# **FENCE**

***A fuzzy sociotechnical congruence measurer***

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# **Resumen**

# **Abstract**

# **INTRODUCTION**

## **Motivation of the project**

## **State of art**

# **OBJECTIVES**

## **Main objective**

## **Specific objectives**

# **METHODOLOGY**

This chapter will address the definition and justification of the working methodology used, as well as the planification of the project. The technological resources and tools employed will also be exposed in detail.

## **Agile methodologies**

## **OpenUP**

Being aware of the advantages associated with the use of agile methodologies in software engineering and given the iterative and incremental nature of this project, the methodology chosen for its development was *OpenUP* [1].

*OpenUp* is a minimum and sufficient methodology, which means that it only considers the fundamental contents of software development, leaving aside aspects such as the management of large teams, technology-specific guidance or contractual situations. In spite of its simplicity, *OpenUP* covers in a complete and agile way the whole development process of a software project, being completely flexible to the nature of the project in which it is employed.

The main principles of *OpenUP* offer a direct mapping with the ones expressed in the agile manifesto and try to represent the working model to follow by using this methodology:

* **Collaborate to align interest and share understanding**, advocating for coordination and mutual understanding among stakeholders.
* **Balance competing priorities to maximize stakeholder value**, trying to maximize profits while conforming to project constraints.
* **Focus on the architecture early to minimize risks and organize development**.
* **Evolve to continuously obtain feedback and improve** in order to have continuous communication with stakeholders and demonstrate incremental value to them.

### **Phases and project planning**

The use of agile, iterative and incremental methodologies such as *OpenUP* facilitates the coordination and development of projects based on multiple modules that, once developed, add value to the desired final product.

As shown in *Figure* *1*, the organization of work followed by *OpenUP* distinguishes between three different perspectives based on personal, team and stakeholder levels:

* The personal effort of an *OpenUP* project is defined as a **micro-increment**, commonly measured in hours or days.
* From the team’s perspective, an **iteration lifecycle** reflects how micro-increments are applied to obtain stable and cohesive builds of the system being produced.
* Focusing on how an overview of the project is guaranteed for the stakeholders, *OpenUP* structures the **project lifecycle** into four phases: *Inception*, *Elaboration*, *Construction*, and *Transition*.

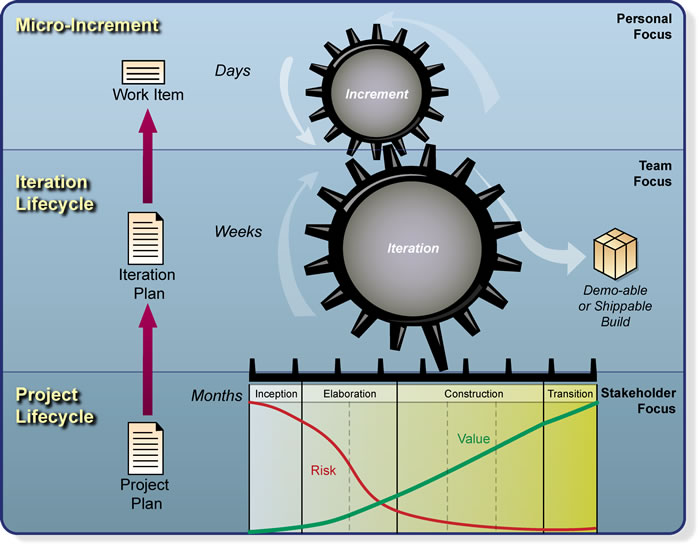


Figure 1. OpenUP layers.

Thus, each of the phases of the *OpenUP* lifecycle are defined as follows:

* **Inception phase**: in this phase, it is a question of understanding what is intended to be produced and what are the objectives and limitations of the system to be developed, identifying the stakeholders and detailing their success criteria.
* **Elaboration phase**: it involves the procurement of a more detailed understanding of the system requirements; design, implementation, validation and establishment of the architecture baseline, providing a skeleton of the system structure; mitigation of essential risks and project planning in terms of time and costs.
* **Construction phase**: iterative development of the desired product, until a tested result is achieved and ready to be offered to users. The goal pursued during this phase is to minimize costs through resource optimization and parallelization of independent tasks.
* **Transition phase**: this last phase involves validating user expectancies, obtaining stakeholders approval and seeking to improve future projects based on well-documented lessons learned.

These phases, applied to the particular case of this project, are presented in the following way:

#### **Inception phase**

In this phase, the justification of the project was carried out, identifying its scope and the objectives to be pursued. Its feasibility in terms of risks, time and estimated costs was also assessed. Roles were assigned and, at the same time, an attempt was made at identifying the key functionalities of the system in accordance with the specifications defined with the identified stakeholders.

At this stage, the first meetings were held to establish the key functionalities of the system, to understand the competencies addressed and to provide an insight into how to proceed in the months ahead.

#### **Elaboration phase**

Once an overview of the project had been established, a more detailed understanding of the objectives pursued was sought in this phase. To perform this task, a series of interviews with stakeholders were planned and conducted, allowing to know the essential features that the system should meet. On this basis, the elicitation and formalised documentation of the system's requirements was carried out, allowing to proceed with the analysis and design of the functional modules that would compose the system.

Other tasks inherent to this stage were addressed, such as the choice of technological resources to be used, the development process employed, the definition of the system architecture baseline or the acquisition of domain-specific knowledge. Actors and use cases were also formally defined.

Finally, considering the set of formally stated requirements as well as the resulting skeleton of the system to be developed, a project planning consisting of time and cost estimation was elaborated. Based on the identified functionalities, the iterations that constitute the lifecycle were organized according to the priority expressed by the stakeholders.

#### **Construction phase**

In this stage, the implementation of the different functionalities of the system was carried out. This implementation was undertaken in an orderly manner based on the priorities agreed upon with the stakeholders in the previous phase.

#### **Transition phase**

### **Roles**

## **Resources**

### **Hardware resources**

### **Software resources**

# **RESULTS**

## **Inception phase**

## **Elaboration phase**

## **Construction phase**

## **Transition phase**

# **CONCLUSIONS**

## **Achievement of the objectives**

## **Competencies justification**

## **Lessons learned**

## **Future work**

## **Personal appraisal**

# **References**

[1] R. B. MacIsaac Onno van der Straaten,Bruce, ‘Eclipse Process Framework Project (EPF) | The Eclipse Foundation’. [Online]. Available: https://www.eclipse.org/epf/. [Accessed: 28-Jan-2020].