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The creative management of creative projects

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Creative projects are characterized by their combination of ambiguity and uncertainty. Project Management techniques intend to reduce the level of both. But it is argued (Guilier, 2015) the convenience on preserving a high level of ambiguities and uncertainties during the creative projects.

Creative projects team members are frequently reluctant to follow strict project management procedures.

The management of Creative projects requires Project managers to shift their focus from planning and controlling tasks to dealing with persons within and outside the project team (Simon, 2006).

This paper reviews the literature about the management of creative projects and proposes a framework which will allow creative project teams and their project managers to select the techniques which would best adapt to their work environment.

Keywords: Creative projects; creativity in project management; uncertainty; C-K design theory

Dirección creativa de proyectos creativos

Los proyectos creativos se caracterizan por su combinación de ambigüedad e incertidumbre. Las técnicas de Gestión de Proyectos pretenden reducir el nivel de ambas. Pero se argumenta (p.e. Guilier, 2015) la conveniencia de preservar un alto nivel de ambigüedades e incertidumbres durante los mismos para conseguir resultados exitosos.

Los miembros de sus equipos suelen ser reacios a seguir procedimientos estrictos de gestión de proyectos, pero a la vez son conscientes de la necesidad de utilizar algunos.

La dirección de proyectos creativos requiere que los directores de proyectos cambien su enfoque del habitual de planificación y control de tareas a uno concentrado en tratar con personas dentro y fuera del equipo del proyecto (Simon, 2006).

Este artículo revisa la literatura sobre la gestión de proyectos creativos y propone un marco que permitirá a los equipos de proyectos creativos y sus directores de proyectos seleccionar las técnicas que mejor se adapten a su entorno de trabajo.

Palabras clave: proyectos creativos; creatividad en la dirección de proyectos; incertidumbre; teoría C-K de diseño

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Thomas Edison "To invent, you need a good imagination and a pile of junk."

1. Introduction

The management of creative projects is a discipline which merges knowledge about Project Management, Product Development and Creativity. These three areas of knowledge show connecting ideas but different approaches.

As regards the Project Management discipline, the guidelines used by Project Managers hardly recognize creativity as an issue to be dealt with, although an increased concern is observed both in professional and scientific publications.

The process of creativity is built on top of iterations between divergent and convergent phases. During the divergent phase new ideas are sought for. In an ideal world the idea tree would grow exponentially; an idea would open the field for new ideas. Ideas may be created, aborted, rejected or implemented. If implemented, they finally deliver a unique product or service.

On the other hand, Project is a temporary endeavour to deliver a unique product. The project has a beginning and an end, but the organization needs to live forever. The project, in order to be successful, needs to deliver in time and within cost the expected scope, but the organisation may require a large set of ideas to be developed and managed throughout the long life of the organisation. These two realities create tensions in the management of the creative projects.

The management of creative projects has to deal with the compromise between not rejecting alternatives (leave all the doors open) and progressing fast in the development of selected ones (short time to market). It is an issue directly related to the decision making process which needs to answer two questions:

- When can - or should - alternatives be rejected? This one embeds the Which is the opportunity cost of the rejected alternatives? question.
- What should be done with the rejected alternatives?

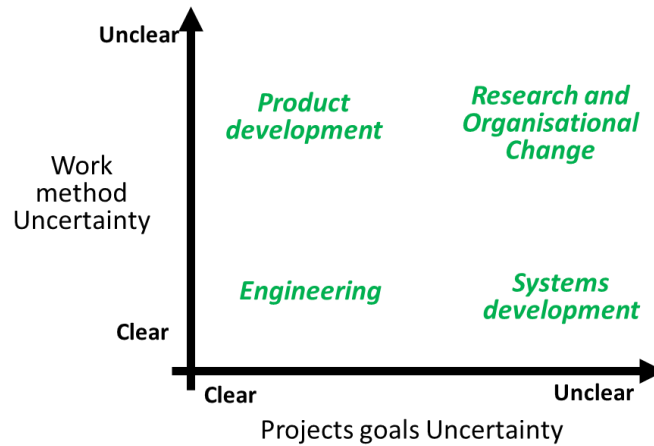
The following section of this paper discuss the typology of projects and their connected management approaches. Then an overview of the project life cycles for product development projects and creative projects are presented. A comparison between engineering and creative projects is discussed as the basis of the proposed new methodology for Creative Projects Management. Finally the case study is introduced and a final Conclusion section is included.

