Università degli studi di Salerno

Disa-Mis “Business Innovation & Informatics”

Course of IT Project Management

Year 2016/2017

Project Plans (VMT)

Michele Palumbo Mat. 0222600017
Angelo Conte Mat. 0222600016

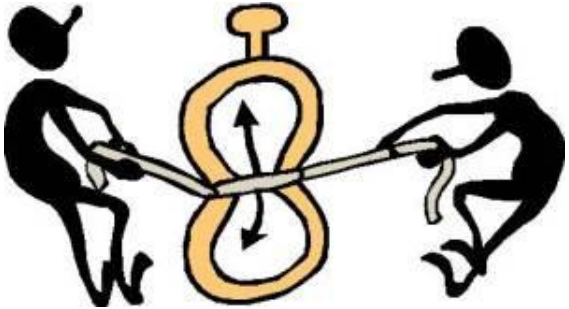

11:23 AM
59%
iPad
No network connection
VIRTUAL MUSEUM TOUR

Objectives

App compatible with Android devices that will allow you to visit a museum and its works of art directly in augmented reality.

Facilitating visitors entering the museum to show the operas, provide details about them and the related works of art

Assumptions and Constraints



Delivery of the application
by February 2018

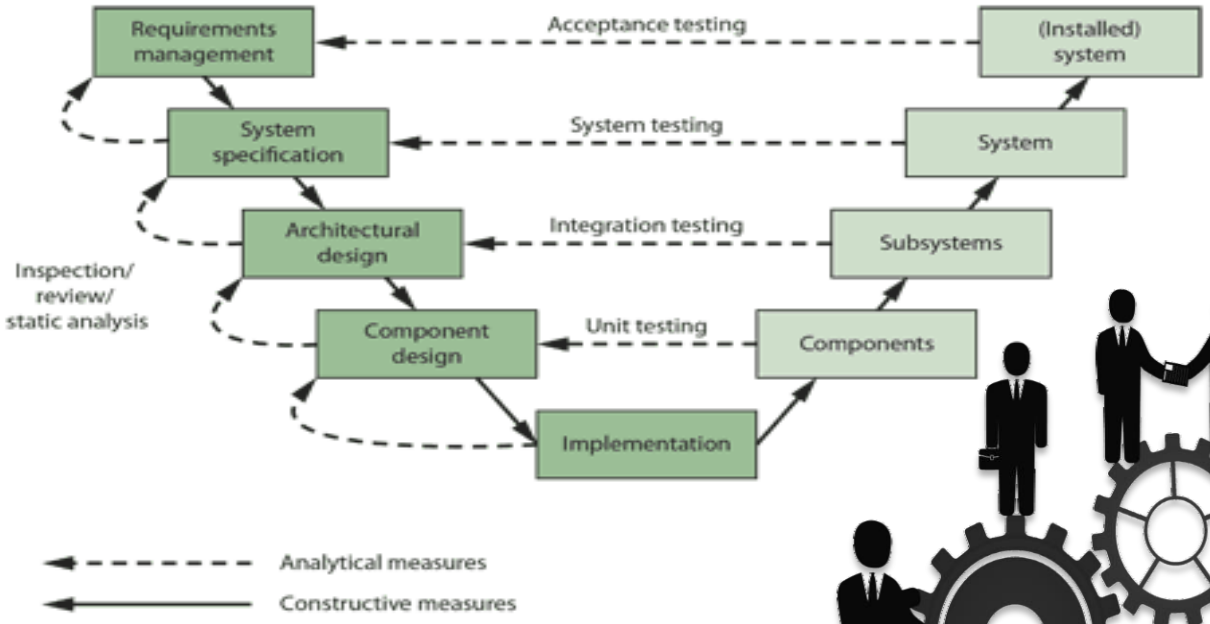
20000€ of Budget for
human resources

1 Project Manager
8 Team Members

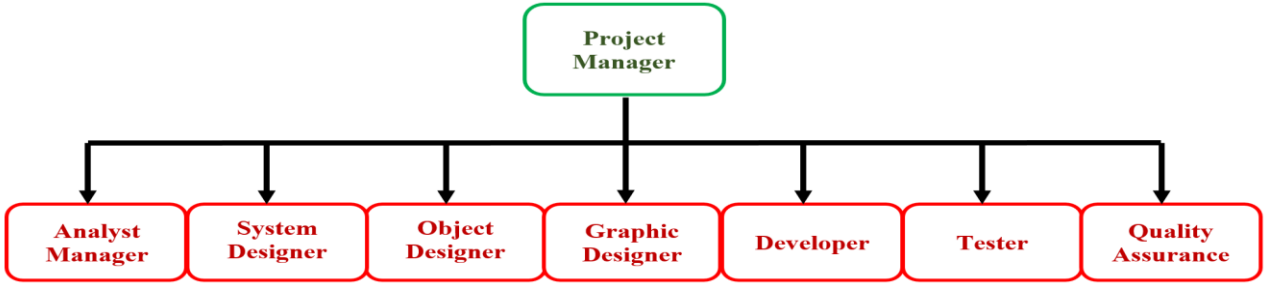

Project
Organization

Process Model

The model V & V



Organizational Structure



Project manager
Project manager; It coordinates and plans its development in order to meet time, demands and costs.

Analyst
Team member gathering and analyzing requirements to be able to understand and accurately define customer requests.

