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**EINDHOVEN
UNIVERSITY OF
TECHNOLOGY**

Date	Our reference	Your reference	Dept. of Math. & Comp. Science
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Subject: Project Requirements, Organisation and Assessment
in the context of PDEng Software Technology program

1 Introduction

The Professional Doctorate in Engineering (PDEng) degree program on Software Technology ('OOTI') provided by the Department of Mathematics and Computer Science of Eindhoven University of Technology in the context of the 4TU.School for Technological Design, Stan Ackermans Institute is a 2-year post-graduate (post-M.Sc.) education and training program in advanced software engineering with a strong emphasis on strengthening their technical and non-technical competencies related to the effective and efficient design and development of software for resource-constrained software-intensive systems, such as real-time embedded or distributed systems, and for interconnected and intelligent software systems, in an industrial setting. In particular we focus on large-scale project-based design and development of this kind of software.

As part of their education and training program, our trainees have to participate in an industrial design and devel-opment project for a period of 10 months. Such a project is a fixed-date, fixed-price project. In order to support a high-quality software engineering process and product, this brief memo defines a number of general rules and guidelines. When you are interested in contracting an industrial design and development project to the Software Technology program, please read the information in this memo and refer to the corresponding Project Proposal Form on the site.

2 Contact Information

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3 Proposal Requirements

For a project proposal to be considered it should fulfil the quality criteria of the Software Technology program:

- The project must fit with the focus of the program, i.e. the design and development of software (for resource-constrained software-intensive systems).
- The project must be innovative and challenging.
- The project must comprise a substantial part of the software development lifecycle (e.g. requirements engineering, specification, architecting, design, implementation, and testing).
- The project has to be conducted by a team. This can either be a team of at least two trainees or a combination of a trainee with a company team.
- The company has to provide sufficient coaching for our trainee(s). As a rule of thumb, the company coach should be able and willing to spend at least 2 hours per week with the trainee(s).
- The company must use state-of-the-art development methods and development tools.
- The company must be willing to contribute to funding [1] this project accordingly for the period of ten months.
- When a company wants to have the project conducted outside The Netherlands, the company must be willing to provide 50% of the expenses for the university project supervisor to visit the actual project site two times.
- The project proposal has to be submitted in time. Proposals for the project period [2] of 3 January 2022 – 26 October 2022 have to be submitted to our project office no later than 1 October 2021.

4 Project Allocation

The management team reviews the submitted project proposals with respect to the above criteria and then selects a number of projects. If there are more suitable projects than trainees, the management team selects the project proposals according to the following priority rules:

1. Projects that are related to application areas that are considered as strategically important by the management team.
2. Projects that continue or built on earlier successful projects. In this way continuity is achieved with respect to the domains and projects the Software Technology program is involved in, to the project-specific knowledge of the university supervisor and to the relationship with (strategic) partners.
3. Projects that are acquired and co-initiated by trainees themselves. This rule is a means to acknowledge the initiative and motivation of our trainees. For these projects the same criteria apply.
4. Projects that are initiated by trainees and research groups of the Department of Mathematics and Computer Science, as part of the PDEng-PhD programs. For these projects the same criteria apply.

The selected projects will then be offered to the trainees of the Software Technology program that will start their industrial design and development project on 3 January 2022. The companies whose projects have been selected may then be requested to present their project proposals in more detail to the group of trainees.

After the various presentations, the trainees of the Software Technology program will indicate their preferences. Based upon these preferences, selection and/or introduction interviews are scheduled. After the various selection interviews, the companies may select the trainee(s) that appear(s) to be the most appropriate for the project at hand. Project partners will be informed on 15 October 2021 end of day which trainees have chosen their project(s) and receive accompanying resumes to select from. The Interview period will start on 25 October and last until 12 November 2021.

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[1] The costs are based on a public private collaboration and in accordance with university's certified general management and accountancy principles. The costs include the participation of senior staff members of the Department of Mathematics and Computer Science of Eindhoven University of Technology as project supervisor providing basic project consultancy. For information on these costs, please contact us.

[2] For various reasons an industrial partner may want a project to formally start in December 2021. In general, this is negotiable.