2. Different types of projects require different Project Management methods

Early in the beginning of the Project Management discipline, it was recognized the need to adapt the PM techniques to the different types of projects. Several categorizations have been analysed in literature and practice. The more acknowledged ones applicable to the management of creative projects are presented below:

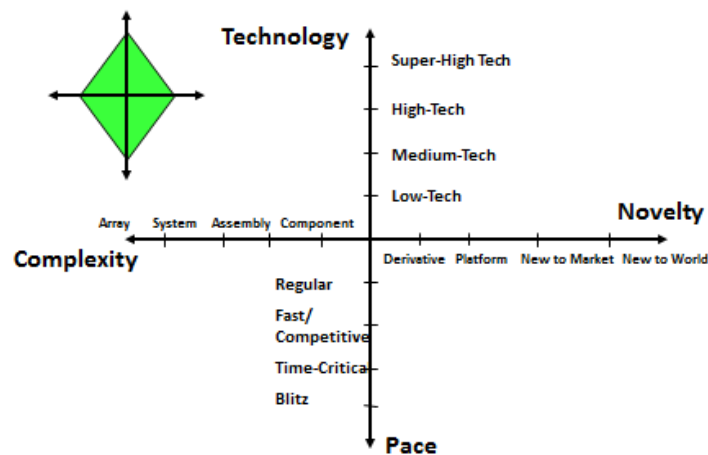
(Turner, 2009) classified projects in a two axis chart where projects are located as regards the uncertainty of their scope and the technologies needed to obtain them.

Fig. 1. Categorization of projects depending on the uncertainty of the work method and the project goals (Turner, 2009)



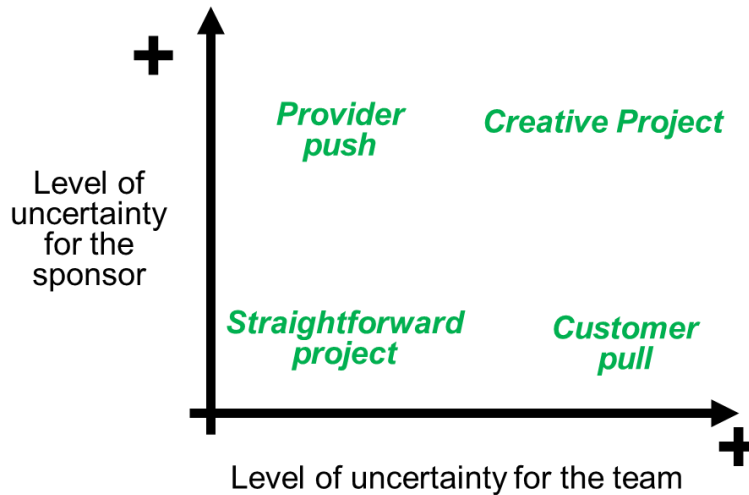
Dvir and Sherhar (Dvir & Shenhar, 2004) categorized projects with the four axis diagram: Technology, Novelty, Pace, Complexity. Creative projects would fall in diamonds with the Novelty part of the horizontal axis well towards the right; the rest of directions less relevant.

Fig. 2. The NCTP diagram (Dvir & Shenhar, 2004)



(Otegi-Olaso, 2017) adapted Turner’s diagram to a more focused classification oriented to position them compared to the lack of knowledge by the project team and by the sponsor.

Fig. 3. Categorization of projects depending on the uncertainty of the scope for the sponsor and for the team (Otegi-Olaso, 2017)



Following this classification we could define a creative project as that combining a double level of uncertainty, one regarding the definition of the scope by the project sponsor and one regarding the regarding the definition of the scope by the project team. None of the major stakeholder has a clear way to define the scope or output of the project, although both of them may coincide and agree on the definition of the outcome and/or its impact.