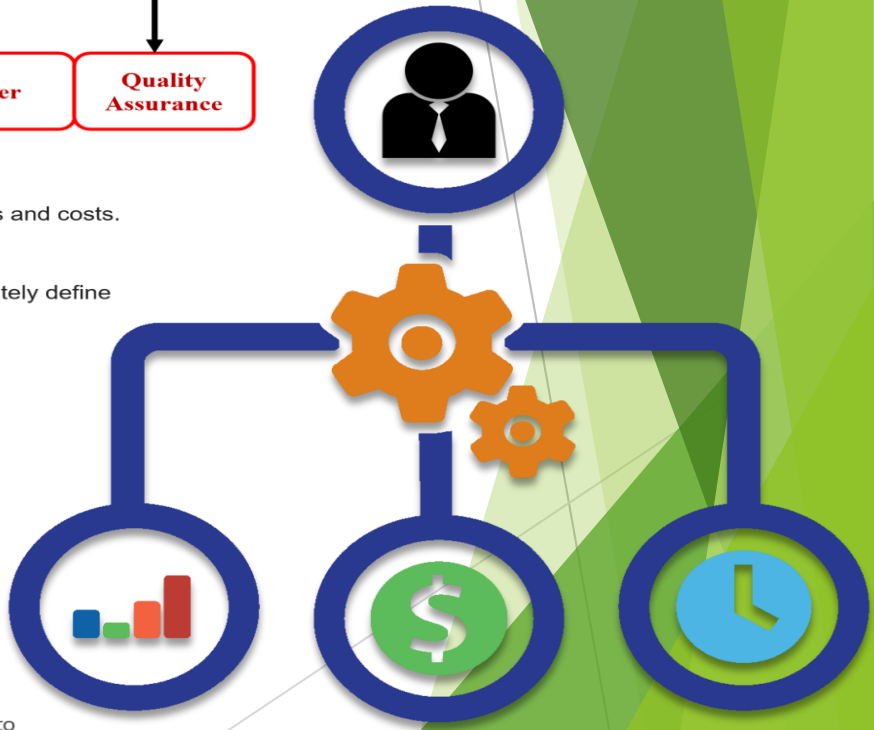
System Designer
Team member of the system architecture and its decomposition in subsystems;
It takes care of the system design phase.

Object Designer
Team member that takes care of the object design phase.

Graphic Designer
Team member that deals with the development of the graphical interfaces of the system.

Developer
Team member who is responsible for the development of the system.

Tester
Team member that verifies the operation of the product software to detect and communicate to programmers any errors.



Role and Project resource

Resource	Role
Michele Palumbo	(PM) Project manager
Angelo Conte	Quality Assurance, Analyst
Pietro Cupo	Analyst, Tester
Simone Sannella	System Designer, Object Designer, Developer
Giacomo Parisi	Database Manager, Object Designer, Developer
Domenico Turco	System Designer, Object Dedigner, Developer
Marco Benevenga	Graphic Designer, Developer
Davide Massa	Developer
Pasquale Troisi	Tester

Communication interfaces(1)

Tool	Description
Google Drive	Document sharing for your team.
Google Hangout	Tool that allows synchronous audio/video communication between two or more people.
Telegram	For instant communications
E-mail	Tool that allows asynchronous communication, where each user can send and receive messages, also useful to send and receive attachments regarding the documentation.
Meeting	A tool used to schedule meetings to indicate an event. These meetings include: lectures, seminars, conferences, congresses useful for the development of the project.
Skype	Tool that allows synchronous audio/video communication between two or more people.

Google Drive

Telegram

Hangouts

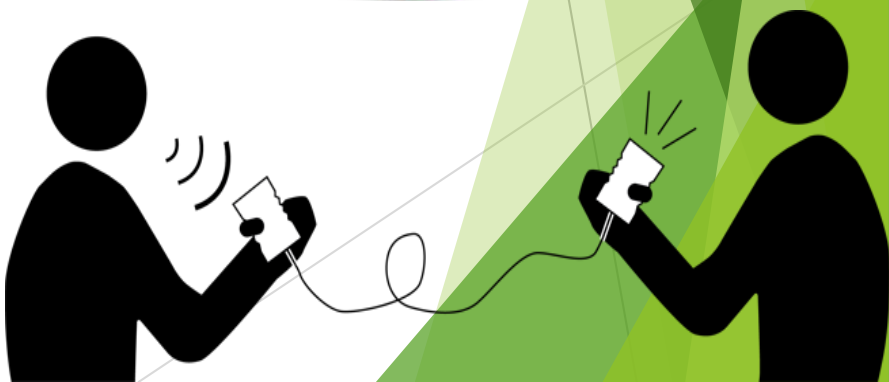
skype™

Meeting

Communication interfaces(2)

Contact team members for communication

Name	Title	E-mail	Office	Phone	Skype
Michele Palumbo	Project manager	michele.p@gmail.com	0980-555671	331-3456823	Michele.p
Angelo Conte	Quality Assurance, Analyst	angelo.c@gmail.com	0980-555672	333-8952867	Angelo.c
Pietro Cupo	Analyst, Tester	pietro.c@gmail.com	0980-555673	333-2856300	Pietro.c
Giacomo Parisi	Object D., Database M, Developer	giacomo.p@gmail.com	0980-555674	328-6754123	Giacomo.p
Simone Sannella	System D., Object D., Developer	simone.s@gmail.com	0980-555675	320-5530980	Simone.s
Domenico Turco	System D., Object D., Developer	domenico.t@gmail.com	0980-555676	335-6745984	Domenico.t
Marco Benevenga	Graphic D., Developer,	marco.b@gmail.com	0980-555677	331-7860921	Marco.b
Davide Massa	Developer	davide.m@gmail.com	0980-555678	333-6840890	Davide.m
Pasquale Troisi	Tester	pasquale.t@gmail.com	0980-555679	333-7890890	Pasquale.t




RISK
LOW
MEDIUM
HIGH
VERY HIGH
EXTREME

Risk management approach

The risks were classified according to two parameters:

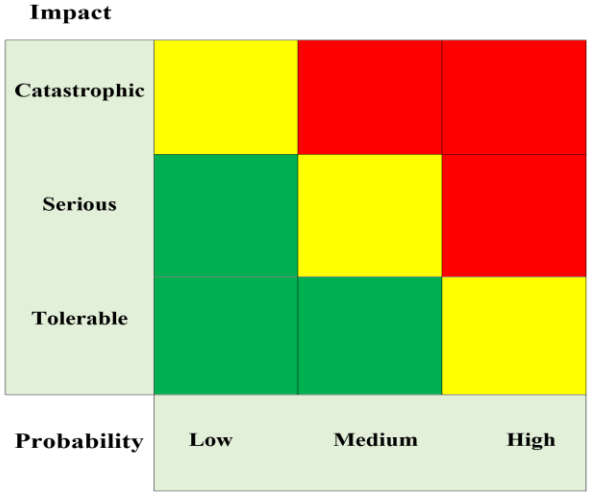
- he likelihood that they will occur
- their impact on the good success of the project.

