Master Thesis

Master's degree in Industrial Organisation and Business Management

Case study on the use of project management techniques for a European event project

Author: Antonio Valerio Revuelta Tutor: Guillermo Montero Fernandez-Vivancos

> Department of Industrial Organisation and Business Management II Escuela Técnica Superior de Ingeniería Universidad de Sevilla



Sevilla, 2022



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El tribunal nombrado para juzgar el Proyecto arriba indicado, compuesto por los siguientes miembros:

Presidente:

Vocales:

Secretario:

Acuerdan otorgarle la calificación de:

Sevilla, 2013

El Secretario del Tribunal

I still remember that child who didn't know what to do as an adult. The one who had just started school, who only wanted to learn new things and whose curiosity made him devour as much knowledge as he could. I imagined what it would be like to go to university, live on my own, study something I was passionate about and develop myself in a field. I think that, although I often imagined it, I never stopped to think about the steps I was taking and that I was getting closer and closer to finishing, studying something I really loved and getting a degree. Time went by and not only did I finish my degree, but I am now writing my last master's thesis, without realising how fast everything has happened and how I went from dreaming to living.

I would be lying if I wrote that I am not scared or afraid of not knowing what is coming, but the excitement of following my path is greater than the fear of entering a new world.

Throughout this journey, I have met and been accompanied by incredible people without whom I would not have been able to write this project.

First of all, I would like to thank my tutor Guillermo Montero Fernández Vivancos, for infecting me with his passion for this field and for his patience throughout the project.

To Victor Luis and Ines, the three people who were responsible for motivating me and making it possible for me to become the project manager of the event that has led me to write this work. It was one of the most enriching experiences of my life and the reason why I am following this path right now.

To those who have always, since the first year of university, been my pillars both academically and personally, Sergio Flores Medina, Alejandro Morilla Amor and Juan Guzmán Romero thank you for challenging me to do great things and for being both people to admire and friends for life.

Finally, I would like to thank my family, who has supported me in all my decisions and has made it possible for me to be the person I am today, giving me the values and principles necessary to feel proud of the steps I take every day.

El objetivo del proyecto es la aplicación de procesos de gestión de proyectos para la organización de un evento estudiantil internacional, denominado council meeting, en Sevilla durante el año 2021 e identificar las técnicas y herramientas más adecuadas para gestionar adecuadamente este tipo de proyectos en la red y estandarizarlo en el futuro para otros directores de projecto en toda Europa.

En primer lugar, ara enmarcar el proyecto, se explican los conceptos teóricos clave relacionados con la gestión de proyectos. A continuación, se enumeran los procesos a seguir según el PMBOK.

A partir de estos conceptos teóricos y directrices, se ha realizado una selección específica de procesos para elegir los más adecuados para este proyecto, ejecutando únicamente los grupos de procesos de iniciación y planificación.

Para cada proceso se aplicaron las técnicas y herramientas más adecuadas, como el modelo de Salience para crear un registro de partes interesadas, el método del camino crítico para determinar la secuencia lógica de las actividades y el diagrama de red, el método de estimación de tres puntos con la distribución PERT para estimar la duración de las actividades, el diagrama de Gantt para determinar la duración del proyecto, el juicio de expertos para, entre otras cosas, identificar los riesgos del proyecto y un análisis de riesgos cualitativo para evaluar los riesgos del proyecto.

Al final, se analiza cada objetivo del proyecto junto con algunas lecciones aprendidas y consideraciones para el futuro. El único objetivo que necesita seguimiento es la estandarización ya que hay que esperar a los siguientes eventos para ver su efectividad. En cuanto a las lecciones aprendidas, la importancia de llevar a cabo procesos de diferentes grupos de trabajo de forma conjunta o en paralelo a lo largo del tiempo y de iniciar algunos procesos sin toda la información necesaria al principio del mismo son cosas que todo director de proyecto debería conocer y tener en cuenta y son las principales consideraciones futuras de este proyecto.

The aim of the project is the application of project management processes for the organisation of an international student event, named Council Meeting, in Seville in 2021 and to identify the most suitable techniques and tools to properly manage this kind of project in the network and standardise it in the future for others project managers all over Europe.

In order to frame the project, key theoretical concepts related to project management are explained first. Following with a list of processes to follow as per the PMBOK.

Based on these theoretical concepts and guidelines, a specific selection of processes has been done in order to choose the most suitable for this project, executing only the initiating and planning process groups.

For each process the most suitable techniques and tools were implemented such as the Salience model to create a stakeholder register, the Critical path method to determine the logical sequence of activities and the network diagram, Three-Point estimating method with PERT distribution to estimate activities duration, Gantt chart to determine the duration of the project, Expert judgement to identify the risks of the project and a qualitative risk analysis to evaluate the risks of the project.

In the end, each objective of the project is analysed along with some lessons learned and considerations for the future. The only objective that needs to be followed up is the standardisation as we have to wait for the following events to see its effectiveness. Regarding lessons learned, the importance of carrying out processes of different workgroups jointly or in parallel over time and starting some processes without all the information needed at the beginning of it are things that every project manager should know and take into account and are the main future considerations of this project.

Index

Acknowledgements		5
Resumen		6
Abstract		7
Index		8
Index of tables		10
Index of figures		13
index of figures		12
List of abbreviation		13
1 Introduction		11
1.1 Aim of the p	roject	11
1.2 ESTIEM		11
1.2.1 LG Sevil	le	12
1.2.2 ESTIEM	Council meeting	12
2 Project Manager	nent	13
2.1 Concepts		13
2.1.1 Roles w	ithin project management	13
2.1.2 Project	life cycle	14
2.1.3 Project	Phases	14
2.1.4 Process	of project management	15
2.1.5 Process	Groups	15
2.1.6 Knowle	dge Areas	15
2.2 Rita's list of	processes	17
3 Application of pr	oject management	19
3.1 Selection of	processes	19
3.2 Initiating gro	oup	19
3.2.1 Develop	oment of the Project charter	21
3.2.2 Identify	ing Stakeholders	24
3.3 Planning Gro	pup	31
3.3.1 Project	management plan	32
3.3.2 Require	ment's collection	32
3.3.3 Define S	Scope	33
3.3.4 Plannin	g team	35
3.3.5 WBS an	d WBS dictionary	35
3.3.6 Activity	list	37
3.3.7 Networ	k diagram	39
3.3.8 Resourc	e Requirement	42
3.3.9 Activity	duration and cost	43
3.3.10 Critical	Path	52
3.3.11 The Sch	edule	56
3.3.12 Budget		59

3.3.13 Roles and responsabilities				
3.3.14	Communications management	61		
3.3.15	Risk Management	63		
3.3.16	Change management plan	73		
Conclusi	ons	77		
iography		78		
endix A. V	WBS Diagram	80		
Appendix B. Network Diagram				
Appendix C. Gantt Diagram				
endix D. I	Formal budget	84		
endix E. F	RACI MATRIX	88		
	3.3.13 3.3.14 3.3.15 3.3.16 Conclusion iography endix A. M endix B. I endix C. C endix D. I endix E. F	 3.3.13 Roles and responsabilities 3.3.14 Communications management 3.3.15 Risk Management 3.3.16 Change management plan Conclusions iography endix A. WBS Diagram endix B. Network Diagram endix C. Gantt Diagram endix D. Formal budget endix E. RACI MATRIX 		

Index of tables

Table 1.CM Seville process chart.	19
Table 2. CM Seville Project Charter.	24
Table 3. Salience Categories.	29
Table 4. Stakeholder Register.	30
Table 5. Activity list.	39
Table 6. Activity list with diagram codes and predecessors.	41
Table 7. Resources required for CM.	42
Table 8. Activities estimate duration.	47
Table 9. Resource costs.	48
Table 10. Activity resources and cost.	52
Table 11. Critical path calculation and results.	56
Table 12. Activity list with GANTT.	59
Table 13. Budget resume table.	60
Table 14. Communication plan matrix.	62
Table 15. Risk identification table.	66
Table 16. Risk impact table.	66
Table 17. Impact x probability matrix.	67
Table 18. Risk analysis R01.	67
Table 19. Risk analysis R02.	67
Table 20. Risk analysis R03.	67
Table 21. Risk analysis R04.	68
Table 22. Risk analysis R05.	68
Table 23. Risk analysis R06.	68
Table 24. Risk analysis R07.	68
Table 25. Risk analysis R08.	68
Table 26. Risk analysis R09.	69
Table 27. Risk analysis R010.	69
Table 28. Risk analysis R011.	69
Table 29. Risk analysis R012.	69
Table 30. Risk analysis R013.	69
Table 31. Risk analysis R014.	70

Table 32. Resume of risk and risk levels.	71
Table 33. Final risk response plan.	73
Table 34. Change plan for diagnosis and planning stage of change.	75
Table 35. Change plan for implementation stage of change.	75
Table 36. Change plan for evaluation and monitoring stage of change.	76

Index of figures

Figure 1. Example diagram of the general process.	15
Figure 2. Mapping of Process Groups and Knowledge Areas.	17
Figure 3. Rita Process Chart.	18
Figure 4. Project boundaries.	20
Figure 5. Develop project charter diagram.	21
Figure 6. Identify Stakeholder process diagram.	24
Figure 7. Venn Diagram Salience Model.	27
Figure 8. Planning process groups scheme.	31
Figure 9. Develop project management plan process diagram.	32
Figure 10. Define Scope process diagram.	33
Figure 11. Communication plan decision.	63
Figure 12. WBS Diagram.	80
Figure 13. Network Diagram.	81
Figure 14. Gantt Diagram part 1.	82
Figure 15. Gantt Diagram part 2.	83
Figure 16. RACI Matrix part 1.	88
Figure 17. RACI Matrix part 2.	89

List of abbreviation

AC	After Christ
BC	Before Christ
СМ	Council meeting
CPM	Critical Path Method
CR	Corporate Relation
EF	Early Finish
ES	Early Start
ESTIEM	European Student of Industrial Engineering and Management
GA	General Assemblie
GD	Gala Dinner
HDMI	High-Definition Multimedia Interface
IEM	Industrial engineering and management
IN	International Night
LF	Late Finish
LG	Local Group
LS	Late Start
PERT	Program Evaluation and Review Technique
PM	Project Management
PMI	Project Management Institute
RACI	Responsible, Accountable, Consulted, Informed
SV	Survival Guide
SWOT	Strengths, Weaknesses, Opportunities, Threats
WBS	Work Breakdown Structure

1 INTRODUCTION

The main purpose of this chapter is to introduce the project and its objectives. Thus, in the following sections, both the aim and scope of the project will be explained in order to provide an adequate context.

1.1 Aim of the project

The aim of the project is the application of project management processes for the organisation of an international student event, called council meeting, in Seville in 2021 and to identify the most suitable techniques and tools to properly manage this kind of project in the network and standardise it in the future for others project manager all over Europe.

The current project describes the organisation of an international students' event in accordance with project management processes. The event, hereafter referred to as "Council Meeting (CM)", will take place in Seville in 2021.

As project manager of the event, the following key objectives were set to assure the success of the event and a smooth organisation:

- Application of project management processes for CM.
- Identification of the most suitable techniques and tools for each process of this specific project.
- Standardisation of project management processes for future CMs within the network.

1.2 ESTIEM

In order to understand what organising a CM truly implies, it is important to understand the basics of the international students' association for which it will be organised - ESTIEM - an acronym for European Student of Industrial Engineering and Management.

ESTIEM is the largest student association of industrial engineering and management (IEM) in Europe. It is a non-political, non-religious and non-profit-making association that combines technological knowledge with management and organisational skills. Founded in 1990, the network is already present in 74 faculties, distributed across 27 countries.

With the goal to be the facilitator of all IEM stakeholders, ESTIEM connects students with companies, alumni and professors. Ultimately, its vision is to prepare and shape the professional reality of tomorrow, starting by bringing students from all over Europe closer together and developing a strong community of competent IEMers, who have the opportunity to further develop themselves and the field in an international risk-free environment. While belonging to ESTIEM, students have the opportunity of improving their organisational, business and personal skills, by attending events, stepping up to take an active role in the management of the association, or striving to have an impact in Europe by contributing to initiatives that shape the quality of IEM - all of it as a complement one's formal education in their own universities.

ESTIEM is represented in these 74 Universities by local student associations of IEM, from now on named Local Groups (LGs). LGs are the official members of ESTIEM, as to say: ESTIEM has 74 members.

To coordinate all the initiatives that are led by ESTIEM, a group of over 150 European volunteer Students manage and develop the network, organise events with the help of LGs, and communicate with the multiple IEM stakeholders, including ESTIEM's members.

These 150 people, who respond to the Board of ESTIEM, consisting of 6 European elected people, actively engage with students that belong to members of ESTIEM: the people across Europe that are studying IEM.

Every year, over 8000 people directly engage in ESTIEM's activities, such as workshops and training sessions about soft skills (eg. Leadership), academic development (eg. Supply Chain Management Courses) and career-related topics (eg. How to be a successful entrepreneur).

All in all, accounting for all the IEM stakeholders, including companies and professors, ESTIEM has a reach of over 60000 people, a number that continues to grow each passing day.

1.2.1 LG Seville

As mentioned, all the activities of ESTIEM are organised by its members. So, yearly, each one of the 74 LGs volunteers to organise one or more events open for students all over Europe to attend.

This project focuses on a particular event organised by ESTIEM LG Seville, the local group of the city of Sevilla based in the E.T.S.I (engineering school) and in charge of the events in this city. LG Seville has become one of the most active local groups in the Iberian Peninsula, carrying out a multitude of activities where participants apply to improve their personal and professional skills, including public speaking, teamwork and many more.

It has also grown to be a highly respected Member of ESTIEM, which led to the responsibility of organising the largest and most important event of the network: The Council Meeting.

1.2.2 ESTIEM Council meeting

The council meeting is a mandatory and statutory event of ESTIEM, taking place twice a year. It is the largest event of the network gathering all of ESTIEM's members, represented by two students each, old students (Alumni), guests from other associations and even invited people from universities and companies.

The event is composed of two parts, the General Assembly, where everyone is updated on what is going on in ESTIEM and where decisions are made through voting (such as the election of a new Board) and Working Groups, Training Sessions & Company Workshops, where smaller groups of people either work to develop ESTIEM or improve their soft skills.

It lasts for 5 days, excluding arrival and departure and, given its complexity and dimension, to be organised, a Member (LG) must apply to do so in a Council meeting one year prior to the actual event. So, after being elected in a Council Meeting that took place online (due to the pandemic in 2020), LG Seville became responsible for the organisation of the upcoming Council Meeting, one year later, in 2021.

Throughout our history, the success of multiple projects and the importance of their correct management has become more and more clear. Project management, in particular, has been a fundamental part of human history since time immemorial. From the construction of the pyramid of Giza in 2570 BC through the Great Wall of China in 208 BC to the Eiffel Tower in Paris in 1887 AD we see examples of extraordinary projects of mankind where management, as an organisational tool, was necessary for their success.

As a result, every year and all around the world, principles, practices and tools in the field are developed, attempting to make the process of managing a project simpler and easier. Today, there are countless bibliographies available with specific techniques and processes that are already standardised and acknowledged as crucial, for any manager to apply to their own needs, thus augmenting the quality of all projects.

That being said, this section describes the fundamentals of project management and the concepts that serve as a basis for the project developed in later stages.

2.1 Concepts

According to the Project Management Institute (PMI) (2017), project management is defined as the application of knowledge, skills, tools and techniques to project activities, aimed at satisfying or meeting the needs and expectations of the entities and organisations involved in a project. These demands are believed to have to be balanced between:

- Scope, timing, cost and quality.
- Different needs and expectations of the different entities involved in the project.
- Identified needs and unidentified expectations.

