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Design and Testing of a Methodology for Thesis Advisory as an Approach from Project Management

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Introduction

For many people in different disciplines, a project could be anything, but "project" is a concept in evolution considering the maturity of the person or group using the concept. In the academic world, project has a different meaning for students in elementary school than for students at high school; it is different for under graduated students than for graduated students in post grade.

For this work, we are interested in those who become passant and need to complete a thesis to graduate. Consider the realization of thesis is not necessary for all students in all universities, with time many universities have included many different graduation options for students to get a grade.

We are interested in passant students interested in developing thesis at under graduated and graduated level. So, our interest is to increase productivity, quality and quantity when advising thesis, so technical and non-technical skills must be developed by students and advisors, but also identified risks must be reduced to get successful projects. In this work, we show a methodology specifically to be applied to thesis advisory, so it could be applied as framework for thesis, where advisors, under graduated and graduated students can get several benefits, letting increase quality and quantity spending less time when developing projects, also advisor can expect at the end of the process future graduated students be part of the research or development group having a win to win process for all members of the team.

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Methodology

After hundreds of projects and subprojects when working for industry or as consultant or as academics for more than 20 years having a certain maturity level, a methodology for thesis advisory was designed, developed, and tested.

Due to the ambiguity of what a project is, the first step was to use metrics or indicators to define a projecting, so we consider a project must have the following arbitrary characteristics: (A) two or more sub projects must form a project; (B) each sub project requires more than 100 effective work hours per team member; (C) each subproject must produce a specific product as result as minimum, (D) then subprojects are coupled into a project through an integration process.

The methodology designed to apply to thesis advisory, where the objective is to receive a candidate, to form a student with abilities in project and to get at the end of this process, a new member of a group for future projects. The complete process has three stages as shown in Fig. 1, where an UML activity diagram indicates the general process to be followed by advisor and students.

Stage 1: Pre-thesis student

In general, advisors don't know in deep how candidates work, it could be an advantage if candidates and students know each other in courses or developing small projects, but also consider that in our universities, candidates requesting thesis advisory can come from different campuses, or different universities.
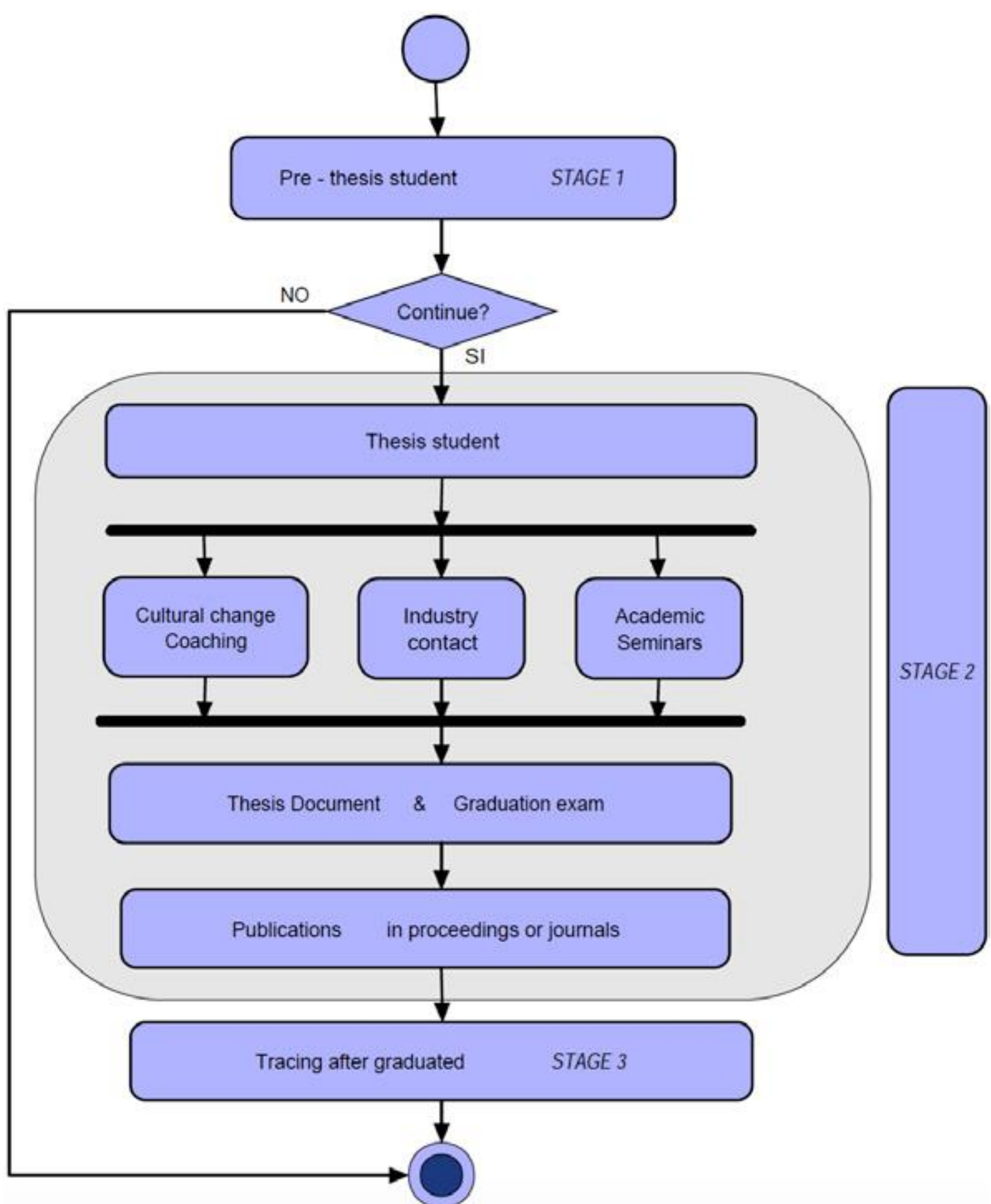