The **expected odds** are:

- **Low**
- **Medium**
- **High**

The **impact** is quantified as:

- **Tolerable**
- **Serious**
- **Catastrophic**

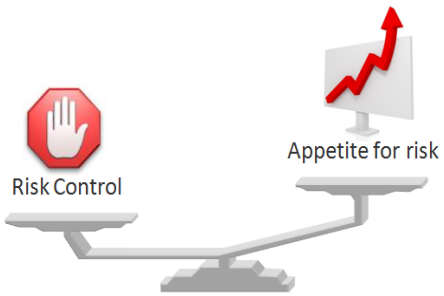


RISK

Identification and risk analysis

N°	Risk	Probability	Impact
1	Abandoning a team component	Medium	Tolerable
2	Unavailability of some team members in certain periods of time	High	Serious
3	Inefficient tools	Low	Tolerable
4	Work product delivered late	Low	Serious
5	Time of the underestimated software development	Low	Serious
6	Inefficient communication between team members	Medium	Serious
7	Passive participation of some team members	Medium	Tolerable
8	Absence by illness of some team members	Medium	Tolerable
9	Low quality of work products	Medium	Serious
10	Bad quality control and monitoring by the quality assurance	Medium	Serious
11	Failure to deliver a document	Low	Serious
12	Failure to complete a task	High	Serious
13	Low consideration of the judgement of the PM	Medium	Tolerable
14	Failure to implement everything that had been planned	Medium	Serious

Risk planning



Risk Management strategy

ID	Strategy
1	Deploying workload on other team members
2	Assigning tasks based on Team component commitments
3	Search for more efficient tools
4	Make the scheduled delivery date to avoid any delays
5	Reduce the functionality to implement
6	Easy-to-use communication tool
7	Assign an important role so as to spur it
8	Redistributing workload on other team components
9	Review the work products before passing them to the PM supervision
10	The PM will assist the quality assurance in the review of the work product products, intervening if necessary
11	Ask the team members to send an unofficial "status report" to PM every two/three days indicating the activity they have done in this period, the hours they consumed, and the percentage of completion on the overall task
12	Perform continuous checks to reallocate resources if you encounter problems in your implementation. Have a reserve of hours in the schedule to use if needed.
13	To show that the criticisms and advice made by the PM are sensible and justified but above all useful for the project. Try to exalt the fact that the common goal of PM and TM is the delivery of a quality project in the times and costs required by the customer.
14	Try to redistribute the load to improve the parallelization of the tasks, or reduce the low-priority functionality to implement or reduce the coverage of the unit test.

SOFTWARE

HARDWARE

Hardware resource and costs

8 PC for each Team member

Android devices to test app features

Object	Cost
8 PC	0 € (*Already present in the company*)
Routers	0 € (*Already present in the company*)
Devices Android: - 3 Samsung Galaxy 8 edge plus - 3 Tablet s	 2.790,00 € 2.100,00 € 4.890,00 €
Total	4.890,00 €

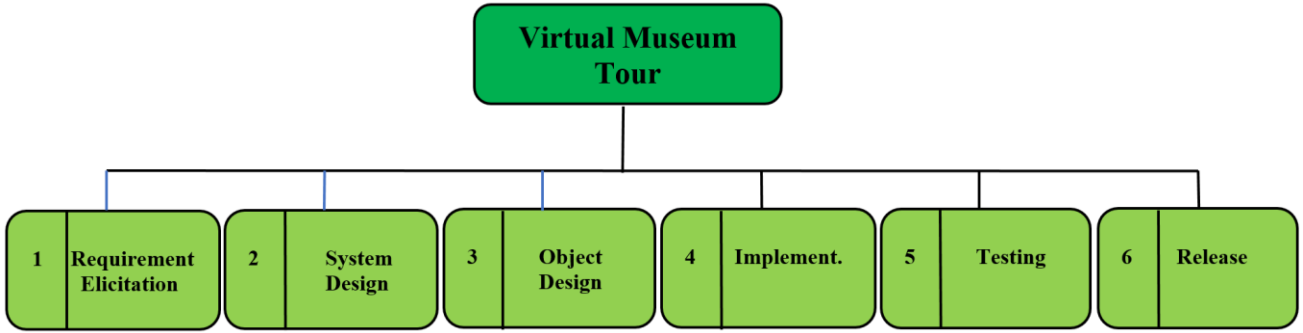
Routers for internet Connection

Software resource and costs

Object	Cost
Package Office	**0 €** (*Already present in the company*)
StarUML	**0 €** (*Already present in the company*)
Microsoft Project 2016	**0 €** (*Already present in the company*)
MySQL	**0 €** (*Already present in the company*)
Android Studio	**0 €** (*Already present in the company*)
Unity 3d	**0 €** (*Already present in the company*)
Total	**0 €**

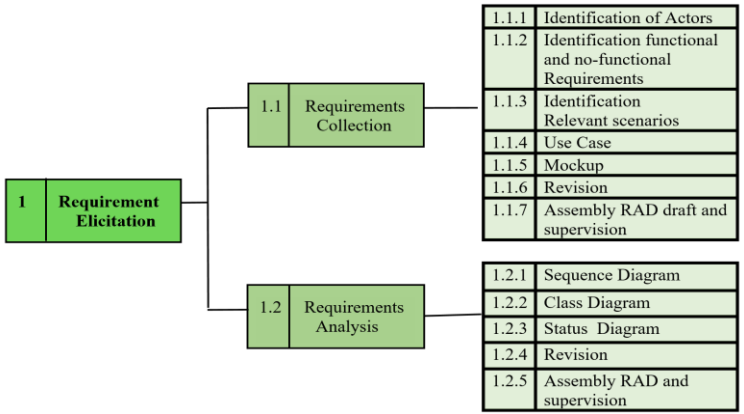

WORK
BREAKDOWN
STRUCTURE
VMT
VIRTUAL MUSEUM TOUR

Work activities



Code WBS	Task	Duration (Days)	Duration (Hours)	Beginning	End
1	Requirement Elicitation	32	160	05/06/2017	18/07/2017
2	System Design	16	80	19/07/2017	09/08/2017
3	Object Design	16	80	10/08/2017	01/09/2017
4	Implementation	46	230	04/09/2017	07/11/2017
5	Testing	16	80	08/11/2017	29/11/2017
6	Release	23	30	30/11/2017	05/01/2018

