement Template

ILES Project – Change Impact Statement		
#ID – **Change Request:** #REF		
Expected value: …		
Related risks: …		
Alternatives to change: ...		
Impact area	**Description**	**Impact seriousness**
Scope		L | M | H
Schedule		L | M | H
Costs		L | M | H
Resources		L | M | H
Quality		L | M | H
Impact study developed by: **Date:**	**Signature of acknowledgment:** **Date:**	

Impact seriousness: (L)ow – (M)edium – (H)igh

B.10 Retrospective Report Template



<Project Name>

Edu@Home
***<project name>* Project**
Retrospective Report

Project Name: <Project Name>

Prepared By: <Editor>

Date: <Date>

A Introduction

Team Description

Team Components

...

Team Competences

...

Approach and other info

...

Work description

...

Success Criteria

...

Retrospective Inputs

- Encountered issues
- Performance reports
- Reference performance

09/10/2014 Page 1 of 2
Retrospective Report Template Project Management Office

B Things that went well

Business

Description	Links	Additional notes

Technical

Description	Links	Additional notes

Management / Organizational

Communication

<Other Category>

...

C Things that could have gone better

Business

Description	Links	Additional notes

...

D Lessons learned

...

Appendix C

Summary of Principles, Facts, Techniques, and Tools

C.1 Principles

P1 Scope triangle: projects are dynamic systems that must be in equilibrium, [4], so you need to make trade-offs and monitor in order to keep scope, time, and resources in balance

P2 Traceability: the process of creating semantic/syntactic links between a given artifact/event and related artifacts/events.
NOTE: this is a general principle that subsumes that of "requirement traceability"; for example, [5] argues the convenience of applying traceability from the project management model (e.g., lifecycle abstractions, organizational elements) and the system model

P3 Conceptual Integrity: the quality of a system where all the concepts and their relationships with each other are applied in a consistent way throughout the system [1]

P4 Visibility: it is easier to keep things under control when they are clearly visible, i.e., when they can be rapidly distinguished from others without excessive cognitive overhead

C.2 Facts

F1 Much of management takes place behind closed doors. [1]

F2 Almost all project failures are due to sociological problems, not technological issues. [6]

F3 The man-month is mythical: "Cost varies with manpower and resources, but progress does not!". [3]

C.3 Techniques

T1 Dashboard: artifact supporting the Visibility principle through a compact, intuitive, and clear interface – often consisting of a collection of gauges – for effective data visualization.

C.4 Tools

Tool1 Draw.io: `http://www.draw.io`
A free online diagramming and drawing application.

Tool2 GanttProject: `http://www.ganttproject.biz/`

Tool3 OnlineChartTool: `http://www.onlinecharttool.com/graph`

[1] See `http://architecture.typepad.com/architecture_blog/2011/10/the-importance-of-conceptual-integrity.html`

Bibliography

[1] J. Rothman and E. Derby, *Behind Closed Doors: Secrets of Great Management*. Raleigh, NC: Pragmatic Bookshelf, 2005. (document), 1.1, 3.1.2, Fact1

[2] *A Guide To The Project Management Body Of Knowledge (PMBOK Guides)*. Project Management Institute, 2013. (document)

[3] F. P. Brooks, Jr., *The Mythical Man-month (Anniversary Ed.)*. Boston, MA, USA: Addison-Wesley Longman Publishing Co., Inc., 1995. 3.1.1, Fact3

[4] R. K. Wysocki, *Effective Project Management: Traditional, Agile, Extreme*. John Wiley & Sons, 5. auflage ed., 2009. Principle1

[5] J. Helming, M. Koegel, and H. Naughton, "Towards traceability from project management to system models," in *Proceedings of the 2009 ICSE Workshop on Traceability in Emerging Forms of Software Engineering*, TEFSE '09, (Washington, DC, USA), pp. 11–15, IEEE Computer Society, 2009. Principle2

[6] T. DeMarco and L. Timothy, *peopleware - productive projects and teams*. 1987. Fact2

[7] "Wikipedia - the free encyclopedia." `http://en.wikipedia.org/`.