A similar description is made by the International Project Management Association (IPMA) (2017) which, besides mentioning the coordination of demands and application of processes, adds and highlights the importance of the motivation of all those involved in managing a project. By also including the relevance of adequate leadership in their definition of PM, the IPMA brings a new perspective. One that sees project management beyond processes and extended to the people involved in it.

Thus, when exploring the details of PM, according to multiple sources, the common points across them would define the mission of project management as to establish the objectives of the project, define the methodology to be followed in its implementation, plan and schedule tasks and resources, correct deviations and communicate progress and results.

The objectives of management are the planning, monitoring and control of the project, i.e. all those functions related to the usage of material and human resources of the project and those related to the organisation of the same and the structure of the project tasks, highlighting:

- Meeting the deadline for completion of the project.
- Meeting the project's budget.
- Achieving the expected results (conformity with the specifications of the product, service, work, etc.), i.e. achievement of the required quality of the project.

2.1.1 Roles within project management

In the field of project management, it is essential to define which areas, tasks and activities are covered by the project manager, as well as what knowledge, skills, aptitudes and attitudes a good project manager should possess.

In addition, an important distinction between the project manager and other project leadership functions can be made, as follows:

- Management functions, allocated to the project manager, are considered to be those of planning, monitoring and control of the project, i.e. those relating to the use of material and human resources of the project as well as those relating to the organisation of these resources and the structure of the project tasks.
- Other leadership activities and functions include those related to the organisation of the project, human resources and the company where the project will be carried out, as well as those related to the characteristics of the components of the project team, the actors related to the project: project designers, promoter, contractor, user, client, administration, etc. and those related to the skills and abilities of the project team.

2.1.2 Project life cycle

In their book PMBOK (2017), the PMI describes a project life cycle as just the series of phases that a project has from its start to its completion as, typically, a project has phases that are associated with the development of a product, service, or result. The phases are called development life cycles and they can be predictive, iterative, incremental, adaptive, or hybrid:

- Predictive life cycle: This life cycle refers to the early stages, used when the project scope, time, and costs are determined; any changes to the scope are carefully managed in this cycle.
- Iterative life cycle: When, following the definition of the first project scope in the predictive life cycle, the time and cost estimates are routinely modified as the project team's understanding of the product increases.
- Incremental life cycle: The deliverable is produced through a series of iterations that successively add functionality within a predetermined time frame.
- Adaptive life cycle: The detailed scope is defined and approved before the start of an iteration.
- Hybrid life cycle: It is a combination of a predictive and an adaptive life cycle. Those elements of the project that are well known or have fixed requirements follow a predictive development life cycle, and those elements that are still evolving follow an adaptive development life cycle.

Although the definitions above refer mostly to the process of managing a project, it is also important to consider how the content evolves. So, in a project life cycle, it is common to talk about both a construction and a creative phase, where, clearly, the first one requires more human, material and financial resources than the second one. This makes the construction phase of more critical importance to PM, not only for the difficulty involved in managing a greater volume of tasks and resources but also because of the implicit economic repercussions of each of the decisions taken.

The PM team needs to determine the best life cycle for each project and should maintain it flexible enough to deal with the variety of factors included in the project.

The project described in this dissertation deals with a hybrid life cycle, due to the uncertainty associated with organising an event with people from different countries, in the midst of a worldwide pandemic caused by the outbreak of COVID-19.

2.1.3 Project Phases

A project phase is a group of project activities that culminates in the completion of one or more deliverables. These phases are generally described by a variety of attributes such as:

- Name.
- Number.

- Length.
- Resource Requirements.
- Entrance criteria for a project to advance into that phase.
- Exit criteria for a project to complete that phase.

2.1.4 Process of project management

A project consists of multiple processes. The processes within a project are activities that, when executed, evolve the project phases and the project life cycle itself. Every process in the project produces one or more outputs from one or more inputs by using different tools and techniques.

Generally, the output of one process results in input to another process or a deliverable of the project or project phase. Consequently, processes are linked by the outputs they produce. An illustration can be seen in *Figure 1*:



Figure 1. Example diagram of the general process.

Source: Guide to the Project Management Body of Knowledge.

Project processes can be divided into three categories:

- Processes used just once or at a predefined point in the project.
- Processes performed periodically as needed.
- Processes performed continuously throughout the project.

2.1.5 Process Groups

As per PMI (2017), a PM process group is a logical group of PM processes to achieve specific project objectives. Those process groups are independent of project phases and all the processes of the project are grouped into the following five PM groups:

- 1. Initiating Process Group: This group collects those processes performed to define a new project or a new phase of an existing project by obtaining authorisation to start the project or phase.
- 2. Planning Process Group: This group collects those processes required to establish the scope of the project, redefine the objectives, and define the course of action required to attain the objectives of the project.
- 3. Executing Process Group: This group collects those processes performed to complete the work defined in the project management plan to satisfy the project requirements.
- 4. Monitoring and Controlling Process Group: This group collects those processes required to track, review, and regulate the progress and performance of the project, identify any areas in which changes to the plan are required and initiate the corresponding changes.

2.1.6 Knowledge Areas

In addition to process groups, the PMBOK guide categorises the processes in knowledge areas, where a knowledge area is an identified area of PM, defined by its knowledge requirements and described in terms of its component processes, practices, inputs, and outputs, tools, and techniques.

The ten knowledge areas used for this project are:

- 1. Project Integration Management. Includes the processes and activities to identify, define, combine, unify, and coordinate the various processes and project management activities within the Project Management Process Groups.
- 2. Project Scope Management. Includes the processes required to ensure the project includes all the work required, and only the work required, to complete the project successfully.
- 3. Project Schedule Management. Includes the processes required to manage the timely completion of the project.
- 4. Project Cost Management. Includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so the project can be completed within the approved budget.
- 5. Project Quality Management. Includes the processes for incorporating the organisation's quality policy regarding planning, managing, and controlling project and product quality requirements, in order to meet stakeholders' expectations.
- 6. Project Resource Management. Includes the processes to identify, acquire, and manage the resources needed for the successful completion of the project.
- 7. Project Communications Management. Includes the processes required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and ultimate disposition of project information.
- 8. Project Risk Management. Includes the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project.
- 9. Project Procurement Management. Includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team.
- 10. Project Stakeholder Management. Includes the processes required to identify the people, groups, or organisations that could impact or be impacted by the project, to analyse stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution.

Below a table with the different processes collected in PMBOK Guide can be seen categorising them into the different knowledge areas and process groups (*Figure 2*):

	Project Management Process Groups						
Knowledge Areas Group		Planning Process Group Executing Process Group		Monitoring and Controlling Process Group	Closing Process Group		
4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work 4.4 Manage Project Knowledge	4.5 Monitor and Control Project Work 4.6 Perform Integrated Change Control	4.7 Close Project or Phase		
5. Project Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope			
6. Project Schedule Management		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Durations 6.5 Develop Schedule		6.6 Control Schedule			
7. Project Cost Management		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs			
8. Project Quality Management	Project Quality Management		8.2 Manage Quality	8.3 Control Quality			
9. Project Resource Management		9.1 Plan Resource 9.3 Acquire Management Resources 9.2 Estimate 9.4 Develop Team Activity Resources 9.5 Manage Team		9.6 Control Resources			
10. Project Communications Management		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Monitor Communications			
11. Project Risk Management	11. Project Risk Management		11.6 Implement Risk Responses	11.7 Monitor Risks			
12. Project Procurement Management	12. Project Procurement Management		12.2 Conduct Procurements	12.3 Control Procurements			
13. Project 13.1 Identify 1 Stakeholder Management 13.1 Identify 5 Stakeholders 5		13.2 Plan Stakeholder Engagement	13.3 Manage Stakeholder Engagement	13.4 Monitor Stakeholder Engagement			

Figure 2. Mapping of Process Groups and Knowledge Areas.

Source: Guide to the Project Management Body of Knowledge.

To develop the current project, as the main document behind it is the PMBOK Guide, the five groups and the ten knowledge areas that this guide uses to classify the processes are the ones used.

2.2 Rita's list of processes

For this specific project, I have based the selection of processes to be used in the book of Rita Mulcahy "PMP Exam Prep", which is aligned with the PMBOK Guide (PMP Exam Prep Eight Edition ,Mulcahy, n.d.). In it, there are concepts and practical materials about project management that have been very useful for the implementation of all the knowledge within PMBOK into a real project.

This project is only focused on the initiating and planning process groups. Specifically, the processes defined by Rita are the following:

	PLANNING		MONITORING &			
INITIATING	(This is the only process group with a set order.)	EXECUTING	CONTROLLING	CLOSING		
Select project manager	Determine development approach, life cycle, and	Execute work according to the project management plan	Take action to monitor and control the project	Confirm work is done to requirements		
Determine company culture and existing systems	how you will plan for each knowledge area	Produce product deliverables	Measure performance against	Complete final procurement		
Collect processes, procedures, and historical information	Define and prioritize requirements	Gather work performance data	baseline	Gain final acceptance of		
Divide large projects into	Create opiect scope statement	Request changes	Measure performance against other metrics in the project	product		
phases or smaller projects	Assess what to numbers and	Implement only approved	management plan	Complete financial closure		
Understand business case and benefits management plan	create procurement documents	changes	Analyze and evaluate data and performance	Hand off completed product		
Uncover initial requirements,	Determine planning team	Continuously improve; perform progressive elaboration	Determine if variances warrant	Solicit customer's feedback about the project		
assumptions, nsks, constraints and existing agreements	Create WBS and WBS Dictionary	Follow processes	change request(s)	Complete final performance		
Assess project and product feasibility within the given	Create activity list	Determine whether quality plan and processes are correct and	Influence factors that cause change	Index and archive records		
constraints	Create network diagram	eflective	Request changes	Gather final lessons learned		
Create measurable objectives and success criteria	Estimate resource requirements	Perform quality audits and issue quality report	Perform integrated change	and update knowledge bases		
Develop project charter	Estimate activity durations and costs	Acquire final team and physical resources	Approve or reject changes			
Identify stakeholders and determine their expectations, interact influence, and impact	Determine critical path	Manage people	Update project management			
meres, moence, and mpace	Develop schedule	Evaluate team and individual	plan and project docaments			
Request changes	Develop budget	performance; provide training	change request results			
Develop assumption log	Determine quality standards,	Hold team-building activities	Monitor stakeholder			
Develop stakeholder register	Determine team charter and all	Give recognition and rewards	engagement			
	roles and responsibilities	Use issue logs	Confirm configuration compliance			
	Plan communications and	Facilitate conflict resolution	Create forecasts]		
	Perform risk identification,	Release resources as work is completed	Gain customer's acceptance of interim deliverables			
	qualitative and quantitative risk analysis, and risk response	Send and receive information, and solicit feedback	Perform quality control			
	Co back - iterations	Report on project performance	Perform risk reviews,			
	Engline programent strategy	Facilitate stakeholder	reassessments, and audits			
	and documents	engagement and manage expectations	Manage reserves			
	Create change and configuration management	Hold meetings	procurements			
	plans	Evaluate sellers; negotiate and	Evaluate use of physical resources			
	Finalize all management plans	Use and share project				
	Develop realistic and sufficient project management plan and	knowledge				
	Dasernes	Execute contingency plans				
	Gain formal approval of the plan	Update project management plan and project documents				
	Hold kickoff meeting					
	Request changes					

Figure 3. Rita Process Chart.

Source: (PMP Exam Prep Eighth Edition, Mulcahy, n.d.)

3 APPLICATION OF PROJECT MANAGEMENT

Following the selection of processes to be used, during the course of this chapter, we will focus on the project initiation and planning phases.

3.1 Selection of processes

For the development of this project, based on both process charts (PMBOK and RITA), a unique process chart has been developed with the processes needed to perform it. The selection of the most important ones required for this specific project can be seen below in *Table 1*:

Initiating	Planning		
Develop Project Charter	Develop project management plan		
Identify Stakeholders	Collect Requirement		
	Define Scope		
	Determine planning team		
	Create WBS & WBS dictionary		
	Create Activity list		
	Estimate Resource Requirement		
	Estimate Activity duration and cost		
	Create Critical Path		
	Develop Schedule		
	Develop Budget		
	Determine roles & responsibilities		
	Plan communications management		
	Plan risk management		
	Create change management plan		

Table 1.CM Seville process chart.

Source: Own creation.

3.2 Initiating group

The Initiating process group is composed of those processes carried out to define a new project or a new phase. Within the initiation processes:

- The initial scope is defined and initial financial resources are determined.
- Internal and external stakeholders who will interact and influence the overall project outcome are identified.
- If not already appointed, the project manager will be selected.

This information is recorded in the project charter and in a stakeholder register. When the project charter is approved, the project is considered officially authorised. Although the project management team may collaborate in the drafting of these documents, the approval and funding are handled outside the project boundaries. To better understand the project boundaries *Figure 4*:



Figure 4. Project boundaries.

Source: Guide to the Project Management Body of Knowledge.

In short, the processes in this group facilitate the formal start of the project, reaching some important milestones such as:

- Assign the Project Manager.
- Project Charter is made.
- Money is allocated.
- People and teams are chosen to work on the project.
- The project or a project phase is authorised.

The key benefit of this Process Group is that it allows the project to be aligned with the organisation's strategic objective and that the business case, benefits, and stakeholders are considered from the start of the project. As described before, projects are often divided into phases and, at the start of each phase, the output generated in the Initiating Group helps keep the focus on the business need that the project was undertaken to address.

Project charter, business documents, and success criteria are verified and all the influence and objectives of the project stakeholder are reviewed. It serves as an initiating point for coming back and revising when making any decision and it works too as a dynamic and live document that can be adjusted during the development of the project if needed.

There are two main outputs within this Initiating Group:

- 1. Project Charter.
- 2. Stakeholder Register.

We are going to focus on each one to understand why they are important to the development of the project and how they are made.

3.2.1 Development of the Project charter

The Project Charter is a document that formally authorises the existence of a project and provides the project manager with the authority to apply organisational resources to project activities. It documents the high-level information on the project and on the product, service, or result the project is intended to satisfy, such as:

- Project purpose.
- Measurable project objectives and related success criteria.
- High level requirements.
- High level project description, boundaries, and key deliverables.
- Overall project risk.
- Summary milestone schedule.
- Pre Approved financial resources.
- Key stakeholder list.
- Project approval requirements.
- Project exit criteria.
- Assigned project manager.
- Sponsors information.

The key benefits of this process are that it provides a direct link between the project and the strategic objectives of the organisation, creates a formal record of the project, and shows the organisational commitment to the project.

As for every process, the development of the Project Charter has some inputs and some tools and techniques that could be applied in order to achieve the outputs of the process. The scheme of the process is shown in *Figure 5*:



Figure 5. Develop project charter diagram.

Source: Guide to the Project Management Body of Knowledge.

Like many others, this process is not linear and should be completed many times throughout the project. Some of the inputs are not still available in the first iteration of the project, but must be taken into account for later adjustments.

3.2.1.1 Develop project charter Inputs

The Inputs of this process are:

- Business Document: Describe the necessary information from a business standpoint to determine whether expected outcomes of the project justify the required investment.
- Agreements: Agreements are used to define the initial intentions for a project and may take the form of contracts, memorandums understanding, letter of agreement, email, or other written agreements.
- Enterprise environmental factors: It collects all the environmental factors that can influence the development of the project charter such as government standards, legal requirements and constraints, market conditions, etc.
- Organisational process assets: It collects all organisational process assets that can influence the development of the project charter such as organisational standard policies, templates, historical information, etc.

For the development of this case study, there isn't a business document so the explanation of the event is considered in the organisation as inputs of the project, as well as the historical data of the past event of the organisation that fulfilled the same requirements.