WBS Requirement Elicitation and Analysis



Phase	1	Requirements Elicitation and analysis	Responsible: Cupo, Conte			
			Days	Gross Cost	Role	Resource
Sub-Phase	1.1	Requirements Collection	21	2750,00€	Analyst, Graphic Designer, Quality Assurance, Project Manager	Cupo, Conte, Benevenga, Palumbo
Task Sub-Phase	1.1.1	Identification of Actors	2	250,00€	Analyst	Cupo
	Description: during this phase the actors will be identified.					
	1.1.2	Identification functional and no-functional Requirements	5	625,00€	Analyst	Cupo
	Description: identify both functional and no-functional project requirements and includes various brainstorming activities to identify the real needs of the user.					
	1.1.3	Identification Relevant scenarios	4	500,00€	Analyst	Conte
	Description: find scenarios that are placed within tables that identify iterations between user and system.					
	1.1.4	Use Case	4	500,00€	Analyst	Conte
	Description: identification of use cases and their dependencies.					
	1.1.5	Mockup	4	500,00€	Graphic Designer	Benevenga
	Description: create mock-up, high-level graphical vision of the project with features.					
	1.1.6	Revision	1	125,00€	Quality Assurance	Conte
	Description: integration and review of the work products produced by the various team members.					
	1.1.7	Assembly RAD draft and supervision	1	250,00€	Project Manager	Palumbo Michele
	Description: necessary steps to properly assemble RAD draft through supervision.					
Sub-Phase	1.2	Requirements Analysis	11	1500,00€	Analyst, Quality Assurance, Project Manager	Cupo, Conte, Palumbo
Task Sub-Phase	1.2.1	Sequence Diagram	3	375,00€	Analyst	Cupo
	Description: create sequence diagrams from the use Cases and objects produced in the previous phases.					
	1.2.2	Class Diagram	3	375,00€	Analyst	Cupo
	Description: locating objects (entity, boundary, control) from use cases.					
	1.2.3	Status Diagram	3	375,00€	Analyst	Conte
	Description: creation of state diagrams from the use cases and from the objects produced in the previous phases.					
	1.2.4	Revision	1	125,00€	Quality Assurance	Conte
	Description: integration and review of the work products produced by the various team members.					
	1.2.5	Assembly RAD and supervision	1	250,00€	Project Manager	Palumbo Michele
	Description: necessary steps to properly assemble the document (RAD) through supervision.					
1 Phase Total Cost = 4250,00€						

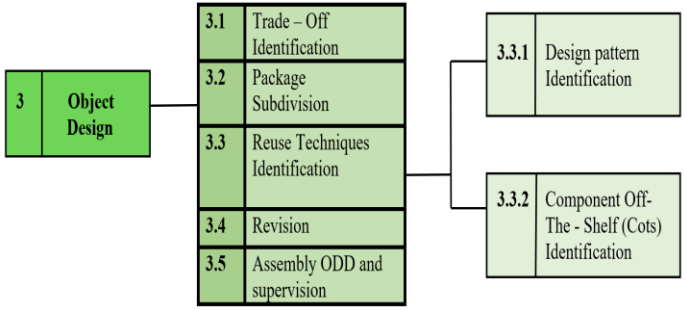
WBS System Design

2	System Design

2.1	Design Goals Identification
2.2	Architecture Identification
2.3	Sub – System Identification
2.4	Identification Persistent Data
2.5	Services Identificaton
2.6	Limit Cases Identification
2.7	Revision
2.8	Assembly SDD and supervision

Phase	2	System Design	Responsible: Sannella			
			Days	Gross Cost	Role	Resource
Task	2.1	Design Goals Identification	2	250,00€	System Designer	Sannella
	Description: this phase involves the identification of the design goals that the system will have to support.					
	2.2	Architecture Identification	3	375,00€	System Designer	Cupo
	Description: it is expected to analyse and identify the current architecture of the system.					
	2.3	Sub - System Identification	3	375,00€	System Designer	Turco
	Description: it is expected to identify the proposed architecture of the system and the new sub-systems.					
	2.4	Identification Persistent Data	2	250,00€	System Designer	Sannella
	Description: identification of the data that should be stored in permanent memory.					
	2.5	Services Identification	2	250,00€	System Designer	Sannella
	Description: identification of the services offered by the identified sub-systems.					
	2.6	Limit Cases Identification	2	250,00€	Analyst	Cupo
	Description: identify the boundary cases that can occur while using the application.					
	2.7	Revision	1	125,00€	Quality Assurance	Conte
	Description: integration into the SDD of the work products produced by the various team members and the final review of the document.					
	2.8	Assembly SDD e supervision	1	250,00€	Project Manager	Michele Palumbo
	Description: operations necessary to properly assemble the document (SDD) through supervision.					
2 Phase Total Cost = 2125,00€						