Figure 1. UML activity diagram for the three-state general process.

Stage 2: Thesis student

This model requires a minimum of two students in a similar research area, in order they can feedback and work as a team when preparing advisory sessions, when having seminars and attending to visits to industry in order they can provide feedback each other having discussions about the different reviewed topics. Thesis students must visit the advisor one per week as a minimum, providing to the advisor a Gantt graph where a planning is outlined, advances, or finished works or simulations, which must be discussed with the advisor, but also, he or she must follow the paths or routes having a visual eyewitness using a modified Kanban tool proposed for the first time in this work.

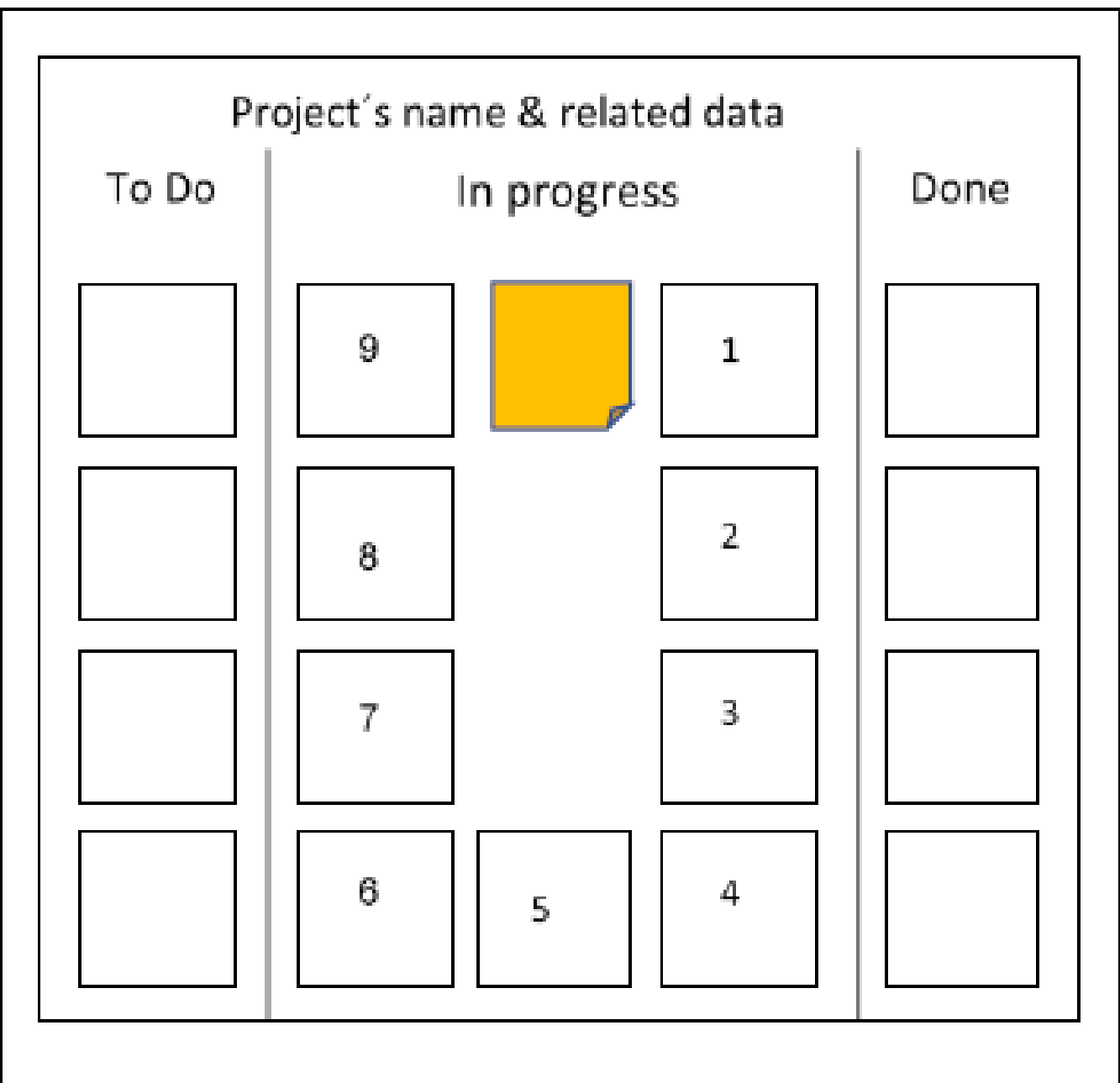The proposed modified Kanban tool named Kanban-Castillo is shown in Fig. 2.

Figure 2. Kanban modified (Kanban Castillo) tool for eyewitness of thesis process.

Stage 3: Follow up of graduates

After graduation, engineers are invited to continue being in touch to the group. At this stage, maybe a publication in conference or journal is in progress, so advisor suggests to young engineer to get ready their passport. Advisor must consider maintaining at minimum two physical meetings if possible per year with all the group members to maintain contact and feedback about engineers work with real projects. Maintaining a group of engineers with new thesis students is important in order engineers could do comments that could add value to thesis students, maintaining coherency and activity inside the group. Information from engineers are very valuable to improve the application of the proposed methodology, letting also trace their professional path and making a better professional network.

Results

Just for running the model and methodology, a first group of the ADVNETLAB was used as baseline running tests to the methodology proposed. In this case, the baseline group was formed by three under graduated students with the following results.

Results for stage 1: Pre-thesis student