3.2.1.2 **Project charter tools and technique**

There are some techniques that can be used in order to develop the Project charter:

- Expert Judgement: This is the judgement provided based upon expertise in an application area, discipline, industry, etc., as appropriate for the activity being performed.
- Data gathering: Different techniques used to gather data such as brainstorming, focus groups or interviews.
- Interpersonal and team skills: This consists of some skills that can be useful when developing the Project Charter such as conflict management, facilitation or meeting management.
- Meetings: For this process, meetings are used to identify objectives, success criteria, key deliverables, high level requirements, summary milestones and other summary information.

For this case study, a meeting was held to identify the main objectives and key points to focus on during the development of the Project charter.

The group of people involved and present in the meetings consist of the team involved in the execution of the event and stakeholders, as well as different Project managers of older events like this from all over Europe, who provided the experience regarding this type of Project (expert judgement).

All the interpersonal and team skills named here were used in that meeting to conduct a more productive data gathering.

3.2.1.3 Develop project charter outputs

The outputs of this process are the Project Charter and the Assumption log, being the last one used to record all the assumptions and constraints throughout the Project life cycle.

The initial Project Charter for our project is:

Project Charter

Project Name

Planning and management of a Council Meeting for the student organization ESTIEM in Seville, Spain.

Business Case

This event is mandatory for the organization of ESTIEM students, since during this event votes must be taken that will govern the course of the association for the next six months and must be organized by one of its local groups, in this case the LG Seville, since it was elected at the previous Council Meeting.

Objectives

- To bring together 250 people, including members of the association, senior officials from ESTIEM central, Alumis and guests.
- Facilitate accommodation, transport and food for participants.
- Ensure the development of the mandatory activities during the event.
- Ensuring the safety of participants.

Major project requirements

- Ensure the development of the mandatory activities during the event.
- To gather 2 members of each LG.
- Facilitate accommodation, transport and food for participants.
- To be held in November 2021.

Description of the Project

Planning and management of a Council Meeting for the student organisation ESTIEM in November during 5 days in Seville, Spain. Gathering more than 250 formal members, old members (Alumni) and guests from other organizations, associations and universities. It is composed of two parts, the General Assembly, where everyone is updated on the what is going on in ESTIEM and decisions are made through voting and the Working Groups & Training Sessions & Company Workshops, where smaller groups either work to develop ESTIEM, or improve their soft skills.

Risk assessment

- Cancelling due to COVID restrictions.
- Lack of funding.
- Problems with participants.

Deliverables

- Accommodation agreement and contracts.
- Guide of transport routes needed during the event and means of transport to be used.
- List of meals and places where they take place.
- Agreement of places to be used during the event.
- Assignment of personnel to tasks.
- Collaboration agreements.
- Merchandising of the event.

Project Budget

42.927€

Project Charter					
Success Criteria					
Be able to host the event in Seville and meet the minimum conditions of it:					
Ensure the development of the mandatory activities during the event.Facilitate accommodation, transport and food for participants.					
Project Manager					
Antonio Valerio Revuelta					
Project Sponsor					
ESTIEM LG SEVILLA					

Table 2. CM Seville Project Charter.

Source: Own creation.

3.2.2 Identifying Stakeholders

This process frequently occurs for the first time in a project either prior or at the same time the project charter is developed and approved.

Within this process, the project stakeholders are identified and analysed and relevant information regarding their interest, involvement, interdependencies, influence, and potential impact on project success are documented. The purpose of this process is enabling the project team to identify the appropriate way of engagement with each stakeholder or group of stakeholders. The scheme of this process is the following *Figure 6*:



Figure 6. Identify Stakeholder process diagram.

Source: Guide to the Project Management Body of Knowledge.

3.2.2.1 Stakeholder Inputs

The inputs of this process are the same as for the process "Develop Project Charter" together with the outputs of that process as inputs when identifying stakeholders.

- Project Charter.
- Business documents.

- Project Management plan: It is not available when firstly identifying stakeholders. Later on this document we will look in more depth at this project management plan but it includes:
 - Communications management plan: Describe how project communications will be planned, structured, implemented, and monitored for effectiveness.
 - Stakeholder engagement plan: It is a document that identifies the strategies and actions required to promote productive involvement of stakeholders in decision making and execution.
- Project documents: It is unlikely that any project documents will be inputs for the initial stakeholder identification. However, we will take them into account since stakeholder identification occurs throughout the project. It consists of:
 - Change log: Used to document changes that occur during the project.
 - Issue log: Document where all issues are recorded and tracked.
 - Requirements documentation: It describes how individual requirements meet the business need for the project.
- Agreements.
- Enterprise environmental factors.
- Organisational process assets.

3.2.2.2 Stakeholder's tools and techniques

There are different tools and techniques that can be used to identify, classify and analyse stakeholders. Some of them are:

- Expert Judgement.
- Data gathering. Such as:
 - Questionnaires and surveys.
 - Brainstorming.
- Data Analysis. Data analysis techniques that can be used for this process include but are not limited to:
 - Stakeholder analysis. It results in a list of stakeholder and relevant information such as their position in the organisation, roles on the project, expectation, attitudes, and their interest in information about the project.
 - o Document analysis. Consists of reviewing and assessing any relevant document information.
- Data representation. A data representation that may be used include stakeholder mapping/representation. It is a method of categorising stakeholder using various methods. Common methods include:
 - Power/interest grid, power/influence grid, or impact/influence grid. Each of these techniques supports a grouping of stakeholders according to their level of authority (power), level of

concern about the project's outcomes (interest), ability to influence the outcomes of the project (influence), or ability to cause changes to the project's planning or execution.

- Stakeholder cube. This model combines the grid elements into a three-dimensional model that can be useful to project managers and teams in identifying and engaging their stakeholder community.
- Salience model. This is the technique used in this case study and we will look into it into more detail later. It describes classes of stakeholders based on assessments of their power, urgency and legitimacy.
- Directions of influence. Classifies stakeholders according to their influence on the work of the project or the project team itself.
- Prioritization.
- Meetings.

3.2.2.3 Stakeholders Outputs

The main output of this process is the **stakeholder register**, and the one we will focus on for our business case. The register contains information about identified stakeholder that includes:

- Identification information. Such as name, organisational position, location, etc.
- Assessment information. Such as major requirements, expectation, potential for influencing Project outcomes, and the phase of the Project life cycle where the stakeholder has the most influence or impact.
- Stakeholder classification. A classification of the different stakeholders in order to better approach when planning.

Other outputs are the change request, the project management plan updates and the Project documents updates. Any of them will exist at the beginning of the Project but will be updated as the project develops.

- Change request. It collects all the changes to the product, Project management plan, or documents.
- Project management plan updates.
- Project documents updates.

For this case study a Salience Model have been chosen to identify, analyse, prioritise the stakeholder and to decide which strategy we should follow for each of them.

The Salience Model uses three variables that were bases on the evaluation of attributes of the stake holding entities of the attributes (Bahadorestani et al.):

- Power: Power is the prospect that an entity will be able to exert their own will despite the resistance of other entities. The type of power that an entity can exer are:
 - Coercive. Plainly stated, this is a physical power. It incorporates the use of violence, force, physical, threat, damage of property, restraint, etc.
 - o Utilitarian. Monetary or material items of value and the use for control purposes.

- Normative. Symbolic claims such as prestige, familial or community ties, social symbols, and material items that are representative of these types symbols.
- Legitimacy. Legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within same socially constructed system of norms, values, belief, and definitions.
- Urgency. It is the character of how sensitive, very important, or critical the impact of a project is to a stakeholder.

The combination of the analysis of power, legitimacy, and urgency of a proposed stakeholder yields their salience. Based on their salience we can determine the quality of interaction that the management of a project need to apply to completing stakeholder claims or relationships.

Depend on how a stakeholder is identify in this 3 variables they can be defined different. To more fully understand how this works it helps to visualize these characteristics on a Venn Diagram (Margaret E. Baron):



Figure 7. Venn Diagram Salience Model. Source: PointProx (Web page).

There are four level which represent the amount of impact that a stakeholder will likely have on a project. The more attributes are possessed the more important they will be to the success of the project:

- Non- Stakeholder. These entities are not stakeholder as they possess none of the attributes of power, legitimacy, or urgency.
- Latent. These entities possess only one of the three potential attributes. As such, they will be unlikely to affect any impact and likely to be uninterested in project.
- **Expectant**. These entities possess two of the three potential attributes. Unlike the latent level, an expectant stakeholder becomes active and the quantity of effort applied to manage the expectations of such entities must be increased accordingly.
- **Definitive**. These are entities that possess the three of the attributes, they are then a definitive stakeholder and therefore highly salient and influential to the project.

In addition to the four levels of salience, there are seven intersecting categories on the Venn Diagram. The categories, represented by the intersection of possessed attributes, identify the character of the entity's relationship to the project. The salience categories are the followings:

Category	Attributes	Description
Dormant	Power	The dormant stakeholder possesses power in relationship to the project but has neither a legitimate interest or any urgent claim. An example might be a senior executive of a part of the company not directly affected by the project but who has expressed interest in the effort. They could exercise their power but have neither cause or need to do so. Dormant stakeholders need watching as the acquisition of another attribute can make them active in a dominant or dangerous way.
Discreptionary	Legitimacy	Typically, a discretionary stakeholder has a latent "pro bono" or charity relationship to a project. They have no power to affect a claim and no issues that require immediate attention. An example might be a local soup kitchen which is a favorite charity for the sponsoring company that is rolling out a large restaurant management system. Unless the entity becomes active or the project feels there is a benefit to performing charity work, the project need not consider a discretionary stakeholder too deeply.
Demanding	Urgency	A demanding stakeholder feels that their issues have a degree of urgency in relation to a project. However, their claims have no validity and they do not possess the power attribute required to push their agenda forward. At worst, they are a likely little more than a pest. An example might be an employee that habitually promotes a particular business process that was legitimately rejected in favor of a process that will be implemented by the project. The demanding entity bears watching and potentially tolerance but little effort on the part of the project manager.
Dominant	Power and Legitimacy	With the combination of power and a legitimate relationship to a project a dominant stakeholder requires a lot of attention. An example of a dominant stakeholder might be a union that represents primary users of the software produced where the project does not change their contractual or work relations to the company. The question with this type of entity is if they choose to exercise their power to affect their legitimate relationship to a project they could become an important stakeholder. If, in the example above, the union feels that it has a critical issue with the adoption of a new feature on the project they already have the power and legitimacy to make their requirements enacted.
Dangerous	Power and Urgency	A stakeholder can affect power for urgent claims that have no legitimate claim on the project is said to be dangerous. This type of stakeholder is in a position to extort changes or concessions from a project of which they have no valid claim. If the power used is coercive then there is a chance of their activities being violent in nature. An example of a dangerous stakeholder might be a vendor that threatens members of a project team to be awarded a contract to provide services to the project. Due to the potentially disruptive nature of a dangerous stakeholder, when identified, planning is critical to mitigating potential impact of their actions.
Dependent	Legitimacy and Urgency	While possessing legitimate claims that have a degree of urgency, a dependent stakeholder has no power to be able to affect an action towards these claims. As such, they are dependent on another entity that has some power in relation to the project. An example might be customers that own a version of software that will be made obsolete by a new project output. Note that since there is a legitimate urgency to this entity's claim it is attractive for other stakeholders who possesses power to align with them thereby allowing for their claims to significantly influence the project. Contingency and risk planning are in order with the dependent stakeholder.
Definitive	Power, Legitimacy and Urgency	Possessing all three of the salience attributes, a definitive stakeholder can affect their will on the project. The management of these entities' requirements and issues will be critical to the success of a project. An example of such a stakeholder would be the management of departments who have sponsored the project. Care should and must be taken in stakeholder and communications planning.
Non- Stakeholder		As these entities have no salience they are not stakeholders on the project. Other than being aware of them they can safely be ignored for planning purposes.

Table 3. Salience Categories.

Source: PointProx (Web page).

Our stakeholders identified are the following:

- 1. Sevilla City Hall.
- 2. ESTIEM Central: The central board of the organization ESTIEM.
- 3. ESTIEM LG Sevilla: Our local group within the organization.
- 4. Universidad de Sevilla.
- 5. E.T.S.I: Our faculty.

- 6. Public media.
- 7. Organizers: Members of the LG Seville that organize the event.
- 8. Participants.
- 9. ESTIEM.
- 10. Hostel.
- 11. Material Suppliers.
- 12. Restaurants.
- 13. Means of transport.
- 14. Night time activity rooms partners.
- 15. Partnership companies.

Stakeholder Register									
D.	N	Dela	Impact						
D	Name	noie	Major Requirement	Main Expectations	Power	Legitimacy	Urgency	Salience Group	Salience Classification
1	Sevilla City Hall	Goverment	To report transparently and clearly on the whole project	Compliance with imposed regulations				Core	Definitive
2	Estiem central	Client	Be able to have the General Assembly	To fulfill their requirements				Core	Definitive
3	Estiem LG Sevilla	Sponsor	To hold the event	To fulfill central requirements				Dominant	Expectant
4	Universidad Sevilla	Partner	To be informed	Compliance with internal rules				Dormant	Latent
5	E.T.S.I	Partner	To be informed	Compliance with internal rules				Dormant	Latent
6	Public media	Media	To be informed	To be able to communicate the event				Non-Stakeholder	Non- Stakeholder
7	Organizers	Team	To be clear about the tasks	to help during the event and have their work recognised				Discretionary	Latent
8	Participants	Users	to take care of their needs during the event	To be able to carry out all the activities that are part of this type of event (Estiem Council Meeeting)				Dependent	Expectant
9	ESTIEM	Community	To report transparently and clearly on the whole project and the event	To hold a responsible event with the conditions of the moment that facilitates the fulfillment of the general assembly				Dominant	Expectant
10	Hostel	Partner	fulfilment of the agreement	Accommodation for participants				Dependent	Expectant
11	Material suppliers	Suppliers	fulfilment of the agreement	Sale of event materials				Demanding	Latent
12	Restaurants	Partner	fulfilment of the agreement	Food for the event				Demanding	Latent
13	Means of transport	Partner	fulfilment of the agreement	Transport during the event				Demanding	Latent
14	Night-time activity rooms partners	Partner	fulfilment of the agreement	To host the evening activities				Demanding	Latent
15	Partnership companies	Partner	fulfilment of the agreement	To be able to carry out the agreed activities				Dependent	Expectant

After completing the Salience Model the result and the stakeholder register is the following:

Table 4. Stakeholder Register.

Source: Own creation

3.3 Planning Group

The PMI (2017) describes this process group as the group of processes that establishes the total scope of the effort, defines and refines the objectives, and develops the course of action required to attain those objectives. The processes in this group develop the components of the project management plan and the project documents used to carry out the project.

As the project context and variables are changing and more information is gathered and understood, additional planning will likely be required. Due to this, planning processes may need a revision in order to adapt to those changes.

PMBOK defines this ongoing refinement of the project management plan as "progressive elaboration", indicating that planning and documentation are iterative or ongoing activities. The key benefit of this Process Group is to define the course of action to successfully complete the project or phase.

This Process Group brings together all of the different types of planning needed to run the project. This is not only to identify the Scope, Cost, Schedule but also identify the resources needed and plan proper mitigation strategies against any unforeseen future event. Throughout the project, the Monitoring and Controlling processes compare the project performance to the baselines.



The Planning Process Group includes the processes:



3.3.1 Project management plan

This process consists of the development of a project management plan - a formal, approved document that defines how the project is executed, monitored, and controlled. It may be a summary or a detailed document and may include baselines, subsidiary management plans, and other planning documents. The goal is the production of a comprehensive document that defines the basis of all project work and how the work will be performed. The inputs and outputs of this process are:



Figure 9. Develop project management plan process diagram.

Source: Guide to the Project Management Body of Knowledge.

The project management plan is not created all at once but progressively elaborated, which means it is developed, refined, revisited, and updated. Since the project management plan integrates all the knowledge area management plans into a cohesive whole, it needs to be assembled after all the component plans have been created.