WBS Object Design



Phase	3	Object Design	Responsible: Parisi			
			Days	Gross Cost	Role	Resource
Task	3.1	Trade – Off Identification	2	250,00€	System Designer	Parisi
	Description: identifying the trade-off of the project					
	3.2	Package Subdivision	4	500,00€	System Designer	Parisi
	Description: find the packages that will contain the classes to implement.					
Sub-Phase	3.3	Reuse Techniques Identification	8	1000,00€	Object Designer, Quality Assurance	Parisi, Sannella, Turco, Conte
	Description: identification of techniques for re-use of components divided into: identification of design patterns and identification of off-the-shelf components (COTS).					
Task Sub-Phase	3.3.1	Design pattern Identification	4	500,00€	System Designer	Sannella
	Description: identify design patterns that will be used during implementation.					
	3.3.2	Component identification Off-The – Shelf(Cots)	4	500,00€	System Designer	Turco
	Description: discovery of the components already available, to be used during implementation					
Task	3.4	Revision	1	125,00€	Quality Assurance	Conte
	Description: integration of the work products produced by the team components and the revision of the Final document.					
	3.5	Assembly ODD e supervision	1	250,00€	Project Manager	Michele Palumbo
	Description: operations necessary to properly assemble the document (odd) through supervision.					
3 Phase Total Cost = 2125,00€						

WBS Implementation

4	Implementation

4.1	GUI Developer (Front-end-application)
4.2	Component Development to interface DB (Back-and-application)
4.3	Module (GPS) Develop
4.4	Code Develop
4.5	Code Optimization
4.6	Write document on implementation.

Phase	4	Implementation	Responsible: Benevenga, Massa, Turco			
			Days	Gross Cost	Role	Resource
Task	4.1	GUI Developer (Front-end-application)	10	1250,00€	Developer	Benevenga(5), Massa(5)
	Description: development of the Virtual Museum Tour GUI.					
	4.2	Component Development to interface BD (Back-and-application)	4	500,00€	Data Base Manager	Parisi
	Description: development of components for interface to the database in order to simplify the development of the sub-teams and increase the maintainability.					
	4.3	Module (GPS) Develop	5	625,00€	Developer	Massa
	Description: development of the code for the Realization GPS module for the localization (museums images).					
	4.4	Code Develop	21	2625,00€	Developer	Benevenga(6), Turco(5), Massa(5), Sannella(5)
	Description: development of the code for the realization of the Virtual Museum tour app.					
	4.5	Code Optimization	5	625,00€	Developer	Parisi
	Description: optimization of the product code to make it more readable and fluid.					
	4.6	Write document on implementation.	1	250,00€	Project Manager	Michele Palumbo
	Description: operations necessary to correctly assemble the document (Implementation) through supervision.					
4 Phase Total Cost = 5875,00€						

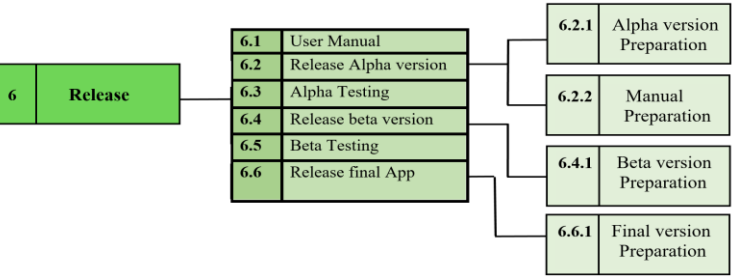
WBS Testing

5	Testing

5.1	Unit Test
5.2	Integration Test
5.3	Functional Testing
5.4	Usability Test
5.5	Write document on Testing

Phase	5	Testing	Responsible: Troisi			
			Days	Gross Cost	Role	Resource
Task	5.1	Unit Test	5	625,00€	Tester	Troisi
	Description: Unit testing of implemented methods and classes and production of the test report document.					
	5.2	Integration Test	3	375,00€	Tester	Troisi
	Description: Testing of integrated subsystems, according to the bottom-up approach.					
	5.3	Functional Testing	3	375,00€	Tester	Troisi
	Description: Testing the functionality of the application					
	5.4	Usability Test	4	500,00€	Tester	Troisi
	Description: Testing the usability of the application					
	5.5	Write document on Testing	1	250,00€	Project Manager	Michele Palumbo
	Description: Drafting document on the various parts of the implementation					
5 Phase Total Cost = 2125,00€						

WBS Release



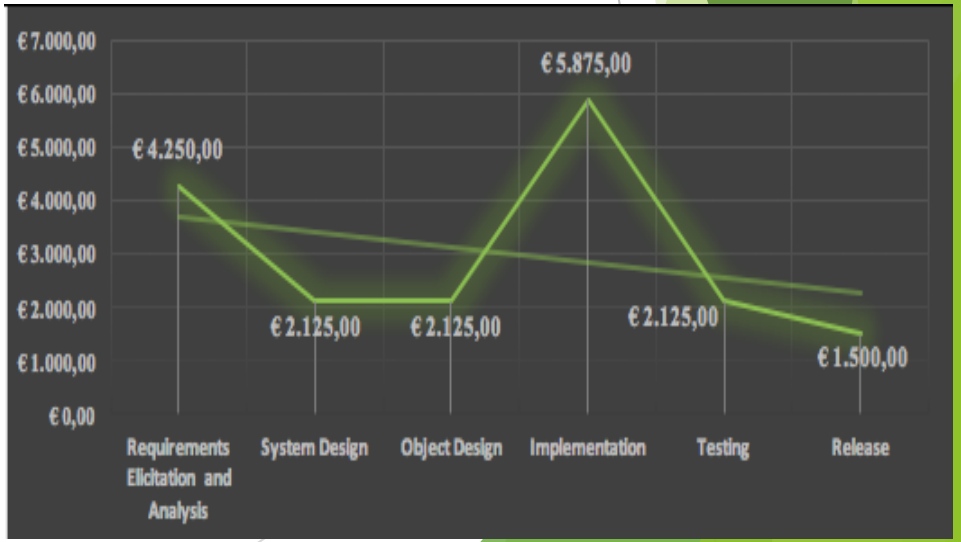
Phase	6	Release	Responsible: Michele Palumbo			
			Days	Gross Cost	Role	Resource
Task	6.1	User Manual	2	500,00€	Project Manager	Michele Palumbo
	Description: create a guideline for using the app.					
Sub-Phase	6.2	**Release alpha version**	2	500,00€	Project Manager	Michele Palumbo
	Description: the version of the app that is still incomplete that includes the most important features to be tested within the company and stakeholders.					
Task Sub-Phase	6.2.1	Alpha version Preparation	1	250,00€	Project Manager	Michele Palumbo
	Description: latest definitions for the release of the alpha version.					
	6.2.2	Manual Preparation	1	250,00€	Project Manager	Michele Palumbo
	Description: latest definitions for the release of the Alpha version manual.					
Task	6.3	Alpha Testing	7	0 €		
	Description: testing the alpha version of the company's components and stakeholders. There is a percentage based on sales for those who adhere to this test.					
Sub-Phase	6.4	**Release Beta version**	1	250,00€	Project Manager	Michele Palumbo
	Description: version of the app that is almost complete to a maximum of 200 download.					
Task Sub-Phase	6.4.1	Beta version Preparation	1	250,00€	Project Manager	Michele Palumbo
	Description: latest definitions for beta release.					
Task	6.5	Beta Testing	10	0 €		
	Description: Beta testing by people included in the 200 downloads.					
Sub-Phase	6.6	**Release final App**	1	250,00€	Project Manager	Michele Palumbo
	Description: full app version available for everyone.					
Task Sub-Phase	6.6.1	Final version Preparation	1	250,00€	Project Manager	Michele Palumbo
	Description: latest definitions for the release of the final version.					
6 Phase Total Cost = 1500,00€						