Although Project Management guides are supposed to support all types of projects, practice and literature have mainly focused on Engineering projects, with some recent efforts on Research and Technology development projects. Standard methodologies are better suited to address complicated projects than complex projects. These require a different set of mind and different leadership roles (Allen, 2016).

Table 1. Comparison between Complicated and Complex Systems (Allen, 2016)

<i>Complicated systems</i>	<i>Complex adaptive systems</i>
Role defining – setting job and task descriptions	Relationship building – working with patterns of interaction
Decision making – find the ‘best’ choice	Sense making – collective interpretation
Tight structuring – use chain of command and prioritise or limit simple actions	Loose coupling – support communities of practice and add more degrees of freedom
Knowing – decide and tell others what to do	Learning – act/learn/plan at the same time
Staying the course – align and maintain focus	Notice emergent directions – building on what works

In order to propose a methodology adapted to Creative projects, it is necessary to understand their life cycles.

3. The life cycle of creative projects

The following is a set of different life cycles which have been proposed and used to design and develop new products. We are concentrating in three major groups:

- Engineering design process, by Ulrich and Eppinger
- The Creative Process (both individual and socio-organizational variants), by Sawyer
- The C-K Design Theory, by Hatchuel and Weil.

3.1 Engineering design processes

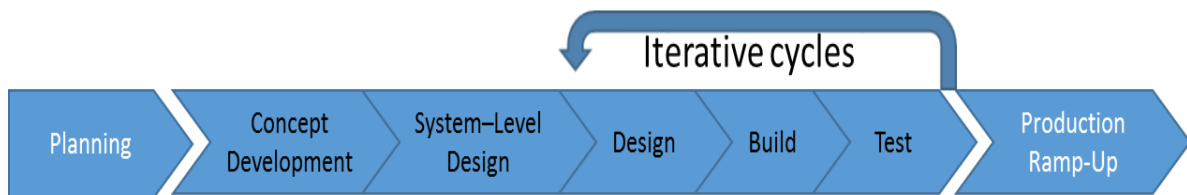
Well accepted Engineering design processes (Ulrich & Eppinger, 2012) as cited by (Arias, 2016) include the following phases: Planning, Concept development, System Level design, Detail design, Testing and refinement, Production and ramp-up.

Fig. 4. Phases in Engineering Design Processes (Ulrich & Eppinger, 2012)



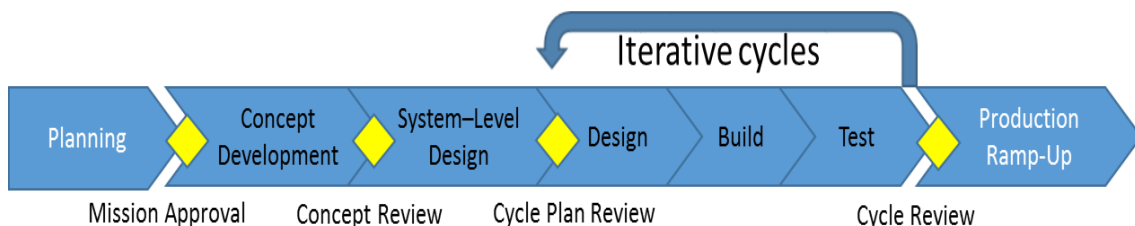
This process may have iteration cycles in all or some of the different phases; one of them usually is the design-build-test iteration in rapid prototyping processes. This could also apply to agile methodologies.

Fig. 5. Phases in Engineering Design Processes with iterations (Ulrich & Eppinger, 2012)



Decision Gates should be found in - at least - the interfaces between processes shown below:

Fig. 6. Phases in Engineering Design Processes with iterations and decision gates (Ulrich & Eppinger, 2012)



3.2 The Creative Process

(Sawyer, 2012) found that the creative process follows a standard life cycle, both in a creative and a collective endeavour.

