

THE EXTERNAL ADVISOR ROLE

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Student, university, and company can mutually benefit from a master thesis collaboration. This memo describes the role of the external supervisor.

1. WHO

The main target audience are employees in companies that are new to the role as master thesis supervisors and would like to know more about that role.

2. WHY

Student, university (represented by a professor), and company (represented by a supervisor) can mutually benefit from a master thesis collaboration. The key to a successful collaboration is that the three parties in such a collaboration are aligned in their understanding of their respective roles.

3. How

To formulate the expectations for external supervisors we consider the following sources for insight and information:

The “Standard agreement on student work carried out in cooperation with an external organization” [1].

Established practice described by NTNU staff and external supervisors.

Learning objectives described in the syllabus for Electronic System Design [2].

4. WHAT AND WHEN

A master thesis collaboration can be divided into four phases: proposal process, agreement, thesis work, after thesis completion

We provide a description of the expectations of the external supervisor in each phase.

The external organization must provide a contact person who has the necessary expertise to provide the student with adequate guidance in collaboration with the supervisor at NTNU.

The purpose of the work is to carry out a student assignment. The work is performed as part of the programme of study. The student must not receive a salary or similar remuneration from the external organization for the student work.

Expenses related to carrying out the work must be covered by the external organization. Examples of relevant expenses include travel, materials for building prototypes, purchasing of samples, tests in a laboratory, chemicals. The student must obtain clearance for coverage of expenses with the external organization in advance.

Figure 1. Duties of the external organization described in [1]

5. PHASE 1: PROPOSAL PROCESS

The department sends out a call for thesis proposals in March for projects and October for Master thesis with instructions for proposal submission. For an industrial partner it is convenient have a backlog of interesting projects in advance of the submission deadline. Once the supervisor

in the company have submitted the thesis proposals. A review of proposals with the NTNU staff is recommended. An understanding is reached with respect to:

- Which **proposals** that are suited as master projects.
- Who will be **supervisor** from the company and university?
- Review the **tool and EDA requirements** and ensure that these will be available for the student.
- Establish whether the student will be located within the **facilities** of the university or the company.
- If the company already are in contact with a **student** interested in this thesis, then that must be brought up so that the thesis can be reserved.
- NTNU ensures that the company is aware of the **standard agreement** that must be signed when the student does a master thesis in collaboration with a company.

The thesis will be published in a database and made available for students. A thesis proposal presentation day is sometimes conducted and the students can start to browse the catalogue to find proposals they are interested in.

Students may contact the company to learn more details on the proposals. Details can be clarified on email or a call, including questions related to whether the student has sufficient background and competence for the assignment in question.

6. PHASE 2: AGREEMENT

When a student chooses a thesis, the professor at NTNU will contact the student and the company typically by email. The remaining questions are sorted out and an agreement is made between the student, professor, and external supervisor. The standard project/master thesis agreement at NTNU should be approved by legal department early, such that when the students start on the thesis the progress is not blocked by legal issues.

7. PHASE 3: THESIS WORK

It is recommended to conduct a face-to-face startup meeting.

During the thesis work the supervisor must conduct regular meetings with the students. Typically, 1 hour every week on average. It is important to exchange **contact information** with the student so that the student has a way to contact the supervisor if needed (and vice versa).

Unlike the practice in many other European countries, companies shall **not pay** NTNU students for their master thesis work [1].

The company **could** supply the student with a desk, chair, access card and computer from day 1 unless any other agreement has been made. The same applies to necessary software and hardware.

What should a supervisor help with?

The supervisor should help to motivate the student throughout the project and clearly explain the problem and domain for example by supplying the student with useful literature and references.

Sometimes the work of the student will build on an existing system made by the company, it's good to ensure any such infrastructure or system is well documented. Don't underestimate the amount of support that might be needed for poorly documented systems.

Now and then the student will run into tool issues and practical issues where they would need help.

In your meetings with the student, try to ensure the student creates a plan for the project and the student monitors the progress against the plan. Recommend that the student start writing the report early. Read drafts of the thesis. Give feedback to the students (The professor will also contribute here).

A master thesis is independent work. The supervisor can give direction and feedback on ideas, but the external supervisor should not supply the student with a solution example. Let the student be the one that comes up with the ideas and proposes solutions.

8. PHASE 4: AFTER THESIS COMPLETION

Once the thesis has been handed in, it is time for celebration. Why not invite the student to present the work at an event in the company? Perhaps you have gotten a new friend for life or a new colleague.

If the student has produced novel academic work, then consider writing a paper based on the thesis.

The job as external supervisor is now done, but it might be that sensor contacts the supervisor if necessary.

9. PITFALLS

Different departments at NTNU will have slightly different processes. Get in touch with staff at the department to understand their specific needs. Example: The degree of how tightly the thesis topics must be tied to the research done at the departments will typically vary.

The master thesis is a piece of academic work. Such work focuses more on analysis, exploration, modelling, and discussion compared to the product focused engineering work in the companies where quality and robustness is key. Be satisfied with $E=mc^2$. Don't expect the student to build a ready to go, well tested, nuclear power plant.

Ensure the standard agreement [1] is approved by the lawyers in your organization. This can often take time. It regulates the right of the work done by the student.

Don't attempt to create an NDA for the sensor assigned to evaluate the thesis. The risk is low, and the hassle is very high.

Order all necessary gear well in advance.

A thesis project that depends on a lot of infrastructure, tools, in-house expertise, and components can turn into a project where the organization must give a lot of support on those parts.

Never set up a project in the company that depends on the result from the thesis work.

10. CONCLUSION

Read this and the references in the reference section and you will be ready for your first day in your new role as external supervisor in a company for a master thesis student at NTNU.

REFERENCES

[1] "Standard agreement on student work carried out in cooperation with an external organization", December 2020, NTNU. <https://www.ntnu.no/bridge/en/samarbeidsavtaler>

[2] "Electronic System Design Syllabus"

<https://www.ntnu.no/studier/mtelsys/design-av-digitale-system#programmeCode=MTELSYS&year=2015&dir=MTELSYSDDS-15>