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“Complexity in engineering R&D projects”

## Background

Project complexity has been shown to be an illusive subject throughout the years, with many authors like Baccarini (1996), Williams (1999), Geraldi and Adlbrecht (2007), etc. adding new concepts or even redefining the concept. Our previous work tried to consolidate this knowledge and help project managers out there deal with complexity in their projects. The insight gained by dividing complexity into elements (project characteristics that make it complex) and situations (arising from the elements add extra complexity to the project) seems to be very helpful for practitioners trying to deal with complexity. However, the findings still seem to be very general and it is hard, so far, to link them with a specific industry. Projects of engineering R&D are an example of project type that is greatly influenced by complexity. For starters, they are usually very large projects, interconnected with several departments or even companies; which will certainly contribute to the structural type of complexity. Also, they deal with the development of new solutions and products, which is always a bit of a step into the unknown; which makes these projects have a large amount of uncertainty. Both these elements give rise to situations that will make these projects even more complex and have a higher failure rate, however they also are what we have studied closely in our previous work. The knowledge of handling complex situations can be linked with this specific kind of industry, and through this work gain a better insight into how project managers in these type of projects can handle complexity better, leading to better results from them.

## Methodology

The work will first involve a literature review, in which we will seek to gain better insight into engineering R&D projects. The aim is to identify how these projects work and the type of complexity in them (what kind of elements and situations would likely arise).

For the second part we would do an empirical research, interviewing managers who are, or have been, involved in R&D projects, and find out how they have seen these elements and situations of complexity in their projects.

Lastly, combining this information we will gain better insight into how to deal with complexity situations in R&D projects. The final aim to develop tools that will help practitioners in the future, as well as competencies the manager of such projects should ideally have.

## Project objectives and scope

The purpose of this thesis can be divided into three parts:

- First of all, to identify elements in engineering R&D projects.
- Secondly, identify, classify and analyze complex situations that arise from these elements.
- Thirdly, identify the type of competences needed to manage these complex situations in each step of the project life cycle, and what is the role of the project manager in this process.