This project management plan is a collection of baselines and subsidiary plans that include among others:

- Baselines for scope, schedule and cost.
- Management plans for scope, schedule, cost, quality, human resources, communications, risk, and procurement.
- Requirement management plan.
- Change management plan.
- Configuration management plan.
- Process improvement plan.

For this reason, the other processes in this group will be performed in advance to use their outputs as inputs in this process.

3.3.2 Requirement's collection

This is the process of determining, documenting and managing needs and requirements to meet objectives. With this, a basis for defining the project scope is created.

The detailed requirements are later used for the project scope statement. For this project the detailed requirements are:

1. Ensure the development of the mandatory activities during the event:
During the event there are some mandatory activities that have to take place within the general assembly, the event needs to ensure the proper development of these activities.

2. To gather 2 members of each LG:

The event needs to ensure that, at least, 2 members of each local group in the network attend.

3. Facilitate accommodation, transport and food for participants:

The event needs to ensure accommodation, transportation from the accommodation to the different activities and food for every participant during the whole council meeting.

- **4.** To be held in November 2021: This event needs to be held in Seville during November 2021.
- 5. Ensure that the entire network can see the whole general assembly live and delayed:

The event needs to be accessible for all the members of the organisation making it possible to see and participate in the general assembly either presentially or online, having this general assembly recorded and posted online later.

6. Facilitate extra activities for the participants:

Apart from the mandatory activities other activities need to take place in order to ensure that participants are distracted and learn during the event, both culturally and professionally.

7. Ensure the safety of the participants:

The event must guarantee the safety of all participants during each activity and always have a form of contact with the organisers in case of emergency.

3.3.3 Define Scope

The PMI (2017) describes the scope of a project as a detailed description of the project and product. The key benefit of this process is that it describes the product, service, or result boundaries and acceptance criteria. The inputs and outputs of the project are:



Figure 10. Define Scope process diagram.

Source: Guide to the Project Management Body of Knowledge.

The main output and focus for this project in this section is the project scope statement.

A project scope statement provides a detailed description of the work that must be done to deliver the output of the project on time and with the budget available. It will act as the primary tool for stakeholders and teammates to refer back to and use as a guideline to accurately measure project success.

3.3.3.1 Project scope statement of CM Seville

For this project case, CM's event, the project scope statement is the following:

PROJECT OBJECTIVE

Planning and management of an international event of 5 days long for 250 members of the student organisation ESTIEM in Seville from 8th to 12th of November 2021.

DELIVERABLES

- Guide of transport routes needed during the event and means of transport to be used.
- Meals for all the participants during the whole event.
- Places to be used during the event. Rooms for general assembly, working groups and other activities.
- Merchandising of the event.
- Extra activities during the event.
- A place for the accommodation of the participant during the event.

MILESTONES

- 1. Accommodation agreement and contracts 23th February 2021.
- 2. Accommodation payments 20th June 2021
- 3. Transportation agreement 15th August 2021
- 4. Transportation payments 15th September 2021
- 5. Meal schedule -10^{th} September 2021
- 6. General Assembly schedule and place 10th August 2021
- 7. Extra activities list and plan July 2021
- 8. Event's merchandising September 2021
- 9. Creation of all marketing documents and publicity needed 15th August 2021
- 10. Collection of the fee 1th November 2021
- 11. Final organizers meeting to distribute task during the event 2th November 2021

REQUIREMENTS

- 1. Ensure the development of the mandatory activities during the event.
- 2. To gather 2 members of each LG
- 3. Facilitate accommodation, transport and food for participants
- 4. To be held in November 2021
- 5. Ensure that the entire network can see the whole general assembly live and delayed
- 6. Facilitate extra activities for the participants
- 7. Ensure the safety of the participants

LIMITS AND EXCLUSIONS

- All the participants must be part of the student organizations ESTIEM.
- The event can't be lucrative for the organizers. If there are benefits it may stay for the network or the local group of Seville.
- The budget could not include alcohol.
- The event must take place during November.
- The event cannot include transportation to the city where it takes place (Seville).
- This event cannot take place without the knowledge and the agreement of the local university (Universidad de Sevilla).

3.3.4 Planning team

During this process the planning team is defined.

For the management of the CM, the project team covered all fields needed for the success of the event. The team consist of six members divided in different roles:

- 1. Project Manager. The Project manager leads the project team to meet the project's objectives and stakeholders' expectation and works to balance the competing constraints on the project with the resources available. The project manager also performs communication roles between the project sponsor, team members, and other stakeholders. This includes providing direction and presenting the vision of success for the project.
- 2. Corporate Relation Leader. The Corporate Relation leader is the key accountable for all the related with external companies and funding management during the event.
- 3. The Public Relations Leader. The Public Relation Leader is the key accountable for all the related with the marketing and advertising of the event.
- 4. Logistic Leader. The Logistic Leader is accountable for all the related logistics during the event.
- 5. Resource Leader. The resource Leader is accountable for the resources needed during the event.
- 6. Control leader. The Control Leader is accountable for everything related with the control of the different process of organisation of the event and the correct fulfilment of all of them.

3.3.5 WBS and WBS dictionary

WBS stands for Work Breakdown Structure and the PMBOK describes it as the process of subdividing project deliverables and project work into smaller, more manageable components. This way, each level shows the work packages that are part of the package of the higher level.

The key benefit of this is that it provides a framework of what has to be delivered. This process is performed several times during the development of the project and is one of the most important tools during PM (Indelicato):

The WBS dictionary is where the details of the tasks and deliverables of the work breakdown structure are located. The content includes whatever milestones are related, the project scope and in some instances dates, resources, cost and quantity.

The WBS dictionary allows you to define each of the steps on the WBS and shows how to execute them to reach the final deliverable of the project. The purpose of this WBS dictionary is to add information context to the WBS and increase its usability.

3.3.5.1 WBS and WBS dictionary of CM Seville

For the CM, the WBS is divided into seven key deliverables or milestones. The WBS is represented graphically in the *Appendix A*. Regarding the WBS dictionary, a first approach collects the details of each work package without the information of the resources needed or the owner of each package since this information is going to be added later on the next processes. The WBS dictionary for the CM is:

- 1. Accommodation: It collects everything related to the accommodation of the participants of the event.
 - 1.1. Preliminary study: Carrying out a preliminary study on the different accommodation options.
 - **1.2.** Strategy planning: Planning the strategy to follow in order to get a good deal on accommodation.
 - **1.3.** Strategy review: Review of the strategy to check its effectiveness.
 - 1.4. Payments: It collects everything related to the payments of the accommodation.
 - 1.4.1. Realization of the agreement: Realization of the agreement with the hotel.

- **1.4.2. Payment scheduling:** Internal schedule to pay the accommodation based on the agreement with the hostel.
- 2. Transport: It collects everything related to the transport during the event.
 - 2.1. Route planning: Planning the different travel routes that are necessary during the event.
 - **2.2. Transport to GA:** It collects everything related to the transport to the different General Assemblies. GA: Mandatory assembly in which the statutes are reviewed, the representatives of the association are selected and new ideas, initiatives, trajectory, projects and other matters related to the performance of the ESTIEM organization are discussed.
 - **2.3. Transport to IN:** It collects everything related to the transport to the International Night. IN: An evening in which participants from different countries bring together typical food and drink from their respective countries.
 - **2.4.** Transport to GD: It collects everything related to the transport to the Gala Dinner. GD: An evening in which participants dress up in their best clothes and companies are invited.
 - 2.5. Night activities: It collects everything related to the transport to the different night activities.
 - **2.6.** Extra activities: It collects everything related to the transport to the different activities during the event (apart from the night's ones).
- **3.** Food: It collects everything related to the food during the event.
 - 3.1. Breakfast: It collects everything related to the breakfasts during the event.
 3.1.1. Planning: Planning and management of the different breakfasts throughout the event.
 3.1.2. Logistic: It collects the logistic needs of each breakfast and the management of them.
 - **3.2.** Lunch: It collects everything related to the lunches during the event.
 - 3.2.1. Planning: Planning and management of the different lunches throughout the event.
 - **3.2.2. Logistic:** It collects the logistic needs of each lunch and the management of them.
 - **3.3. Dinner:** It collects everything related to the dinners during the event.
 - **3.3.1. Planning:** Planning and management of the different dinners throughout the event.
 - **3.3.2. Logistic:** It collects the logistic needs of each dinner and the management of them.
- **3.4. Food exceptions:** Planning the management of possible food exceptions for participants.
- 4. Logistic: It collects everything related to the logistic (except for food logistics) during the event.
 - **4.1. ETSI relationship management:** Management of the relationship with E.T.S.I (Escuela Técnica Superior de Ingeniería), regarding the logistic needs, for and during the event. The E.T.S.I is que faculty where our organization is based.
 - 4.2. Daytime activities management: Management of the logistic needs of daytime activities.
 - **4.2.1. Place for GA:** Management of the place where to do the GA.
 - **4.2.2. Place for WG & Trainings:** Management of the place where to do the different Working Groups (WG) and trainings during the event.
 - **4.2.3.** Place for IN & GD: Management of the place where to do the IN and GD.
 - 4.3. Night activities management:
 - **4.3.1. Place:** Management of the place where to do the GA.
 - 4.3.2. Activities: Planning and management of the different Night activities.
 - 4.4. Material needs management: Management of the necessary materials during the event activities.
 - **4.5.** Stakeholder management: Management of the stakeholder needs during the event.
 - 4.6. Human resources management: Management of the different organizers needed.
 - **4.7. Fee management:** Management of the fee of the participant. The fee is the amount of money participants pay to attend the event.
 - **4.8.** US relationship management: Management of the relationship with the University of Seville.
- 5. Funding: It collects everything related to the funding of the event.
 - **5.1. Preliminary planning:** It includes the initial planning of approaching companies and achieving funding.
 - **5.1.1. Packs:** Implementation and management of the different partnership packages for the companies that want to participate in the event.

5.1.2. Company analysis: Analysis of each company to adopt the best approach for each one.

5.1.3. Division of labour: Management of the division of labour for the search for funding.

5.1.4. Budget: Implementation and management of the project budget.

- **5.2.** Planning secondary options: The plan of action in the event of not obtaining the necessary funding for the event to take place.
- **5.3.** Action strategy: It collects the different actions needed to approach a company, including all the steps from the first contact to the closing of the agreement.
- **5.4.** Forecast payment performance: Creation of a financing scheme necessary to control the money we should have at each stage of the event.
- **5.5. Management of partnership companies:** It includes the management of relations with the companies participating in the event.
 - **5.5.1. Contracts:** Management of contracts with the different companies. Ensuring compliance with what has been agreed
 - **5.5.2. Management of company contributions:** Management of the different contributions of the companies collaborating in the event.
- 6. Marketing: It collects everything related to the marketing of the event.
 - **6.1.** SV Planning: Design and development of the event's survival guide (SV). The survival guide is a document to help the participants of the event to locate themselves in the city and get to know it and its culture.
 - **6.2. Nametag management:** Design and development of the nametag of the participants and organizers of the event.
 - **6.3. Legal documents management:** Development and management of the different legal documents required during the event.
 - 6.4. Merchandising management: Design, development and management of event merchandising.
 - 6.5. Posters management: Design, development and management of event posters.
 - **6.6. Media management:** Management of the media of the association during the event.
 - 6.7. CR documents: Design and development of the documents needed for corporate relation (CR).
- 7. Control: It collects everything related with the control of the different processes of organization of the event and correct fulfillment of them.
 - 7.1. Project Charter: Design and development the project charter of the project.
 - 7.2. Stakeholder register: Design and development of the register of stakeholder of the project.
 - 7.3. Schedule reviews: Planning and carrying out reviews to control the development of the event.
 - **7.4.** Statistics & KPI'S: Design, implementation and control of different KPI's and analysis of the data obtained.

3.3.6 Activity list

The creation of the Activity list is the process of identifying and documenting the specific actions to be performed to produce the project deliverables collected in the WBS. It decomposes work packages into scheduled activities that provide a basis for estimating, scheduling, executing, monitoring, and controlling the project work.

For each deliverable of the project, there can be one or more activities needed to achieve it. To our specific project of the CM, 49 activities were identified. Each activity is related with one work package and the relations with predecessor are shown in the table below:

ACTIVITY LIST						
Work Package	Code	Activity	Predecessor			
4.6	9D	Manage HR	-			
4.7	10D	Collects & manage fee	-			
6.2	2F	Create & manage Nametags	-			

	ACTIVITY LIST						
Work Package	Code	Activity	Predecessor				
6.4	4F	Create merchandising	-				
5.5.1	8E	Manage contracts	-				
6.5	5F	Create & manage posters	-				
7.1	1G	Create Project Charter	-				
3.4	7C	Control the food exceptions	9D				
5.5.2	9E	Manage company agreements	8E				
7.2	2G	Create the register of stakeholder	1G				
7.3	3G	Control the development of the project	1G				
7.4	4G	Create and control KPIs	1G				
1.1	1A	Create a preliminary study for accommodation.	1G				
4.1	1D	Manage of the relation with the ETSI	1G				
4.8	11D	Manage of the relation with the US	1G				
4.2.2	3D	Find a place for WG and trainings & prepare it	1G				
4.2.1	2D	Find a place for GA & prepare it	1G				
4.2.3	4D	Find a place for IN and GD & prepare it	1G				
4.3.1	5D	Find a place for night activities and prepare it	1G				
6.6	6F	Manage media	1G				
3.1.1	1C	Create a planning of the event's breakfasts	1G				
6.1	1F	Create the SV	1G				
6.3	3F	Manage legal documents	1G				
5.1.4	4E	Creation of Budget	1G				
4.5	8D	Manage stakeholders	2G				
1.2	2A	Create a Strategic planning for accommodation.	1A				
1.4.1	4A	Get the contracts of the accommodation agreement done	1A				
4.4	7D	Manage the material needs	3D				
2.1	1B	Create a plan about the necessary routes in the event	1A & 2D & 3D & 4D &5D				
4.3.2	6D	Plan and manage night activities	5D				
3.1.2	2C	Manage the logistic need of the breakfasts	1C				
5.2	5E	Create the secondary plan	4E				
5.1.2	2E	Make a analysis of potential partners	4E				
5.4	7E	Create a forecast payment scheme	4E				
5.3	6E	Create the plan of action	4E				
1.3	ЗA	Review & Adjust the Strategic planning of accommodation	2A				
3.2.1	3C	Create a planning of the event's lunches	2A				
3.3.1	5C	Create a planning of the event's dinners	2A				
1.4.2	5A	Make a payment scheduling scheme for accommodation.	4A				

ACTIVITY LIST							
Work Package	Code	Activity	Predecessor				
2.2	2B	Make an agreement about the transport to GA	1B				
2.3	3B	Make an agreement about the transport to IN	1B				
2.4	4B	Make an agreement about the transport to GD	1B				
2.5	5B	Make an agreement about the transport to night activities	1B				
2.6	6B	Make an agreement about the transport to extra activities	1B				
5.1.3	3E	Divide the work for searching funding	2E				
5.1.1	1E	Make the partnership packages	2E				
6.7	7F	Create CR documents	6E				
3.2.2	4C	Manage the logistic need of the lunches	3C				
3.3.2	6C	Manage the logistic need of the dinners	5C				

Table 5. Activity list.

Source: Own creation.

3.3.7 Network diagram

Within this process, the relationship between activities is defined. Using the predecessor relations between each activity (that is shown in the last process) a network diagram is created. Thus, the logical sequence of work is defined to obtain the greatest efficiency given all project constraints.