Table 2. Steps in the Creative process (Sawyer, 2012)

The eight steps in the Integrated framework of the individual creative process proposed by (Sawyer, 2012)	The firm IDEO uses a five steps creative process (Sawyer, 2012). It is a collective creative process.
Find and formulate the problem	Understand the market
Acquire knowledge relevant to the problem	Observe real people
Gather a broad range of potentially related information	Visualize new concepts
Take time off for incubation	Evaluate and refine prototypes
Generate a large variety of ideas	Implement the new concept
Combine ideas in unexpected ways	
Select the best ideas applying relevant criteria	
Externalize the idea using materials and representations	

3.3 The C-K Design Theory

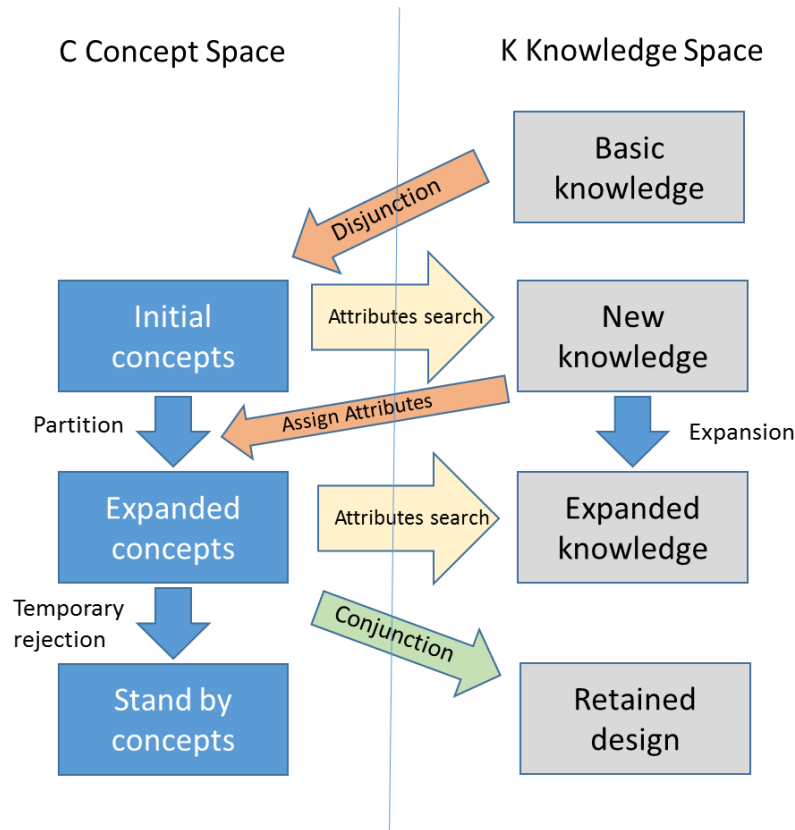
The previous two groups may be summarized in:

- Define the problem
- Identify alternatives
- Compare and select alternative
- Implement the retained alternative

However (Hatchuel & Weil, 2009) started from the axiom that *Design faces situations where it is not possible to define even an infinite list of known design candidates or even to define what such candidates are*. CPs are more devoted to create new design candidates than to select among them.

They developed the C-K theory to explain the process of design and proposed to explore how it contributes to the field of creativity. In C-K theory they propose a two dimensional space where Concepts and Knowledge expand to provide the solution to a design problem.

Fig. 7. Structures of spaces C and K. Adapted by authors from (Hatchuel & Weil, 2009)



4. The management of creative projects

Project Management method should be designed in order to address project life cycle both to benefit from the opportunities and to face obstacles intrinsic to the mentioned life cycles. The fifth version of Project Management Body of Knowledge links execution with control, monitoring and planning, meaning that monitoring will iteratively interact with planning. Nevertheless, in the description of PM process the focus is on planning and control, and both as separate entities. The role of the PM in execution processes is loosely defined.

However in CPs, the role of the Project Manager could be more complex, as it should include the monitoring of the development and management of new concepts. Besides, the management of Creative projects requires Project managers to shift their focus from planning and controlling tasks to dealing with persons within and outside the project team (Simon, 2006). While teams in creative projects do recognize the value of project management tools in some project domains, such as stakeholder and lifecycle management or definition of success criteria (Marcella et al, 2015), they are reluctant to use complex and iterative management processes which could interfere with the dynamic environment in which they perform.

Moreover, Creative Projects are characterized by their combination of ambiguity and uncertainty. Project Management techniques intend to reduce the level of both. But it is argued (Gillier, Hooge, & Piat, 2015) the convenience on preserving a high level of ambiguities and uncertainties during the creative projects.