5 Project Roles and Responsibilities

5.1 Industry partner

During an industrial design and development project, the respective company is supposed to provide:

- A project manager to monitor and control the progress and quality of the design and development process and the resulting products. The project manager is also to provide regular feedback to the operational manager of the Software Technology program on the status of the project and on the quality of the work of the respective trainee(s).
- A project mentor to provide sufficient domain knowledge and skills to support the trainee(s) during their final project. We expect a project mentor to be available for at least 2 hours per week.
- The project manager and the project mentor participate in the various activities and meetings in accordance with the design and development process described in the project management document.
- The project manager and/or the project mentor have to participate in a project evaluation and reflection meeting at the end of the project.
- The integration of the trainees in a project team, if relevant.
- The necessary facilities including an appropriate working environment with all necessary hardware, software, data, and literature.
- The project manager and/or the project mentor may be requested to address their trainees during the graduation ceremonies.

5.2 Eindhoven University of Technology

During an industrial design and development project, the Department of Mathematics and Computer Science of Eindhoven University of Technology provides a project supervisor who has the following responsibilities:

- Monitor and control the quality and progress of the project and the resulting products.
- Provide regular feedback to the operational manager of the Software Technology program on the status of the project and on the quality of the work of the respective trainee(s).
- Support the trainees with (references to) relevant domain knowledge and relevant colleagues.
- Participate in the various project-related activities and meetings in accordance with the design and development process described in the project management document.
- Review the project report with respect to the technical and academic contents.
- Assess the results of the project as described below.
- The project supervisors have to participate in the evaluation and reflection meeting at the end of the project.
- The project supervisors have to address their trainees during the graduation ceremonies.

5.3 Trainees

During an industrial design and development project, trainees should exhibit a professional and goal directed attitude:

- They are expected to pro-actively employ project and risk management.
- They have to compose and maintain their Project Management Document including a risk management section.
- They have to initiate and manage the required progress meetings, project meetings, and review meetings.
- They have to regularly reflect upon the quality and the progress of their project and to modify the Project Management Document according to the deployed design and development process.
- They have to submit the documents that are necessary for the various project related meetings in time, in order to allow their supervisors to read them carefully.
- They have to compose a project report conform to the rules of the university.
- They have to arrange the various project related presentations in time.
- They have to arrange that the texts for the diploma booklets are reviewed and approved by the respective project manager or the project mentor(s) and the project supervisor.
- The approved versions should then be sent to the operational manager for a final review.
- They have to send announcements of their project presentations at least three weeks before their presentation to the management assistant.
- They have to arrange the request for the ISBN-identification in time.

- They have to deliver a project report that was accepted by the project manager, the project mentors and the project supervisor at least one week before the presentation.
- They have to deliver a reflection document at least one week before the project retrospective.
- Status – During an industrial design and development project, trainees remain employees of Eindhoven University of Technology. As such trainees need the permission of the operational management for holidays and days-off. During an industrial design and development project, trainees have to negotiate holidays and days-off with their project manager and project mentor, with the project supervisor and with our operational manager.

6   Project Assessment

The results of the industrial design and development project are to be assessed by the project supervisors during the project evaluation and reflection meeting. The following aspects should be taken into account:

- Product – Can the resulting product be considered to be of high quality? Is it well designed? Is it well documented? Were the trainees sufficiently creative? Were they sufficiently critical? Did they fulfil the original project assignment?
- Process – Was the product developed according to a well-defined process? How did the trainees deal with changes? Did the trainees exhibit self-management? Did they take sufficient initiative?
- Teamwork – How did the trainee(s) cooperate with their peers, their supervisors, and their environment? Did the trainee(s) follow-up on agreements?
- Project Report and Project Presentation – What is the quality of the technical project report? Does it comply with the requirements as described above? What was the quality of the presentation?

All these aspects should have approximately the same weight.

7   Formal employment status

During an industrial design and development project, the trainee remains an employee of Eindhoven University of Technology. During a final project the trainee can use 20 holidays, exclusive the national holidays as applied by the company. For the use of holidays they need the permission of the company manager and/or supervisor, and the program director.