Milestone and Deliverable List

Milestone				Deliverable		Date
M 1	End	Requirements Collection	→	D 1	Release RAD DRAFT	03/07/2017
M 2	End	Requirements Analysis	→	D 2	Release RAD	18/07/2017
M 3	End	System Design	→	D 3	Release SDD	09/08/2017
M 4	End	Object Design	→	D 4	Release ODD	01/09/2017
M 5	End	Implementation	→	D 5	Release Implementation Document	07/11/2017
M 6	End	Testing	→	D 6	Release Testing Document	29/11/2017
M 7	End	Alpha version and Manual	→	D 7	Release Alpha version and Manual	05/12/2017
M 8	End	Beta version	→	D 8	Release Beta version	18/12/2017
M 9	End	Final version	→	D 9	Launch Final APP	05/01/2018

Cost Baseline

Costs		
1	Requirement Elicitation & Analysis	4.250,00€
2	System Design	2.125,00€
3	Object Design	2.125,00€
4	Implementation	5.875,00€
5	Testing	2.125,00€
6	Release	1.500,00€
TOTAL		18.000,00€
Another Cost		
Meetings between PM and stakeholders		750,00€
TOTAL BUDGET ALLOCATED		18.750,00€
Another cost (Overtime)		1.250,00€
OVERALL BUDGET		20.000,00€
Bonus for Alpha Testing		%Percentage of sales




MONITORING
& REPORTING

Monitoring of work and expected work

Example of monitoring the system design phase, this process is done for all phases of the project:

ID	Activities name	Forecast	Work	Variation
0	Virtual Museum Tour	660 h		
1	Requirements Elecitation and Analysis	160 h		
2	System Design	80 h		
2.1	Design Goals identification	10 h		
	Sannella Simone	10 h		
2.2	Architecture identification	15 h		
	Cupo Pietro	15 h		
2.3	Sub-system identification	15 h		
	Turco Domenico	15 h		
2.4	Persistent Data identification	15 h		
	Sannella Simone	15 h		
2.5	Services identification	5 h		
	Sannella Simone	5 h		
2.6	Limit case identification	10 h		
	Cupo Pietro	10 h		
2.7	Revision System Design	5 h		
	Conte Angelo	5 h		
2.8	Assemblay SDD and supervision	5 h		
	Michele Palumbo	5 h		
3	Object Design	80 h		
4	Implementation	230 h		
5	Testing	80 h		
6	Release	30 h		

Business calendar

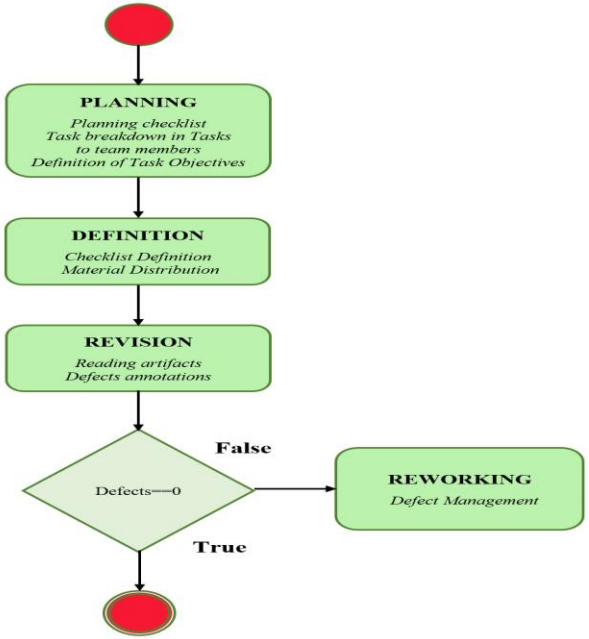
BASIC CALENDAR:	WORKING HOURS
DAYS	**HOURS**
Monday	8.30 – 13.30
Tuesday	8.30 – 13.30
Wednesday	8.30 – 13.30
Thursday	8.30 – 13.30
Friday	8.30 – 13.30
Saturday	No - Working
Sunday	No - Working
EXCEPTIONS	
Any Overtime	According to necessity (max 25 ore)
Holidays / Non - Working	**DATE**
Ferragosto	Tue - 15/08/2017
All Saints	Wed- 1/11/2017
Immacolata	Fri - 8/12/2017
Christmas	Mon- 25/12/2017
Saint Stefan	Tue - 26/12/2017
New Year	Mon - 1/01/2018