We could separate the above methodologies into two encountered approaches: The Engineering Project and the Creative Project. Table 3 is a compared view of the two approaches:

Table 3. Compared view of Project Types along the PM process groups. Source: the authors.

	Engineering Project	Creative Project
Initiation	Develop Project Charter	Definition of Concepts
Planning	Select objective use(r). Collect Requirements. Selection among alternatives. Basic design and Elimination of uncertainties early in the project.	Identify potential use(r) groups. Proposition of alternatives
Execution	Straightforward development.	Iteration of designs. Contrast with sponsor and eventual users Basic and detailed designs
Control and Monitoring	Focus on Time, Cost and Scope. Don't forget Risk and Stakeholders Ensure correct execution	Focus on creative solutions Document rejected concepts
Closure	Exploit (hand over and operate)	Exploit Initiate new cycle

5. The proposed methodology for the management of creative projects

There is not much literature in this respect. Nevertheless, the existing one agrees in several aspects.

(Sundström & Zika-Viktorsson, 2009) provided “*an example of how the organizing and management of a project can support creativity and innovation and at the same time live up to strong requirements on progress and keeping time plans and budget. Flexibility in plans enables openness to new technical solutions and ideas throughout a project.*” They concluded their paper presenting the four factors that “*would allow the project and project members to continuously adjust and improvise on the specific content of the project:*

Implement problem ownership among project members. not only to find solutions to technical problems but also to make sure that they are implemented within the final product...

Seek transparency in the product architecture. This can serve not only as a planning tool, allowing less detail, but also as a motivational factor to be able to see how individual efforts fits into the overall technical system.

Use clear visions and goals with freedom in the realization of that vision. Visions, goals and expectations on deliveries should be made clear to everyone by project management but the interpretation and transformation of those into appropriate technical solutions should be at sole discretion and responsibility of the project members.

Maintain good communication. Both formal as well as informal means should be introduced by project management such as physical location, meetings and enabling arenas for spontaneous interaction.

In a similar sense (Simon, 2005), in an analysis of the behaviour of PMs in creative projects concluded that “*the creative PMs were mostly providing the individuals and the team with meaning, knowledge-sharing spaces, and a balance of challenges and support. They would act as context builders more than plan-and-control managers.*

Support is granted through imposed and negotiated rules, communication and animation, **leaving a lot of freedom for experimentation, trials and errors**. Motivation is fostered through the implementation of a creative climate based on **clarity of objectives, careful job assignments and alignment of individuals' interests with sub-mandates, a constant reassertion of challenges, permanent recognition of achievement, reinforcement through sense-making, and a sense of collective fun**.

Simple practice as the **public rewarding** of positive realisation and the **one-and-one evaluation of errors** shows the embedded tacit wisdom of project managers. As the main interface, they play a determining role in integrating the group, the individual and the organizational context. **The time and efforts they would spend to clarify the meaning of individual and collective action and to craft a cohesive image of the project...."**

Surprisingly both centre on the internal project management business and none of them makes emphasis on the need to maintain an open relationship with other stakeholders.

However, both contributions agree with the set of mind expected when dealing with complex adaptive systems (see above).

As a summary we collect the behaviours that need to be developed into Creative Projects management in the Table 4:

Table 4 Characteristics of Management of Creative Projects. Source: The authors.

Behaviours that the Project Management should embed into the management of Creative Projects
Context and Relationship building – Good communication
Shared vision - Collective interpretation – Transparency of the product structure - Ownership among Project members
Continuous cycles of feedback between Concepts and Knowledge – Continuous expansion of Concepts and knowledge spaces
Loose coupling – support communities of practice and add more degrees of freedom
Learning – act/learn/plan at the same time - collective fun
Notice emergent directions – building on what works – openness to stakeholders

This could derive into a product development life cycle with iterative cycles of a wider range and less but more frequent formal decision gates. A scheme is shown below, compared to the scheme in Fig 6.