Each activity has been identified with a number in the diagram as follows:

	ACTIVITY LIST						
Code	Diagram Code	Activity	Diagram Predecessor				
9D	1	Manage HR	-				
10D	2	Collects & manage fee	-				
2F	3	Create & manage Nametags	-				
4F	4	Create merchandising	-				
8E	5	Manage contracts	-				
5F	6	Create & manage posters	-				
1G	7	Create Project Charter	-				
7C	8	Control the food exceptions	1				
9E	9	Manage company agreements	5				
2G	10	Create the register of stakeholder	7				

	ACTIVITY LIST						
Code	Diagram Code	Activity	Diagram Predecessor				
3G	11	Control the development of the project	7				
4G	12	Create and control KPIs	7				
1A	13	Create a preliminary study for accommodation.	7				
1D	14	Manage of the relation with the ETSI	7				
11D	15	Manage of the relation with the US	7				
3D	16	Find a place for WG and trainings & prepare it	7				
2D	17	Find a place for GA & prepare it	7				
4D	18	Find a place for IN and GD & prepare it	7				
5D	19	Find a place for night activities and prepare it	7				
6F	20	Manage media	7				
1C	21	Create a planning of the event's breakfasts	7				
1F	22	Create the SV	7				
3F	23	Manage legal documents	7				
4E	24	Creation of Budget	7				
8D	25	Manage stakeholders	10				
2A	26	Create a Strategic planning for accommodation.	13				
4A	27	Get the contracts of the accommodation agreement done	13				
7D	28	Manage the material needs	16				
1B	29	Create a plan about the necessary routes in the event	13 & 16 & 17 & 18 & 19				
6D	30	Plan and manage night activities	19				
2C	31	Manage the logistic need of the breakfasts	21				
5E	32	Create the secondary plan	24				

	ACTIVITY LIST						
Code	Diagram Code	Activity	Diagram Predecessor				
2E	33	Make an analysis of potential partners	24				
7E	34	Create a forecast payment scheme	24				
6E	35	Create the plan of action	24				
ЗA	36	Review & Adjust the Strategic planning of accommodation	26				
3C	37	Create a planning of the event's lunches	26				
5C	38	Create a planning of the event's dinners	26				
5A	39	Make a payment scheduling scheme for accommodation.	27				
2B	40	Make an agreement about the transport to GA	29				
3B	41	Make an agreement about the transport to IN	29				
4B	42	Make an agreement about the transport to GD	29				
5B	43	Make an agreement about the transport to night activities	29				
6B	44	Make an agreement about the transport to extra activities	29				
3E	45	Divide the work for searching funding	33				
1E	46	Make the partnership packages	33				
7F	47	Create CR documents	35				
4C	48	Manage the logistic need of the lunches	37				
6C	49	Manage the logistic need of the dinners	38				

Table 6. Activity list with diagram codes and predecessors.

Source: Own creation.

There are different ways to represent the network diagram of a project. In this case, an Activity-on-node diagram has been chosen to represent the relationships among the project activities.

Activity-on-node is a project management term that refers to a precedence diagramming method which uses nodes to denote schedule activities. These nodes are connected from beginning to end with arrows to depict a logical progression of the dependencies between the scheduled activities. Each node is coded with a number that correlates to an activity on the project schedule.

This type of diagram is used to show which activity must be completed in order for the other to commence. This is referred to as "finish-to-start" precedence, this is that one activity must be finished before the next one can start. An example to illustrate this idea better would be:

In the diagram below, activities A and D must be done so that activity E can begin. The same happens with activity B, before C can begin. The end of the project is defined by the end of activities C, E and G.

The network diagram of CM Seville can be found in Appendix B. Where node E represents the start of the project and S the end of it. The path marked in red represents the critical path that will be defined and calculated later on this project.

3.3.8 Resource Requirement

This process estimates team resources and the type and quantity of materials, equipment, and supplies necessary to perform project work. For our project, the CM, the resources required are shown on the table below:

Resource name	Quantity
Members	36
Hotel	1
Dinner	750
Lunch	1000
Breakfast	1250
Coffee & sweets	2500
Transport	1500
Gala dinner food	300
IN food	250
Rooms	18
Night rooms	5
Sheets	3500
Post-it	2000
Pens	300
HDMI cable	19
Whiteboard markers	55
Flipcharts	20
Flipchart sheets	200

Table 7. Resources required for CM.

Source: Own creation.

Looking into them in more details:

- Members: This resource represent the members of the association that are needed to have a successful event regarding the requirement.
- Hotel: The hotel/hostal needed to host the participants.
- Dinner: This resource represents each dinner for each participant that are needed during the event.
- Lunch: This resource represents each lunch for each participant that are needed during the event.
- Breakfast: This resource represents each breakfast for each participant that are needed during the event.
- Coffee & Sweets: During breaks at the event there are going to be needed coffee and sweets fot the participants. There are recorded within this resource.
- Transport: This resource represents the amount of "travels" needed from one place to another for each participant.
- Gala dinner food: This represents the "Gala dinner", a special dinner more elegant that happened ones during the event.
- IN food: This represent the food needed during the "International Night", a night where each participant share with the other some typical foods and drinks of their native country or city.
- Rooms: This resource represents the room needed during the event for the different activities during the day.
- Night rooms: This represents the room needed for night activities.
- Sheets: It represent the sheets needed during the event.
- Post- it: It represent the post-its needed during the event.
- Pens: It represent the pens needed during the event.
- HDMI cables: It represent the HDMI cables needed during the event.
- Whiteboard markers: It represent the whiteboard markers needed during the event.
- Flipcharts: It represent the flipcharts needed during the event.
- Flipcharts sheets: It represent the flipchart sheets needed during the event.

These resources are associated with a unit cost and also to one or more activities. The relationship between resources and activity will be done in the following processes.

3.3.9 Activity duration and cost

The aim of this process is to estimate an initial cost and duration of each activity to be able to calculate later the critical path, scheme and budget of the project.

For this process we will need the network diagram, the estimated resource requirements and the activity list as inputs. There are different techniques or tools that can be uses for the purpose of estimating the duration of the activities:

- Expert Judgment: Experts estimate the time it takes to complete the work in scope, either as a topdown or a bottom-up estimate.
- Analogous Estimating: Adoption and adjustment of historical duration observations for similar types of activities (top-down).
- Parametric Estimating: Using the historical durations per parameter unit to determine the expected duration of future activities.
- Bottom-up Estimating: Estimation of durations at a granular level (e.g. activities or below) and aggregate them to higher levels.
- Three- Point Estimating: Three-point duration estimates consist of optimistic, pessimistic and most likely estimates. They can be converted into final estimates with a triangular or PERT/Beta distribution.

For this project a Three-Point Estimating method with PERT (Clark) distribution has been used to estimate the duration of each activity.

The Three-Points is a technique that involves people that are expert in the task that need to be estimated by this technique. Three figures are produced initially for every distribution that is required, based on prior experience or best-guesses:

The first is a most likely (M) which is the average amount of work the task might take if the team member performed it 100 times. The second estimate is the pessimistic (P) estimate which is the amount of work the task might take if the negative factors they identified do occur. The third estimate is the optimistic (O) estimate which is the amount of work the task might take if the positive risks they identified do occur.

Taking this into account a PERT distribution is used to calculate the estimate duration of each activity following this formula:

Beta Distribution (PERT): E = (o + 4m + p) / 6

The PERT or Beta distribution is a weighted average in which more weight is given to the most likely estimate. The Standard Deviation (σ is a measure of variability for the mean and is defined as (p - o)/6.

The values of the figures (O, M and P) were estimated with the help of prior project managements of the CM in another cities and the central board of ESTIEM.

For our activities the estimate durations, in days, are the following:

ACTIVITY LIST			THREE-POINT ESTIMATION & PERT DISTRIBUTION (DAYS)					
Diagram Code	Activity	0	м	Ρ	E	σ	σ2	
1	Manage HR	4	7	10	7.00	1.00	1.00	
2	Collects & manage fee	4	5	6	5.00	0.33	0.11	
3	Create & manage Nametags	6	8	12	8.33	1.00	1.00	
4	Create merchandising	30	45	60	45.00	5.00	25.00	
5	Manage contracts	90	100	120	101.67	5.00	25.00	

АСТ	ACTIVITY LIST			THREE-POINT ESTIMATION & PERT DISTRIBUTION (DAYS)				
Diagram Code	Activity	ο	м	Р	E	σ	σ2	
6	Create & manage posters	7	10	12	9.83	0.83	0.69	
7	Create Project Charter	12	15	22	15.67	1.67	2.78	
8	Control the food exceptions	2	3	6	3.33	0.67	0.44	
9	Manage company agreements	15	20	23	19.67	1.33	1.78	
10	Create the register of stakeholder	1	1.5	2	1.50	0.17	0.03	
11	Control the development of the project	190	200	230	203.33	6.67	44.44	
12	Create and control KPIs	190	200	230	203.33	6.67	44.44	
13	Create a preliminary study for accommodation.	3	5	6	4.83	0.50	0.25	
14	Manage of the relation with the ETSI	65	75	90	75.83	4.17	17.36	
15	Manage of the relation with the US	65	75	90	75.83	4.17	17.36	
16	Find a place for WG and trainings & prepare it	45	60	75	60.00	5.00	25.00	
17	Find a place for GA & prepare it	45	60	75	60.00	5.00	25.00	
18	Find a place for IN and GD & prepare it	45	60	75	60.00	5.00	25.00	
19	Find a place for night activities and prepare it	50	65	80	65.00	5.00	25.00	
20	Manage media	190	200	245	205.83	9.17	84.03	
21	Create a planning of the event's breakfasts	12	15	24	16.00	2.00	4.00	
22	Create the SV	5	7	12	7.50	1.17	1.36	
23	Manage legal documents	50	68	80	67.00	5.00	25.00	

ACT	THREE-POINT ESTIMATION & PERT DISTRIBUTION (DAYS)						
Diagram Code	Activity	ο	м	Р	E	σ	σ2
24	Creation of Budget	2	3	5	3.17	0.50	0.25
25	Manage stakeholders	60	75	120	80.00	10.00	100.00
26	Create a Strategic planning for accommodation.	6	10	12	9.67	1.00	1.00
27	Get the contracts of the accommodation agreement done	30	40	60	41.67	5.00	25.00
28	Manage the material needs	5	6	8	6.17	0.50	0.25
29	Create a plan about the necessary routes in the event	5	8	10	7.83	0.83	0.69
30	Plan and manage night activities	5	9	12	8.83	1.17	1.36
31	Manage the logistic need of the breakfasts	2	4	5	3.83	0.50	0.25
32	Create the secondary plan	3	4	5	4.00	0.33	0.11
33	Make an analysis of potential partners	5	6	7	6.00	0.33	0.11
34	Create a forecast payment scheme	2	3	4	3.00	0.33	0.11
35	Create the plan of action	5	6	7	6.00	0.33	0.11
36	Review & Adjust the Strategic planning of accommodation	5	7	8	6.83	0.50	0.25
37	Create a planning of the event's lunches	2	4	5	3.83	0.50	0.25
38	Create a planning of the event's dinners	2	4	5	3.83	0.50	0.25

ACT	THREE-POINT ESTIMATION & PERT DISTRIBUTION (DAYS)						
Diagram Code	Activity	ο	м	Р	E	σ	σ2
39	Make a payment scheduling scheme for accommodation.	1	2	3	2.00	0.33	0.11
40	Make an agreement about the transport to GA	7	14	21	14.00	2.33	5.44
41	Make an agreement about the transport to IN	14	21	28	21.00	2.33	5.44
42	Make an agreement about the transport to GD	14	21	28	21.00	2.33	5.44
43	Make an agreement about the transport to night activities	14	21	28	21.00	2.33	5.44
44	Make an agreement about the transport to extra activities	14	21	28	21.00	2.33	5.44
45	Divide the work for searching funding	5	7	12	7.50	1.17	1.36
46	Make the partnership packages	1	2	3	2.00	0.33	0.11
47	Create CR documents	1.5	2	2.5	2.00	0.17	0.03
48	Manage the logistic need of the lunches	2	4	5	3.83	0.50	0.25
49	Manage the logistic need of the dinners	2	4	5	3.83	0.50	0.25

Table 8. Activities estimate duration.

Source: Own creation.

Regarding the cost of each activity, the resources have been distributed and a cost per resource has been set. The resources' costs are:

Resource name	Quantity	Unit cost	Cost
Members	36	-€	0
Hotel	1	25,109.00€	25,109.00€
Dinner	750	3.00€	2,250.00€
Lunch	1000	3.00€	3,000.00€
Breakfast	1250	- €	-€
Coffee & sweets	2500	1.40€	3,500.00€
Transport	1500	1.00€	1,500.00€
Gala dinner food	300	8.00€	2,400.00€
IN food	250	6.40€	1,600.00€
Rooms	18	- €	-€
Night rooms	5	500.00€	2,500.00€
Sheets	3500	0.01€	21.00€
Post-it	2000	0.02€	40.00€
Pens	300	0.27€	81.00€
HDMI cable	19	1.99€	37.81€
Whiteboard markers	55	1.60€	88.00€
Flipscharts	20	27.00€	540.00€
Flipschart sheets	200	1.60€	320.00€

Table 9. Resource costs.

Source: Own creation.

And the different resources used by each activity and each total cost are:

Act	ivity List	Res	ources	COST
Diagram Code	Activity	Туре	Quantity	Cost
1	Manage HR	Members	1	€ 0.00
2	Collects & manage fee	Members	1	€ 0.00
3	Create & manage Nametags	Members	1	€ 0.00
4	Create merchandising	Members	2	€ 0.00
5	Manage contracts	Members	3	€ 0.00
6	Create & manage posters	Members	2	€ 0.00

Activity List		Res	Resources		Resources COS	
Diagram Code	Activity	Туре	Quantity	Cost		
7	Create Project Charter	Members	2	€ 0.00		
8	Control the food exceptions	Members	1	€ 0.00		
9	Manage company agreements	Members	3	€ 0.00		
10	Create the register of stakeholder	Members	1	€ 0.00		
11	Control the development of the project	Members	1	€ 0.00		
12	Create and control KPIs	Members	1	€ 0.00		
13	Create a preliminary study for accommodation.	Members	2	€ 0.00		
14	Manage of the relation with the ETSI	Members	1	€ 0.00		
15	Manage of the relation with the US	Members	1	€ 0.00		
16	Find a place for WG and trainings & prepare it	Members & Rooms & sheets & flipchart & markers & Pens & Post- it & HDMI & flipchart sheets & Coffee sweet	Member[4],Rooms[15], Sheets[2,500], Post-it[1,800], Pens[280], HDMI cable[15], Whiteboard markers[40], Flipcharts[15],flipchart sheets[150], Coffee & sweets[1,250]	€ 2,625.45		
17	Find a place for GA & prepare it	Members & Rooms & sheets & flipchart & markers & Pens & Post-it & HDMI & flipchart sheets & Coffee sweet	Member[2],Rooms[1], Sheets[1,000], Post-it[200],Pens[20], HDMI cable[4], Whiteboard markers[15], Flipcharts[5],flipchart sheets[50], Coffee & sweets[1,250]	€ 2,016.36		
18	Find a place for IN and GD & prepare it	Members & GD food & IN food & room	Member[2], Gala dinner food[300], IN food[250],Rooms[2]	€ 4,000.00		

Act	ivity List	Resources		COST
Diagram Code	Activity	Туре	Quantity	Cost
19	Find a place for night activities and prepare it	Members & NightRooms	Member[2], Night rooms[5]	€ 2,500.00
20	Manage media	Members	2	€ 0.00
21	Create a planning of the event's breakfasts	Members	1	€ 0.00
22	Create the SV	Members	1	€ 0.00
23	Manage legal documents	Members	1	€ 0.00
24	Creation of Budget	Members	2	€ 0.00
25	Manage stakeholders	Members	3	€ 0.00
26	Create a Strategic planning for accommodation.	Members	1	€ 0.00
27	Get the contracts of the accommodation agreement done	Members	1	€ 0.00
28	Manage the material needs	Members	2	€ 0.00
29	Create a plan about the necessary routes in the event	Members	1	€ 0.00
30	Plan and manage night activities	Members	2	€ 0.00
31	Manage the logistic need of the breakfasts	Members & Breakfast Food	& Breakfast Member, ood Breakfast food[1,250]	
32	Create the secondary plan	Members	2	€ 0.00
33	Make an analysis of potential partners	Members 2		€ 0.00
34	Create a forecast payment scheme	Members	1	€ 0.00
35	Create the plan of action	Members	2	€ 0.00

Act	ivity List	Res	COST	
Diagram Code	Activity	Туре	Quantity	Cost
36	Review & Adjust the Strategic planning of accommodation	Members	1	€ 0.00
37	Create a planning of the event's lunches	Members	2	€ 0.00
38	Create a planning of the event's dinners	Members	2	€ 0.00
39	Make a payment scheduling scheme for accommodation.	Members & Hotel	Member, Hotel[1]	€ 25,109.00
40	Make an agreement about the transport to GA	Members & Transport	Member, Transport[300]	€ 300.00
41	Make an agreement about the transport to IN	Members & Transport	Member, Transport[300]	€ 300.00
42	Make an agreement about the transport to GD	Members & Transport	Member, Transport[300]	€ 300.00
43	Make an agreement about the transport to night activities	Members & Transport	Member, Transport[300]	€ 300.00
44	Make an agreement about the transport to extra activities	Members & Transport	Member, Transport[300]	€ 300.00
45	Divide the work for searching funding	Members 1		€ 0.00
46	Make the partnership packages	Members	2	€ 0.00
47	Create CR documents	Members	2	€ 0.00

Act	ivity List	Resources		COST
Diagram Code	Activity	Туре	Quantity	Cost
48	Manage the logistic need of the lunches	Members & Lunch's food	Lunch food[1,000], Member[4]	€ 3,000.00
49	Manage the logistic need of the dinners	Members & Dinner Food	Member[4], Dinner food[750]	€ 2,250.00

Table 10. Activity resources and cost.