In the case of group 1 or testing group, all three members began this stage process in February 2013, one of the members came from other campus of UACM. It was detected three students required regularization activities and this process took less than four months but more than three months, at the end, a closure project interview with each candidate was applied and reported. For the first group, all elements became thesis students and this process was considered successful, then process change to be more formal and interaction time between them time increased gradually but not slowly.

Results for stage 2: Thesis student
After thesis themes were defined and thesis titles were registered officially at university in Augusts of 2013, students were considered thesis student formally. Methodology conducted to the end of the activities for having a successful project

Conclusions

This work looks for helping students in general in project management, in order transfer knowledge for learning based on projects but also to accelerate the acquisition of soft skills.

We also look for adding value to students in all levels helping them to gain experience managing their projects and using quality tools in order they can do more and better projects but also helping others to develop capabilities when working as a group in one or more teams. In terms of cultural change was excellent but metrics must be used in future work. In terms of work insertion, graduated engineers obtained good jobs, in some occasions thesis students get a job before graduation, which represents a risk for finishing a project or subproject, for that reason cultural change is very important.

This successful methodology is advisor´s time demanding but with sweet fruits. Now it´s being applied to a 2nd four under graduated students group at UACM, other three under graduated students group at UAM and graduated students group at UDG.

References

The content of this poster is a summary of the article:

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More information:

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