Fig. 8. Phases in Engineering Design Processes with iterations and decision gates (Ulrich & Eppinger, 2004)

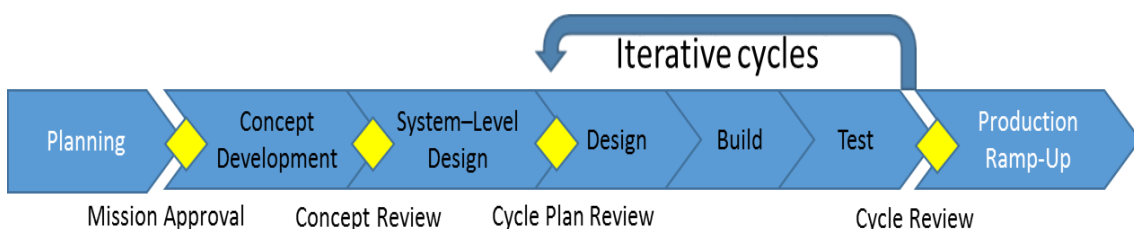
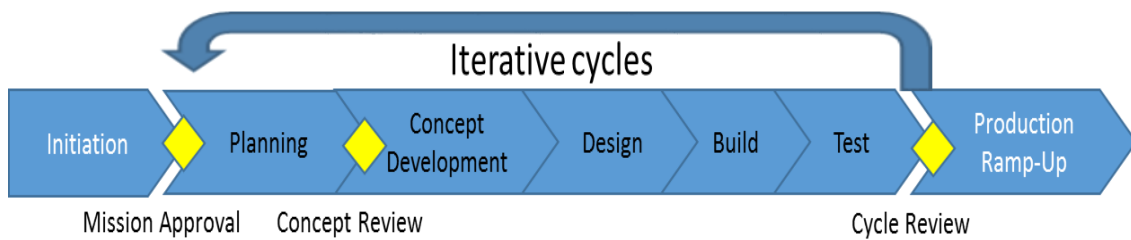


Fig. 9. Phases in Creative Projects Processes with iterations and decision gates (the authors, adapting Ulrich & Eppinger, 2004)



6. Methodology of the research project

An Action Research project will be developed to assess the advantages and difficulties to implement the novel CP management methodology. A Case Study has been selected with the following characteristics:

Table 5. Case Study: The copper etching machine

A multidisciplinary research team developed the bacteria supported machining of copper. The precedent research project delivered some scientific paper and a patent. After the embryonic technology development phase, the research team decided to continue the project to obtain a commercial product. With that purpose, a cooperative team was built:

- The product development team, devoted to the industrialization of the results and overall project manager office. Department of Chemical Engineering of UBC in Engineering Faculty in Bilbao.
- The technology domain team. The scientific researchers are in charge of deepening in the knowledge of the technology, widening the application field and the limits of the technology. Department of Chemical Engineering of UBC in Engineering Faculty in Vitoria-Gasteiz.
- The commercial project management team, dedicated to define the commercial aspects: public, brand, marketing. Department of Engineering Projects of UBC in Engineering Faculty in Bilbao.

Starting point:

Results from Doctorate Thesis work. Basic knowledge about the behaviour of the bacteria when machining copper plates.

Patent filed for a machine to engrave copper. Functional design of the machine.

Financial support from Spanish Ministry of Competitiveness for a three years long project.

Project objectives:

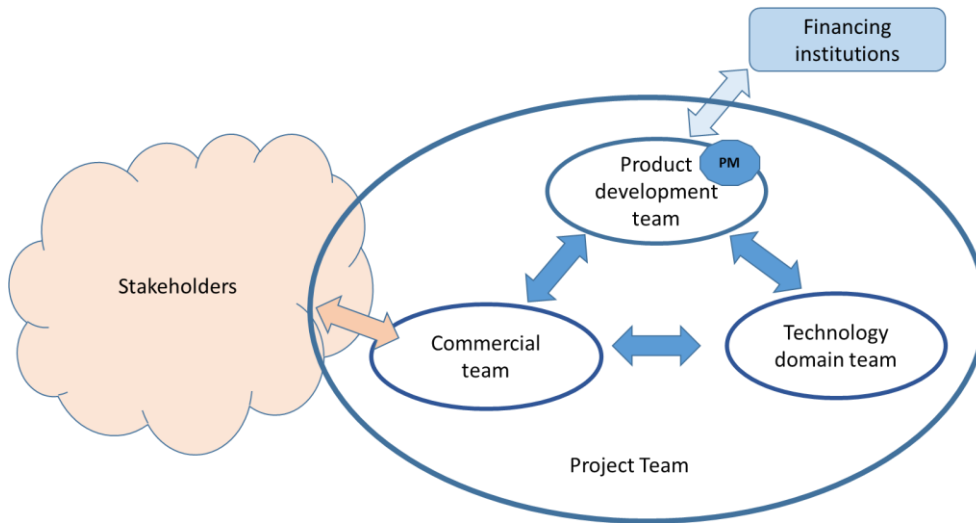
The project falls in the Creative Project category: the team wishes to develop a not so well determined technology into an undefined commercial venture.