Source: Own creation.

3.3.10 Critical Path

In project management, the critical path is the longest sequence of tasks that must be completed to complete a project. The tasks on the critical path are called critical activities because, if they are delayed, the whole project completion will be delayed. The calculation of the Critical Path allows to:

- Estimate the total project duration.
- Identify task and dependencies, resource constraints and project risks.
- Prioritize task and create realistic project schedules.

The Critical Path Method or CPM (Kendall) is used to find and calculate this Critical Path. Using the list of activities, their estimated durations and the network diagram, the Critical Path can be easily calculated. The first thing to do is to calculate the 4 parameters for each activity following the network diagram:

- Early Start (ES): This is the earliest date an activity can start.
- Early Finish (EF): This is the earliest date an activity can finish.
- Late Finish (LF): This is the latest date an activity can finish without delaying the project.
- Late Start (LS): This is the latest an activity can start without delaying the project.

In order to perform this CPM, the network diagram needs to be followed forward, calculating all the early ES of each activity and the EF as the sum of the estimated duration plus ES. Then, it needs to be followed the other way round to calculate the LF and LS of each activity.

At the end of the process, the Float of each activity is calculated (this term describes how long you can delay a task before it impacts its task sequence and the project schedule) as the difference between LF and EF. The activities in the Critical Path are the ones that do not have Float.

For this example, following this method, the critical activities are the activities 7 and 20 (the ones in red):

Act	ivity List	Critical Path			-		
Diagram Code	Activity	t	ES	EF	LS	LF	н
1	Manage HR	7.00	0	7	211.17	218.17	211.17
2	Collects & manage fee	5.00	0	5	216.50	221.50	216.50
3	Create & manage Nametags	8.33	0	8.33	213.17	221.50	213.17
4	Create merchandising	45.00	0	45	176.50	221.50	176.50
5	Manage contracts	101.67	0	101.67	100.17	201.84	100.17
6	Create & manage posters	9.83	0	9.83	211.67	221.50	211.67
7	Create Project Charter	15.67	0	15.67	0.00	15.67	0.00
8	Control the food exceptions	3.33	7.00	10.33	218.17	221.50	211.17
9	Manage company agreements	19.67	101.67	121.34	201.84	221.50	100.17
10	Create the register of stakeholder	1.50	15.67	17.17	140.00	141.50	124.33
11	Control the development of the project	203.33	15.67	219.00	18.17	221.50	2.50
12	Create and control KPIs	203.33	15.67	219.00	18.17	221.50	2.50
13	Create a preliminary study for accommodation.	4.83	15.67	20.50	173.00	177.84	157.33
14	Manage of the relation with the ETSI	75.83	15.67	91.50	145.67	221.50	130.00
15	Manage of the relation with the US	75.83	15.67	91.50	145.67	221.50	130.00
16	Find a place for WG and trainings & prepare it	60.00	15.67	75.67	132.67	192.67	117.00
17	Find a place for GA & prepare it	60.00	15.67	75.67	132.67	192.67	117.00
18	Find a place for IN and GD & prepare it	60.00	15.67	75.67	132.67	192.67	117.00
19	Find a place for night activities and prepare it	65.00	15.67	80.67	127.67	192.67	112.00

Activity List			-	Critica	l Path	-	
Diagram Code	Activity	t	ES	EF	LS	LF	н
20	Manage media	205.83	15.67	221.50	15.67	221.50	0.00
21	Create a planning of the event's breakfasts	16.00	15.67	31.67	201.67	217.67	186.00
22	Create the SV	7.50	15.67	23.17	214.00	221.50	198.33
23	Manage legal documents	67.00	15.67	82.67	154.50	221.50	138.83
24	Creation of Budget	3.17	15.67	18.84	204.84	208.00	189.17
25	Manage stakeholders	80.00	17.17	97.17	141.50	221.50	124.33
26	Create a Strategic planning for accommodation.	9.67	20.50	30.17	204.17	213.84	183.67
27	Get the contracts of the accommodation agreement done	41.67	20.50	62.17	177.84	219.50	157.33
28	Manage the material needs	6.17	75.67	81.84	215.34	221.50	139.67
29	Create a plan about the necessary routes in the event	7.83	80.67	88.50	192.67	200.50	112.00
30	Plan and manage night activities	8.83	80.67	89.50	212.67	221.50	132.00
31	Manage the logistic need of the breakfasts	3.83	31.67	35.50	217.67	221.50	186.00
32	Create the secondary plan	4.00	18.84	22.84	217.50	221.50	198.67
33	Make an analysis of potential partners	6.00	18.84	24.84	208.00	214.00	189.17
34	Create a forecast payment scheme	3.00	18.84	21.84	218.50	221.50	199.67
35	Create the plan of action	6.00	18.84	24.84	213.50	219.50	194.67
36	Review & Adjust the Strategic planning of accommodation	6.83	30.17	37.00	214.67	221.50	184.50

Act	ivity List	Critical Path					
Diagram Code	Activity	t	ES	EF	LS	LF	н
37	Create a planning of the event's lunches	3.83	30.17	34.00	213.84	217.67	183.67
38	Create a planning of the event's dinners	3.83	30.17	34.00	213.84	217.67	183.67
39	Make a payment scheduling scheme for accommodation.	2.00	62.17	64.17	219.50	221.50	157.33
40	Make an agreement about the transport to GA	14.00	88.50	102.50	207.50	221.50	119.00
41	Make an agreement about the transport to IN	21.00	88.50	109.50	200.50	221.50	112.00
42	Make an agreement about the transport to GD	21.00	88.50	109.50	200.50	221.50	112.00
43	Make an agreement about the transport to night activities	21.00	88.50	109.50	200.50	221.50	112.00
44	Make an agreement about the transport to extra activities	21.00	88.50	109.50	200.50	221.50	112.00
45	Divide the work for searching funding	7.50	24.84	32.34	214.00	221.50	189.17
46	Make the partnership packages	2.00	24.84	26.84	219.50	221.50	194.67
47	Create CR documents	2.00	24.84	26.84	219.50	221.50	194.67
48	Manage the logistic need of the lunches	3.83	34.00	37.84	217.67	221.50	183.67
49	Manage the logistic need of the dinners	3.83	34.00	37.84	217.67	221.50	183.67

Table 11. Critical path calculation and results.

Source: Own creation.

The total length of the project is the sum of the activities in their critical path and are 221.5 days with a standard deviation of 9.32 days.

The Critical Path can also be seen in the network diagram in red in Appendix B.

3.3.11 The Schedule

The PMI (2017) describes this process as the analysis of activity sequences, durations, resource requirements, and schedule constraints to create a schedule model for project execution and monitoring and controlling. This process generates a schedule model with planned dates for completing project activities.

For this project, Microsoft Project has been used in order to calculate an estimated schedule and Gantt Chart

(Petersen) starting on 15/10/2021 and ending the 22/08/2022. The Gantt Chart can be seen in the *Appendix C*. The start and finish date for each activity are:

ACT	IVITY LIST	GANTT		
Diagram Code	Activity	Start	End	
1	Manage HR	Fri 15/10/21	Mon 25/10/21	
2	Collects & manage	Fri	Thu	
	fee	15/10/21	21/10/21	
3	Create & manage	Fri	wed	
	Nametags	15/10/21	27/10/21	
4	Create	Fri	Thu	
	merchandising	15/10/21	16/12/21	
5	Manage contracts	Fri 15/10/21	Mon 07/03/22	
6	Create & manage	Fri	Thu	
	posters	15/10/21	28/10/21	
7	Create Project	Fri	Fri	
	Charter	15/10/21	05/11/21	
8	Control the food	Tue	Fri	
	exceptions	26/10/21	29/10/21	
9	Manage company	Mon	Mon	
	agreements	07/03/22	04/04/22	
10	Create the register	Fri	Tue	
	of stakeholder	05/11/21	09/11/21	
11	Control the development of the project	Fri 05/11/21	Wed 17/08/22	
12	Create and control	Fri	Wed	
	KPIs	05/11/21	17/08/22	

ACT	IVITY LIST	GANTT		
Diagram Code	Activity	Start	End	
13	Create a preliminary study for accommodation.	Fri 05/11/21	Fri 12/11/21	
14	Manage of the relation with the ETSI	Fri 05/11/21	Mon 21/02/22	
15	Manage of the relation with the US	Fri 05/11/21	Mon 21/02/22	
16	Find a place for WG and trainings & prepare it	Fri 05/11/21	Fri 28/01/22	
17	Find a place for GA & prepare it	Fri 05/11/21	Fri 28/01/22	
18	Find a place for IN and GD & prepare it	Fri 05/11/21	Fri 28/01/22	
19	Find a place for night activities and prepare it	Fri 05/11/21	Fri 04/02/22	
20	Manage media	Fri 05/11/21	Mon 22/08/22	
21	Create a planning of the event's breakfasts	Fri 05/11/21	Mon 29/11/21	
22	Create the SV	Fri 05/11/21	Wed 17/11/21	
23	Manage legal documents	Fri 05/11/21	Tue 08/02/22	
24	Creation of Budget	Fri 05/11/21	Wed 10/11/21	
25	Manage stakeholders	Tue 09/11/21	Tue 01/03/22	
26	Create a Strategic planning for accommodation.	Fri 12/11/21	Fri 26/11/21	
27	Get the contracts of the accommodation agreement done	Fri 12/11/21	Tue 11/01/22	
28	Manage the material needs	Fri 28/01/22	Mon 07/02/22	

ACT	IVITY LIST	GANTT		
Diagram Code	Activity	Start	End	
29	Create a plan about the necessary routes in the event	Fri 04/02/22	Wed 16/02/22	
30	Plan and manage night activities	Fri 04/02/22	Thu 17/02/22	
31	Manage the logistic need of the breakfasts	Mon 29/11/21	Fri 03/12/21	
32	Create the secondary plan	Wed 10/11/21	Tue 16/11/21	
33	Make an analysis of potential partners	Wed 10/11/21	Thu 18/11/21	
34	Create a forecast payment scheme	Wed 10/11/21	Mon 15/11/21	
35	Create the plan of action	Wed 10/11/21	Thu 18/11/21	
36	Review & Adjust the Strategic planning of accommodation	Fri 26/11/21	Mon 06/12/21	
37	Create a planning of the event's lunches	Fri 26/11/21	Wed 01/12/21	
38	Create a planning of the event's dinners	Fri 26/11/21	Wed 01/12/21	
39	Make a payment scheduling scheme for accommodation.	Tue 11/01/22	Thu 13/01/22	
40	Make an agreement about the transport to GA	Wed 16/02/22	Tue 08/03/22	
41	Make an agreement about the transport to IN	Wed 16/02/22	Thu 17/03/22	
42	Make an agreement about the transport to GD	Wed 16/02/22	Thu 17/03/22	

ACTIVITY LIST		GANTT		
Diagram Code	Activity	Start	End	
43	Make an agreement about the transport to night activities	Wed 16/02/22	Thu 17/03/22	
44	Make an agreement about the transport to extra activities	Wed 16/02/22	Thu 17/03/22	
45	Divide the work for searching funding	Thu 18/11/21	Tue 30/11/21	
46	Make the partnership packages	Thu 18/11/21	Mon 22/11/21	
47	Create CR documents	Thu 18/11/21	Mon 22/11/21	
48	Manage the logistic need of the lunches	Thu 02/12/21	Tue 07/12/21	
49	Manage the logistic need of the dinners	Thu 02/12/21	Tue 07/12/21	

Table 12. Activity list with GANTT.

Source: Own creation.

3.3.12 Budget

This is the process of aggregating the estimated costs of individual activities or work packages to establish an authorised cost baseline. This is used to determine the cost baseline against which project performance can be monitored and controlled (Heldman).

Using the estimated cost per activity in the section 3.2.9 of this project, and the total of the cost of the resources used, the budget has been calculated as $42,986.81 \in$

Resource name	Quantity	Unit cost	Cost
Members	36	-€	0
Hotel	1	25,109.00€	25,109.00€
Dinner	750	3.00€	2,250.00€
Lunch	1000	3.00€	3,000.00€
Breakfast	1250	-€	-€
Coffee & sweets	2500	1.40€	3,500.00€
Transport	1500	1.00€	1,500.00€
Gala dinner food	300	8.00€	2,400.00€
IN food	250	6.40€	1,600.00€
Rooms	18	-€	-€
Night rooms	5	500.00€	2,500.00€
Sheets	3500	0.01€	21.00€
Post-it	2000	0.02€	40.00€
Pens	300	0.27€	81.00€
HDMI cable	19	1.99€	37.81€
Whiteboard			
markers	55	1.60€	88.00€
Flipcharts	20	27.00€	540.00€
flipchart sheets	200	1.60€	320.00€
		TOTAL	42,986.81€

Table 13. Budget resume table.

Source: Own creation.

The resources "Members" do not have costs, since they are the members of the organisation. The cost of breakfasts is already included in the hotel price and the "Rooms" will be borrowed from the Universidad de Sevilla.

A more formal budget has been developed too, as per Appendix D.

3.3.13 Roles and responsibilities

In this process, the roles and responsibilities will be set not only for the team members, but for all the main stakeholders in the project.

Early in a project, the project manager and functional managers divide the overall project into work packages. This division determines skill requirements and serves as the basis for personnel selection and subcontracting.

Those in functional support areas, contractors, and the project office, who will contribute to the project, become part of the project team. This section describes roles of members of the team. (Nicholas and Steyn)

In the CM, there will be three clear groups of roles:

- Leadership's Group: This group consists of all the leadership organisations that are stakeholders of the project. They are:
 - o ESTIEM President.
 - CM Central leader.