Resource costs for hour/work

ID	RESOURCE	ROLE	RATE
1	Palumbo Michele	Project Manager	50€
2	Conte Angelo	Analyst, Quality Assurance	25€
3	Cupo Pietro	Analyst, Tester	25€
4	Parisi Giacomo	System designer, Object model designer, Database manager, Developer	25€
5	Sannella Simone	System designer, Object model designer, Developer	25€
6	Turco Domenico	System designer, Object model designer, Developer	25€
7	Benevenga Marco	Developer, Graphic designer	25€
8	Massa Davide	Developer	25€
9	Troisi Pasquale	Tester	25€

Revision processes and Quality control

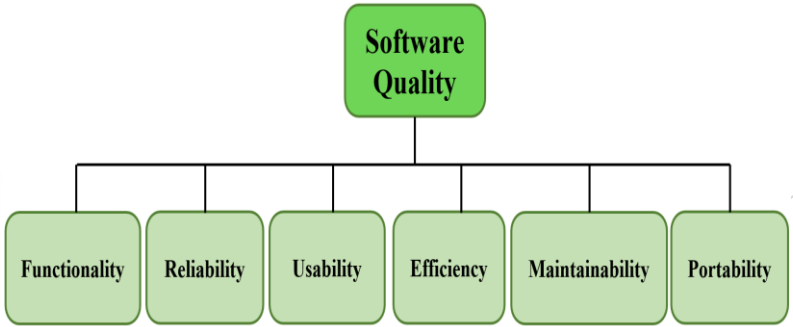
- The **revision process** steps:



Example of checklist:

Id	Description	Evaluation
		From 1 to 5 (1 indicates insufficient, 5 check-item correct)
Example:	**Requirements Specification**	
1	Have you defined the features, constraints, performance, and any other feature that the system will have to meet the needs of the customer?	4
2	……	…..
3	……	…..
4	……	…..
5	……	…..

- Metrics describing a software **quality model**:



Communication plan

Event	Rational	Frequency	Deliverable
Team Meetings	Project discussions, updates on project development	Weekly	Meeting minutes to be uploaded
Supervisor Meetings	Supervisor feedbacks, update on project progress	Fortnightly	Meeting minutes to be uploaded and updates through email
Client Updates	Update client on deliverables after each milestone	After each milestone	Meeting minutes to be uploaded
Sharing Sessions	Peer feedbacks, comments and thoughts about the team	Monthly	Resolved issues, Peer feedback
Team Bonding Session	To maintain team cohesion	Monthly	Have dinner/movies/outings

COST CONTROL MODEL

COCOMO II Estimation(1)

Estimated person/month effort with Early Prototyping Level

Formulas, step by step, for Early Prototyping Level

AP= *APPLICATION POINT*

NAP= *N° OF THE NEW APPLICATION POINT (screen, report e module)*

PROD= *PRODUCTIVITY* $\left(\begin{smallmatrix}4-7-13-25-50\\VL-L-N-M-VM\end{smallmatrix}\right)$

PM= *PERSON/MONTH EFFORT*

STEP 1

$$AP = \sum SCREEN + \sum REPORT + \sum MODULE$$

$$= (N°INPUT\ DATA(SIMPLE) * WEIGHT(SIMPLE)) +$$
$$+(N°INPUT\ DATA(AVERAGE) * WEIGHT(AVERAGE)) +$$
$$+ (N°INPUT\ DATA(COMPLEX) * WEIGHT(COMPLEX)) +$$
$$+ (N°INPUT\ DATA(SIMPLE) * WEIGHT(SIMPLE)) +$$
$$+(N°INPUT\ DATA(AVERAGE) * WEIGHT(AVERAGE)) +$$
$$+ (N°INPUT\ DATA(COMPLEX) * WEIGHT(COMPLEX)) +$$
$$+ (N°INPUT\ DATA(COMPLEX) * WEIGHT(COMPLEX))$$

SCREENS	Number and source of data tables		
Number of views contained	Total <4 (<2server, <2 client)	Total <8 (2-3 server, 3-5 client)	Total 8+ (>3 server, >5 client)
< 3	*Simple*	*Simple*	*Medium*
3 - 7	*Simple*	*Medium*	*Difficult*
8+	*Medium*	*Difficult*	*Difficult*

REPORTS	Number and source of data tables		
Number of sections contained	Total <4 (<2server, <2 client)	Total <8 (2-3 server, 3-5 client)	Total 8+ (>3 server, >5 client)
< 2	*Simple*	*Simple*	*Medium*
2 or 3	*Simple*	*Medium*	*Difficult*
> 3	*Medium*	*Difficult*	*Difficult*

COMPLEX	Complexity Weighting		
Type of object	Simple	Medium	Difficult
Screen	*1*	*2*	*3*
Report	*2*	*5*	*8*
Module	*N/A*	*N/A*	*10*

COCOMO II Estimation(2)

Estimated person/month effort with Early Prototyping Level

STEP 2

$$\%\,reuse = \frac{REUSED\ COMPONENTS}{REQUIRED\ COMPONENTS}$$

0% | 100%

$$NAP = AP * \left[\frac{(100 - \%REUSE)}{100}\right]$$

STEP 3

PROD	Very low	Low	Nominal	High	Very High
Developer's experience and capability	*4*	*7*	*13*	*25*	*50*
CASE maturity and capability	*4*	*7*	*13*	*25*	*50*

$$PM = \frac{NAP * \left(1 - \frac{\%REUSE}{100}\right)}{PROD}$$

COCOMO II Estimation(3)

Estimated person/month effort with Early Prototyping Level

Estimate calculations Person/Month effort for "*Virtual Museum Tour*"

STEP 1

$$AP = ((25 * 1) + (15 * 2) + (10 * 3)) \ (SCREEN)$$
$$+ ((20 * 2) + (10 * 5) + (5 * 8)) \ (REPORT)$$
$$+ (5 * 10) \qquad (MODULE)$$
$$= (85) + (130) + (50) = 265 \quad APPLICATION\ POINTS$$