The final objective of the base project can be defined as *To commercially exploit the biomachining technology.*

6.1 Design of the organizational structure

Taking as basis the existing teams a simple organizational structure has been designed:

Fig. 10. Organizational structure of project



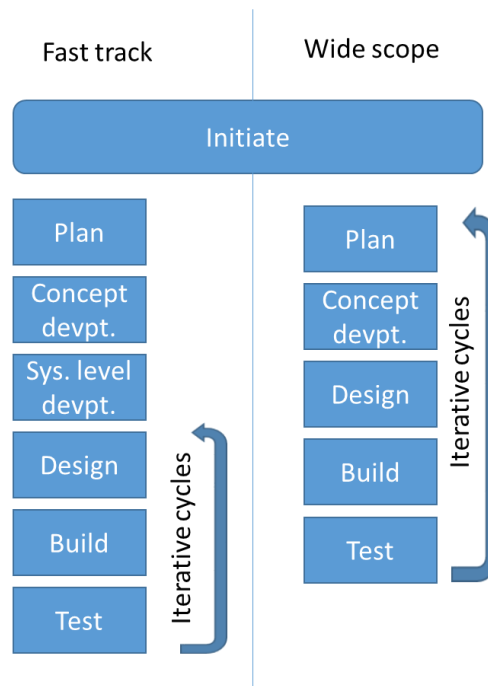
6.2 Research Project Workplan:

Following the discussions above, and with the intention to contrast management styles, the workplan will have the two opposing alternative approaches and corresponding workplans:

Table 6. Alternatives for Approaches and Project Workplan. Source: the authors.

	Fast Track approach	Wide scope approach
Objective	To minimize uncertainties early in the project. This requires identifying a potential user group and potential vendor group, and subsequently defining their requirements.	To maximize the exploitation capabilities of the underlying technology. This requires identifying various potential user groups and potential vendor groups.
Risks	To excessively focus on a use case which does not provide enough revenues. To prematurely reject promising alternatives.	To unnecessarily extend the definition phase without reaching sufficient requirement description.
Advantages	Effort and resources will be devoted to obtain one solution.	Explored routes might remain open for the future even if not retained for development.

Fig. 11. Alternatives for Simultaneous Project Workplans. Source: The authors.



6.3 The Challenge for the Project Manager and the Researcher

The Project Manager is the responsible for delivering the projects results as committed in the Research project funded by the Spanish Ministry. She is also responsible for the fluid communication among the project members.

The Researcher is the responsible for the Action Research project corresponding to the management of the Creative Projects.

They will have to develop the two related projects in a satisfying way for all stakeholders.

7. Conclusions and further work

Creative projects require project management capabilities different from engineering projects. Scientific literature is starting to focus on the differences of management styles in both type of projects, but common understanding has not yet been reached.

The developments related to the C-K design theory or to eco-design concepts could be introduced into Project Management discipline.

This project aims to define the PM methodology which could be used in creative projects where the final scope is not well defined. Given the difficulties to study alternative methodologies when developing creative projects (alternative methods would contaminate mutually if simultaneously implemented), an Action Research project has been designed where the decision making process will be monitored. The Action Research project will keep alive two parallel development methodologies: a Fast Track approach and a Wide Open approach.

In 2017 the research project is starting. The initial set up has been done and the foundations for the Action Research project have been laid down.

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