- University.
- o Sponsor.
- Project's team. This groups consist in the team of the project:
 - Project Manager.
 - CR Leader: Leader of corporate relations.
 - PR Leader: Leader of public relations.
 - Logistic Leader.
 - Resource Leader.
 - Control Leader.
- Other resources: This group consists of other leaders of the project that are outside the main project team and work as associates:
 - Accommodation Leader.
 - Transportation Leader.
 - Food Leader.

In order to determine both the role of each stakeholder and the strategy to follow regarding their role a RACI chart has been implemented.

A RACI chart is a matrix of all the activities or decision making authorities undertaken in an organisation set against all the people or roles. At each intersection of activity and role, it is possible to assign somebody responsible, accountable, consulted or informed for that activity or decision.

There are 4 categories in a RACI chart where the different stakeholder can be classified:

- 1. Responsible: Person or group who performs an activity or does the work.
- 2. Accountable: Person or group who is ultimately accountable for the completion of the activity and has the final decision-making authority. There can be only one per task/activity.
- 3. Consulted: Person or group that needs to feedback and contribute to the activity.
- 4. Informed: Person or group that needs to know of the decision or action.

At a result of this study the RACI matrix is in Appendix E.

3.3.14 Communications management

The PMI (2017) describes this process as the one that develops an appropriate approach and plan for project communication activities based on the information needs of each stakeholder or groups, available organisational assets, and the needs of the project.

It also determines who will be receiving the communication, how those people will receive it, when they will receive it, and how often they should expect to receive that information.

In CM's communication plan there is:

• The purpose or goals of the communication.

- The methods used to communicate.
- The frequency that each stakeholder would like to receive information.
- The stakeholder and their roles.

In this project, five types of main communication have been identified and a communication plan has been developed:

	Purpose	Medium	Frequency	Audience
Kickoff meeting	-Introduce project. -Confirm objectives, goals and deliverables needed.	-In-person meeting	-Once at start of the project	-Project team
Project team meetings	-Review status of project.	-In-person meeting (send video conference link for remote workers)	-Every Monday morning	-Project Team
Check meeting recap	-Update interested parties on project status based on notes from project team meeting.	-Email	-Every Monday afternoon	-Project sponsor -Stakeholders
Project status meetings	-Update leadership on project status and give opportunity to ask questions.	-Conference call	-Monthly	-Project manager -Project sponsor -Stakeholders
Closure meeting	-Update leadership on project status and confirm that all the team know their roles before the start of the event.	-In-person meeting (send video conference link for stakeholders)	-Once at the end of the project planning	-Project manager -Project team -Project sponsor -Stakeholders

Table 14. Communication plan matrix.

Source: Own creation.

For the information that can not be shared via those five communication types, a decision tree regarding communications needs to be followed. To have a good communication plan is to have a clear decision tree that everyone involved in the project can consult at any time and understand who is supposed to be informed and how. For our project the decision tree when it comes to communication is the following:



Figure 11. Communication plan decision.

Source: Own creation.

3.3.15 Risk Management

In this process, risks are identified and a definition of how to conduct risk management activities for a project is done. The key benefit of this process is that it ensures that the degree, type, and visibility of risk management are proportionate to both the risks and the importance of the project to the organisation and other stakeholders.

To do so there are some steps that need to be performed, such as:

- Identify risks.
- Qualitative risk analysis.
- Quantitative risk analysis (No performed for this project).
- Plan risk responses.

3.3.15.1 Identifying risks

The first step in identifying risks is to define what a risk is.

A risk is a known situation, which may or may not occur, and which, if it does, will affect the ability to meet the project objectives (if it is negative, it is a risk, and if it is positive, it is an opportunity). Here it is important to note "**know**", if we cannot define the situation we cannot consider it, and also the fact that it can **occur**, which implies that the management of a risk will be affected by its probability of occurrence. An early identification of these risks and determination of their probability of occurrence will help in quality decision making, better preparedness and being ready with contingency plans (Datta and Mukherjee).

There are different techniques and tools that can be used when identifying risks such as:

- Review of existing documentation. Here we would have the documents of the project itself, internal documents of the company, or external documents. Of these we could highlight:
 - Project's plans.
 - Project charter.
 - Good practices.
 - Activity list.
 - Network diagram.

- Use information from third persons. These are different techniques consisting of gathering information from a group of people, who are assumed to have a certain degree of knowledge or experience related to the project we are analyzing, even if they do not work on it.
 - Brainstorming: Consists of letting members of the project team or experts from outside the project generate a list of potential risks under the supervision of the meeting moderator.
 - Delphi method: Is a method for achieving consensus among different experts on risks. The moderator collects the information from the different experts (using a template or questionnaire), and after sorting it, distributes it anonymously to the whole group. This process is repeated until a consensus is reached among the different experts.
 - SWOT matrix: This method consists of identifying the existing Weaknesses, Threats, Strengths, and Opportunities in our project, and in the organization that develops it. From them it will be possible to identify the potential risks and opportunities that may affect our project.
 - Interviews: The project manager meets with stakeholders, users, or different people with experience and knowledge relevant to the project in question, to gather information on the potential risks they foresee for the project.
 - Expert judgement: It is most likely that in our organization (or outside) there are project managers with more experience than us, or who have previously managed projects similar to ours. In this case, talking to them, and taking advantage of their experience, can be of great help in identifying risks.

There are more techniques that can be used but for this project an Expert judgement has been used with the central board of ESTIEM and old project manager of the CM event in other countries, resulting in a list of fourteen potential risks. These risk were also divided in two type of risks (risk or opportunity) and 6 categories:

- Financial risks.
- Risk external to the organization.
- Risks associated with performance.
- Risks associated with permits.
- Risks associated with resources.
- Risks associated with safety.

Id.	Туре	Category	Description
R01	Risk	Risk external to the organization	Closure of the host country due to the pandemic.
R02	Risk	Risk external to the organization	Closure of a country in the network due to the pandemic.
R03	Risk	Financial risks	Fail in finding sponsors.
R04	Risk	Risks associated with permits	Failure to get approval from the university or city council to hold the event.
R05	Risk	Risks associated with safety	The loss of any participant in the host city.
R06	Risk	Risks associated with safety	Participant being assaulted during the event.
R07	Risk	Risk external to the organization	Flight price increase.
R08	Risk	Risks associated with resources	No accommodation available to host participants.
R09	Risk	Risk external to the organization	Government prohibition of this kind of events.
R10	Risk	Risks associated with resources	Lack of organizers (LG Sevilla members to volunteer) for the event.
R11	Risk	Risks associated with safety	Participant being arrested by the police
R12	Opportunity	Financial risks	Having more sponsors than necessary (more funding).

Id.	Туре	Category	Description
R13	Risk	Risks associated with permits	No space available to hold the general assembly or working groups.
R14	Risk	Risks associated with performance	Project's team without time due to exams.

Table 15. Risk identification table.

Source: Own creation.

3.3.15.2 Qualitative risk analysis

The qualitative risk analysis is the process of prioritising individual project risks for further analysis or action by assessing their probability of occurrence and impact, as well as other characteristics.

Risk analysis typically involves identifying the risk, assessing their probabilities and impacts, ranking and screening out minor risks (Emblemsvåg and Endre Kjølstad). heir probabilities and impacts, ranking and screening out minor risks (Emblemsvåg and Endre Kjølstad). The qualitative risk analysis of this project was developed on the basis of the risks identified, its probability of occurrence and impact and the level of risk was determined according to the rating obtained.

The probability was taken into account from 0% to 100% of probability of occurrence. The number of weighting levels in the scale will depend on the level of detail required for the risk assessment. For our assessment we considered scales of 1 (very low), 3 (low), 5 (moderate), 7 (high) and 9 (very high), to assess impact. The impact for the project was studied for each base line in these five levels as follows:

	Impact							
Basa lina	Very low	Low	Moderate	High	Very high			
Base line	1	3	5	7	9			
	Afect to less	Afect to	Afect between	Afect between	Afect more			
Coore o	than 5% of the	between 5%	10% and 20% of	20% and 30% of	than 30% of			
scope	work packages	and 10% of the	the work	the work	the work			
	of the project	work packages	packages	packages	packages			
	Afect to no							
	critical	Extend the	Extend the	Extend the	Extend the			
Time	activities and	exterio tre	exterior duration	exterio tre	exterio tre			
mie	do not extend	project			project			
	te duration of	uuration (<1%)	(170 - 270)	(270 - 370)	uuration (~5%)			
	the project							
Cost	Increase the	Increase the	Increase the	Increase the	Increase the			
Cost	cost (<1%)	cost (1% - 3%)	cost (3% - 5%)	cost (5% - 7%)	cost (>7%)			

Table 16. Risk impact table.

Source: Own creation.

After this, there is the need to calculate the risk level of each risk. For each risk, we have set an importance of 30% to the level of risk of the cost's baseline, 30% to the level of risk of the scope's baseline and 40% to the level of risk of the time's baseline based on the nature and requirement of the project.

The final risk level is the sum of each weighted level of risk. Once calculated, each risk is classified using the probability-impact matrix following:

	9	0.9	0.27	0.45	0.63	0.81
t	7	0.7	0.21	0.35	0.49	0.63
ba	5	0.5	0.15	0.25	0.35	0.45
느느	3	0.3	0.09	0.15	0.21	0.27
	1	0.1	0.03	0.05	0.07	0.09
		10%	30%	50%	70%	90%
		Probability				



Table 17. Impact x probability matrix.

Source: Own creation.

The evaluation of each risks:

R01. Closure of the host country due to the pandemic							
Base line	Weight	Probability	Impact	Prob x Impact	Prob x Impact x Weight		
Cost	0.3	70%	1	0.7	0.21		
Time	0.4	70%	7	4.9	1.96		
Scope	0.3	70%	9	6.3	1.89		
			Risk Level		4.06		

Table 18. Risk analysis R01.

Source: Own creation.

R02. Closure of a country due to pandemic							
Base line Weight Probability Impact Prob x Impact Prob x Impact x W					Prob x Impact x Weight		
Cost	0.3	90%	1	0.9	0.27		
Time	0.4	90%	1	0.9	0.36		
Scope	0.3	90%	3	2.7	0.81		
			R	isk Level	1.44		

Table 19. Risk analysis R02.

Source: Own creation.

R03. Fail in finding sponsors								
Base line	Weight	Probability	Impact	Prob x Impact	Prob x Impact x Weight			
Cost	0.3	70%	9	6.3	1.89			
Time	0.4	70%	5	3.5	1.4			
Scope	0.3	70%	7	4.9	1.47			
			Risk Level		4.76			

Table 20. Risk analysis R03.

Source: Own creation.

R04. Failure to get approval from local institutions							
Base line Weight Probability Impact Prob x Impact Prob x Impact x Weig							
Cost	0.3	10%	3	0.3	0.09		
Time	0.4	10%	3	0.3	0.12		
Scope	0.3	10%	9	0.9	0.27		
			Risk Level		0.48		

Table 21. Risk analysis R04.

Source: Own creation.

R05. Loss a participant during the event								
Base line	Weight	Probability	Impact	Prob x Impact	Prob x Impact x Weight			
Cost	0.3	10%	1	0.1	0.03			
Time	0.4	10%	5	0.5	0.2			
Scope	0.3	10%	9	0.9	0.27			
	Risk Level			0.5				

Table 22. Risk analysis R05.

Source: Own creation.

R06. Participants being assaulted during the event							
Base line Weight Probability Impact Prob x Impact Prob x Impact x We							
Cost	0.3	10%	1	0.1	0.03		
Time	0.4	10%	1	0.1	0.04		
Scope	0.3	10%	9	0.9	0.27		
			Risk Level		0.34		

Table 23. Risk analysis R06.

Source: Own creation.

R07. Flight price increase									
Base line	Weight	Probability	Impact	Prob x Impact	Prob x Impact x Weight				
Cost	0.3	50%	3	1.5	0.45				
Time	0.4	50%	5	2.5	1				
Scope	0.3	50%	5	2.5	0.75				
			R	isk Level	2.2				

Table 24. Risk analysis R07.

Source: Own creation.

R08. No accomodation available to host participants								
Base line	Weight	Probability	Impact	Prob x Impact	Prob x Impact x Weight			
Cost	0.3	30%	5	1.5	0.45			
Time	0.4	30%	5	1.5	0.6			
Scope	0.3	30%	5	1.5	0.45			
	Risk Level		1.5					

Table 25. Risk analysis R08.
	R09. Central goverment prohibition of this kind of events						
Base line	Weight	Probability	Impact	Prob x Impact	Prob x Impact x Weight		
Cost	0.3	70%	1	0.7	0.21		
Time	0.4	70%	7	4.9	1.96		
Scope	0.3	70%	9	6.3	1.89		
			Risk Level		4.06		

Source: Own creation.

Table 26. Risk analysis R09.

Source: Own creation.

	R010. Lack of organizer for the event					
Base line	Weight	Probability	Impact	Prob x Impact	Prob x Impact x Weight	
Cost	0.3	50%	3	1.5	0.45	
Time	0.4	50%	5	2.5	1	
Scope	0.3	50%	7	3.5	1.05	
			R	isk Level	2.5	

Table 27. Risk analysis R010.

Source: Own creation.

R011. Participants being arrested by the police					
Base line	Weight	Probability	Impact	Prob x Impact	Prob x Impact x Weight
Cost	0.3	10%	1	0.1	0.03
Time	0.4	10%	1	0.1	0.04
Scope	0.3	10%	9	0.9	0.27
			R	isk Level	0.34

Table 28. Risk analysis R011.

Source: Own creation.

R012. To have more sponsor than necessary					
Base line	Weight	Probability	Impact	Prob x Impact	Prob x Impact x Weight
Cost	0.3	10%	5	0.5	0.15
Time	0.4	10%	1	0.1	0.04
Scope	0.3	10%	3	0.3	0.09
			R	isk Level	0.28

Table 29. Risk analysis R012.

Source: Own creation.

R013. N	R013. No space available to hold the general assembly or working groups					
Base line	Weight	Probability	Impact	Prob x Impact	Prob x Impact x Weight	
Cost	0.3	30%	3	0.9	0.27	
Time	0.4	30%	3	0.9	0.36	
Scope	0.3	30%	3	0.9	0.27	
			R	isk Level	0.9	

Table 30. Risk analysis R013.

Source:	Own	creation.

R014. Project's team without time due to exams					
Base line	Weight	Probability	Impact	Prob x Impact	Prob x Impact x Weight
Cost	0.3	50%	3	1.5	0.45
Time	0.4	50%	5	2.5	1
Scope	0.3	50%	7	3.5	1.05
Risk Level			isk Level	2.5	

Table 31. Risk analysis R014.

Source: Own creation.

As a resume table ordering the risk for their risk's level:

Id.	Description	Probability	Impact in cost	Impact in time	Impact in scope	Risk level
R03	Fail in finding sponsors.	70%	9	5	7	4.76
R01	Closure of the host country due to the pandemic.	70%	1	7	9	4.06
R09	Government prohibition of this kind of events.	70%	1	7	9	4.06
R10	Lack of organizers (LG Sevilla members to volunteer) for the event.	50%	3	5	7	2.5
R14	Project's team without time due to exams.	50%	3	5	7	2.5
R07	Flight price increase.	50%	3	5	5	2.2
R08	No accommodation available to host participants.	30%	5	5	5	1.5
R02	Closure of a country in the network due to the pandemic.	90%	1	1	3	1.44

Id.	Description	Probability	Impact in cost	Impact in time	Impact in scope	Risk level
R13	No space available to hold the general assembly or working groups.	30%	3	3	3	0.9
R05	The loss of any participant in the host city.	10%	1	5	9	0.5
R04	Failure to get approval from the university or city council to hold the event.	10%	3	3	9	0.48
R06	Participant being assaulted during the event.	10%	1	1	9	0.34
R11	Participant being arrested by the police	10%	1	1	9	0.34
R12	Having more sponsors than necessary (more funding).	10%	5	1	3	0.28

Table 32. Resume of risk and risk levels.