STEP 2

$$\%\ reuse = \frac{REUSED\ COMPONENTS}{REQUIRED\ COMPONENTS}$$

10% / 90%

$$NAP = 265 * \left[\left(\frac{100 - 10}{100}\right)\right] = 265 * 0.90 = 238,5 \quad APPLICATION\ POINT\ TO\ DEVELOP$$

STEP 3

$$PROD = HIGH = 25$$

$$PM = \frac{238.5}{25} = 9.54 \quad PERSON/MONTH$$

COCOMO II Estimation(4)

Estimated of project duration

Formulas for estimate of Project Duration

$$TDEV = \lceil A * PM^{(0,33+0,2*(B-1,01))} \rceil$$

$$A = COSTANT, 3.0$$

$$B = 1.01 + 0.01 \sum_{j=1}^{5} SFj$$

SF= Scale factor Estimation

Name	Very Low (0,05)	Low (0,04)	Nominal (0,03)	High (0,02)	Very High (0,01)	Extra High (0,00)
Precedentedness	Thoroughly unprecedented	Largely unprecedented	Somewhat unprecedented	Generally familiar	Largely familiar	Thoroughly familiar
Flexibility	Rigorous	Occasional relaxation	Some relaxation	General conformity	Some conformity	General goals
Significant risks eliminated	Little (20%)	Some (40%)	Often (60%)	Generally (75%)	Mostly (90%)	Full (100%)
Team interaction process	Very difficult	Some difficult	Basically cooperative	Largely cooperative	Highly cooperative	Seamless interactions
Process Maturity	Level 1	Level 2	Level 2+	Level 3	Level 4	Level 5

Estimate calculations Project Duration for "Virtual Museum Tour"

$$A = 3$$

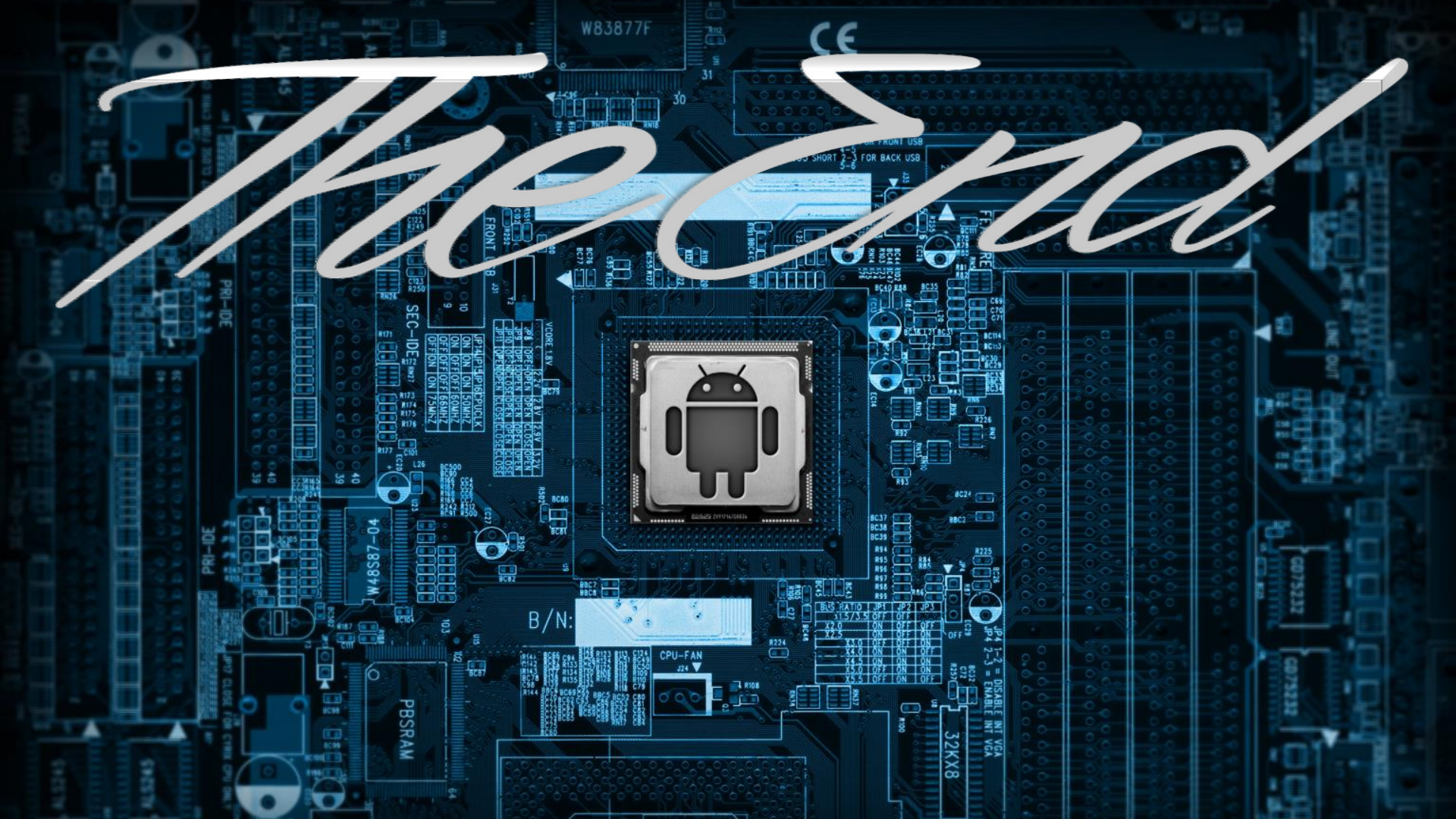
$$B = 1.01 + (0.01 + 0.04 + 0.03 + 0.01 + 0.01) = 1.11$$

$$TDEV = [3 * 9.54^{(0.33+0.2*(1.11-1.01))}]$$

$$= [3 * 9.54^{(0.350)}] = 6.60 \quad MONTHS \text{ (FULL TIME)}$$

This forecast for a full-time estimate (**8 hours/day**).

In the *Virtual Museum Tour* project, they were considered **5 working hours/day**.


The End