Source: Own creation.

3.3.15.3 Risk response

The PMI (2017) describes this process as the process of developing options, selecting strategies, and agreeing on actions to address overall project risk exposure as well as to treat individual project risks.

Risks can have a negative or positive impact on the project. In the latter case, we call them opportunities. These two types of risks give rise to two different groups of strategies, depending on whether we want to reduce or increase their impact on the project.

The strategy for risks can be divided into:

- Avoiding: The best way to deal with a risk is to avoid it, i.e. to stop it from affecting our project. This can be done either by eliminating the reason for the risk (work package within the scope, person in the team, etc.), or by including additional work packages that allow us to avoid the risk (additional quality measurements).
- Transferring: If the risks can not be avoided, the second best strategy for dealing with risk is to get someone else to take it. This strategy is mainly applicable to risks with an impact on the project cost, as it is difficult to pass on the impacts on the schedule. An important aspect to consider is that we are passing on the impact, but not the responsibility.
- Mitigation: This strategy implies that we accept that risk may affect the project, so the objective will be to reduce its impact, or its probability of occurrence.

• Acceptance: This risk strategy is used when none of the previous three strategies can be applied, or after implementing actions to mitigate the impact. As the name suggests, this strategy consists of accepting the risk and its impact, which implies that we must protect the project by appropriate margins.

The strategy for opportunities can be divided into:

- Include: Include the opportunity in our initial project.
- Enhance: This is the opposite strategy to mitigate. In this case, what we seek to do is to increase the impact or probability of a certain opportunity occurring. The difference with respect to the previous strategy is that while we ensure that the opportunity occurs, here it is still subject to a probability of occurrence.

The final plan risk response for this project is:

Id.	Description	Risk level	Туре	Response
R03	Fail in finding sponsors.	4.76	Mitigation	A second plan will be created if funding we not sufficient to cover the full scope of the event to amended it accordingly.
R01	Closure of the host country due to the pandemic.	4.06	Mitigation	Create a plan to improve the online part of the event in order to be able to have the event 100% online.
R09	Government prohibition of this kind of events.	4.06	Mitigation	Create a plan to improve the online part of the event in order to be able to have the event 100% online.
R10	Lack of organizers (LG Sevilla members to volunteer) for the event.	2.5	Mitigation	Look for other local organization that could help us with the event (Scout groups, student delegation, etc.) in addition with other volunteer students of other local groups around Europe.
R14	Project's team without time due to exams.	2.5	Mitigation	Look for other local organization that could help us with the event (Scout groups, student delegation, etc.) and implicate local group of other cities in addition to the central board of ESTIEM.

Id.	Description	Risk level	Туре	Response
R07	Flight price increase.	2.2	Acceptance	N/A
R08	No accommodation available to host participants.	1.5	Mitigation	Create a plan to improve the online part of the event in order to be able to have the event 100% online.
R02	Closure of a country in the network due to the pandemic.	1.44 Mitigation i		Create a plan to improve the online part of the event in order to be able to have the event 100% online.
R13	No space available to hold the general assembly or working groups.	0.9	Mitigation	Create a plan to improve the online part of the event in order to be able to have the event 100% online.
R05	The loss of any participant in the host city.	0.5	Transfering	Participants must sign a declaration of responsibility for their own safety prior to the event.
R04	Failure to get approval from the university or city council to hold the event.	0.48	Mitigation	Create a plan to improve the online part of the event in order to be able to have the event 100% online.
R06	Participant being assaulted during the event.	0.34	Transfering/Mitigation	Participants must sign a declaration of responsibility for their own safety prior to the event and the most dangerous areas of the city will be avoided.
R11	Participant being arrested by the police	0.34	Transfering	Participants must sign a declaration of responsibility for their own safety prior to the event.
R12	Having more sponsors than necessary (more funding).	0.28	Include	Funding plan will be created in order to have more sponsor than needed to be able to increase the initial quality of the event.

Table 33. Final risk response plan.

Source: Own creation.

3.3.16 Change management plan

This process is defined as an adaptation to the new business strategy. It aims at integrating it into the new economic and business models of today and the future. The coordination of change management is the responsibility of the management, together with the team leaders of each area who, from the deployment of the strategic plan, will be in charge of its implementation, administration, monitoring and evaluation (Cesdelpino, 2015).

There are several stages for change:

- 1. Identify the need for change:
 - a. Establish effective internal indicators that provide the necessary information to detect a need for change.
 - b. Take advantage of the information provided by the rest of the members of the organisation to detect the need for change.
 - c. Disseminate the need for change among the members of the organisation.
- 2. Diagnosis of the change:
 - a. Collect and analyse the information necessary to know the current situation of both the technological factor to be modified and those other factors that will support this change (structural, personal and/or cultural).
 - b. Materialise the diagnosis in a document that is really taken as a basis for change.
- 3. Planning for change:
 - a. Clearly define the objectives to be achieved through the technological change to be carried out.
 - b. Detail the actions to be carried out in the technological factor, as well as all those related to the structural, personnel and cultural factors to support the factor at the origin of the change.
 - c. To reflect the results of the planning in a document that will be a continuous reference for the implementation of the change.
- 4. Implementation of change:
 - a. Do not delay the start of implementation more than necessary.
 - b. Carry out the planned technical implementation, as well as those actions related to the rest of the factors that will support us in achieving the success of the technical change, as they help us to determine and resolve the possible problems of rigidity, that on certain occasions, are caused by cultural, structural and human factors.
 - c. Simultaneously to the implementation, the management has to collect the information that is generated as a result of the implementation. This information is very useful to be able to carry out a correct evaluation and control of the change as well as for future changes that may arise in the organisation.
- 5. Evaluation and monitoring of change:
 - a. In order to achieve a good evaluation and control of the change, it is important to have effective information systems that collect in real.
 - b. This information must refer to all the factors of the change, not only to the one that originated it.

Depending of the stage of a specific change different strategies has been set for our project:

Diagnosis and planning			
Objectives	Prepare the organisation for the change.		
Activities	-Plan the change. -Gather resources. -Design the structure. -Train staff. -Locate areas of change. -Collect data. -Solicit participants.		
What to communicate?	 Objectives of the change through a specific description of the activities and expected results. The need and rationality of the change. 		
Principles of communication	Use different media. Meetings with all teams with the project manager being the key communicator. All communications should convey the same message and be consistent with the organisation's values.		

Table 34. Change plan for diagnosis and planning stage of change.

Source: Own creation.

	Implementation
Objectives	Start the process of change and evaluate efforts.
Activities	 Implement the change in the selected areas. Modify or refine the process as needed. Extend the changes when appropiate.
What to communicate?	 -Improvement team leaders in each unit should report regularly on progress and reiterate management support for change. -They should also report on the difficulties inherent in the change and how they have been overcome and how the process has been modified based on evaluations of the process. -Management and the members of the different teams involved in change management need to be familiar with the progress of the change in order to be able of answer all questions from stakeholders that arise individually or in group meetings. -Change any misinformation that is circulating about the change.
Principles of communication	Use of various media to disseminate results as they occur. Emphasis on providing information through the improvement teams of everything that is going to affect the organizers. At this level the information provides a large number of details and is more specific.

Table 35. Change plan for implementation stage of change.

Evaluation and monitoring							
Objectives	 -Reinforce change. -Strengthen weaknesses and correct deficiencies. -Make change successful. 						
Activities	-Correct observed dysfunctions. -Reward and publicise successes.						
What to communicate?	Understand the personal implications of change. Mechanisms need to be put in place to identify possible misinterpretations of change and to address them so that these ideas are well understood by organizers.						
Principles of communication	The flow of information must be multi-directional, continuous and targeted.						

Table 36. Change plan for evaluation and monitoring stage of change.

4 CONCLUSIONS

During the development of the project, I was able to achieve the objectives set at the beginning and have acquired a series of knowledge and lessons learned that will be useful for future personal projects as well as for other CMs in the network.

Firstly, I was able to apply the knowledge of PM to the organisation of an international event, by completing the initiating and planning processes - that served for the actual organisation of the event that took place in Seville. The PM processes, chosen to develop the organisation of the event and that will be marked as standard in our LG for future events, are the ones used in the third part of this project. Thus successfully concluding a first step towards another of the main objectives of the project: to standardise processes to be used for future CMs in the whole ESTIEM network - an objective that should continue to be pursued with the future project managers of this event, in other countries, as we have to wait for the following events to see it effectiveness.

Regarding the different techniques used for each process and how to develop each of them, we should take into account the judgement of experts in many of them as the ESTIEM network is full of people who have already done and/or attended these events in different countries and who can give us light on many alternatives to realise different project requirements. There is no need to reinvent the wheel. In fact, much of the core information for some processes has come from past events adapted to the resources of the LG and the city.

One of the most useful tools used in almost all the processes was the project charter which, together with the WBS, was the decision-making guide for the entire project. Starting from these basis, the techniques found most useful for the development of the processes have been the Salience model (to create a stakeholder register), Critical path method (to determine the logical sequence of activities and the network diagram), Three-Pint estimating method wit PERT distribution (to estimate activities duration), Gantt chart (to determine the duration of the project), Expert judgement (to identify the risks of the project) and a qualitative risk analysis (to evaluate the risks of the project).

Due to the nature of the event, these were the right tools to meet the objective set.

Finally, I would like to reflect on some lessons learned and considerations for the future:

- Because of the nature of the event, which is highly changeable throughout the months of preparation, we need to have thorough change management and resource preparation, being prepared for change in one or more of the project's baselines.
- The baseline cost becomes crucial as it is a non-profit association and if, over the months, funding is not forthcoming, the event will have to radically change its scope or, in the worst case scenario, be cancelled.
- Developing the processes in the order in which they come in the PMBOK and, even those proposed in this work, is not entirely necessary in some of them and, at times, it has delayed me in executing them at the start because, as all the processes feed into each other, I could not accurately execute some processes without information from later processes. Therefore, we should run through the processes once without worrying about all the details of them and, once they are all finished in the initiation and planning, run through them all again, executing the necessary ones and completing the rest when we have enough information. This is something that I did not understand when I studied the subject but that I have understood throughout the project, the importance of carrying out processes of different work groups jointly or in parallel over time, is something that every project manager should know and take into account.

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APPENDIX A. WBS DIAGRAM

Figure 12. WBS Diagram. Source: Own creation.

APPENDIX B. NETWORK DIAGRAM



Figure 13. Network Diagram. *Source: Own creation.*



APPENDIX C. GANTT DIAGRAM

Figure 14. Gantt Diagram part 1. *Source: Own creation.*



Sorce: Own creation.

APPENDIX D. FORMAL BUDGET

PRESUPUESTO GENERAL COUNCIL MEETING SEVILLA 2020



ASOC. ESTIEM LG SEVILLE

ETSI - Camino de los descubrimientos S/N 41092 Sevilla www.estiem.org CIF: G90053943

This document specifies the general expense budget for *Council Meeting Sevilla 2020*. Each concept is developed after the summary table:

CONCEPT	COST
ACCOMODATION AND BREAKFAST FOR 250 (5 NIGHT)	25109€
DINNER FOR FOREIGN PARTICIPANTS	2250€
LUNCH FOR PARTICIPANTS	3000€
COFFE AND SWEETS FOR RESTS (10 RESTS)	3500€
TRANSPOR DURING EVENT	1500€
GALA DINNER	2400€
INTERNATIONAL NIGHT	1600€
UNEXPECTED EVENT	500€
HDMI CABLES	200€
SHEETS	20€
BIC PENS	30€
POST-IT	38€
FLIPCHARTS	200€
MARKERS FOR WHITEBOARD	80€
4 NIGHTS+WELCOME NIGHT	2500€

ESTIEM LG SEVILLE www.estiem-sevilla.es



PRESUPUESTO GENERAL COUNCIL MEETING SEVILLA 2020

TOTAL 42.927€

ACCOMODATION AND BREAKFAST FOR 250 (5 NIGHT) - 25109 €

PRICE FOR PERSON AND NIGHT	20,0872 €
NUMBER OF PARTICIPANTS	250
NUMBER OF NIGHTS	5
Nonibert of Friditio	

ALIMENTACION | DINNER FOR PARTICIPANTS - 2250 €

PRICE FOR ONE DINNER	3€
NUMBER OF DINNERS	3
NUMBER OF PARTICIPANTS	

ALIMENTACION | ALMUERZO PARA LOS PARTICIPANTES - 3000 €

PRICE FOR ONE LUNCH	3€
NUMBER OF LUNCH	4
NUMBER OF PARTICIPANTS	

ESTIEM LG SEVILLE ESTIEM LG SEVILLE www.estiem-sevilla.es



PRESUPUESTO GENERAL COUNCIL MEETING SEVILLA 2020

COFFE AND SWEETS FOR RESTS (10 RESTS)-3500 €

PRICE FOR PERSON	1,4€
NUMBER OF RESTS	10
NUMBER OF PARTICIPANTS	

TRANSPORT DURING EVENT (1500€)

PRICE FOR PERSON.	1€
NUMBER OF TRAVELS	6
NUMBER OF TRAVELLERS	250

GALA DINNER (2400€)

PRICE FOR PERSON	8€
NUMBER OF PARTICIPANTS	

INTERNATIONAL NIGHT (1600€)

PRICE FOR PERSON	6,4€
NUMBER OF PARTICIPANTS.	

4 NIGHTS (2000€) + WELCOME NIGHT (500€)

PRICE FOR PERSON	2€
NUMBER OF PARTICIPANTS	250
NUMBER OF NIGHTS	4
PRICE SOR PERSON IN WELCOME NIGHT	2€
NUMBER OF PARTICIPANTS	250

ESTIEM LG SEVILLE





FLIPCHARTS (200 €)

UNEXPECTED EVENTS(500 €)

MARKERS WHITEBOARD(80€)

HDMI CABLES (200€)

BIC PENS(30€)

POST-IT (38€)

SHEETS(20€)

GENERAL BUDGET FOR COUNCIL MEETING SEVILLA 2020

APPENDIX E. RACI MATRIX

RACI Matrix

Council Meeting Seville

Roles and Responsibilities

Responsible, Accountable, Consulted, Informed

Detersable or Tab Leadership Project Team Other Resource 7 Constrol & Regist Charter 1 C A A R I 10 Constr Regist Charter 1 C A I R I I I I R I I R I I R I I R I I R I I I I R I I			ROLES	ESTIEM PRESIDENT	CM Central Leader	University	Sponsor	Project Manager	CR Leader	PR Leader	Logistic Leader	Resource Leader	Control leader	Accomodation Leader	Tranportation Leader	Food leader
7 Control & Management		Deliverable or Task			Leade	rship			Pr	roject	Теал	n		Other Resources		
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	46	Make parnership packages						Α		С						

Figure 16. RACI Matrix part 1.

		ROLES	ESTIEM PRESIDENT	CM Central Leader	University	Sponsor	Project Manager	CR Leader	PR Leader	Logistic Leader	Resource Leader	Control leader	Accomodation Leader	Tranportation Leader	Food Leader
	Deliverable or Task		Leadership				Project Team					Other Resources			
6	Aarketing														
3	Create nametags						Α		R		С				
4	Create merchardising						Α		R						
6	Create posters						Α		R						
20	Manage media				С	С	Α		R						
22	Create survival guide						Α		R		С				
23	Legal document		С	С			Α		R						
47	Create corporate relation documents		С	С			Α	С	R						



Assigned to complete the task or deliverable.

Has final decision-making authority and accountability for completion. Only 1 per task.

An adviser, stakeholder, or subject matter expert who is consulted before a decision or action. Must be informed after a decision or action.

Figure 17. RACI Matrix part 2.