

NORDIC FIVE TECH



N5T Peer Evaluation

An Educational Development Activity
for Engineering Education Programs at NTNU, Aalto, DTU, Chalmers
and KTH

Project Handbook

Fall 2013 - Spring 2014

12.11.2013

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1. Project description

Background and purpose

Quality Assurance and Development is on the agenda for all Higher Education Institutions. Universities constantly strive to develop their study programs and are met with increasing demands from ministries and accreditation agencies to document the quality of their activities. In 2009, DTU initiated a QA Pilot project on peer evaluation of Master Programs with participants from the five universities within the N5T Alliance.

The purpose of the N5T QA Pilot Project 2009/2010 was to contribute directly to the development of the study programs being evaluated and to qualify the member institutions' discussions and preparedness on quality. The pilot project worked well, and the N5T Rectors meeting on August 20, 2010, decided that there should be a continuation with a second phase coordinated by Chalmers. The minutes from the rectors meeting states that costs should be kept low and that the second round should seek to transfer learning from the pilots across programs at our institutions. There was a recommendation to include pedagogical expertise in the evaluation teams to evaluate and further develop the project. After Chalmers, NTNU lead the project, and in 2013, KTH took over. In the present phase, running from fall 2013 to spring 2014, Aalto University is coordinating the project. Some changes have been made in the process to lighten up the burden for the program leaders who participate in the project.

On a general level, the aim of the project is to contribute to the consolidation of the alliance by facilitating contacts between faculty members and providing them with an in-depth knowledge of the study programs within their field at another N5T institution and creating the framework for discussions and exchange of ideas and inspiration. On the strategic level, the project will support the N5T brand as an alliance of institutions striving for high quality as stated in the N5T ideal:

“N5T recognizes that international acknowledgement can only be achieved if universities strive for the highest possible quality in education, research and innovation”

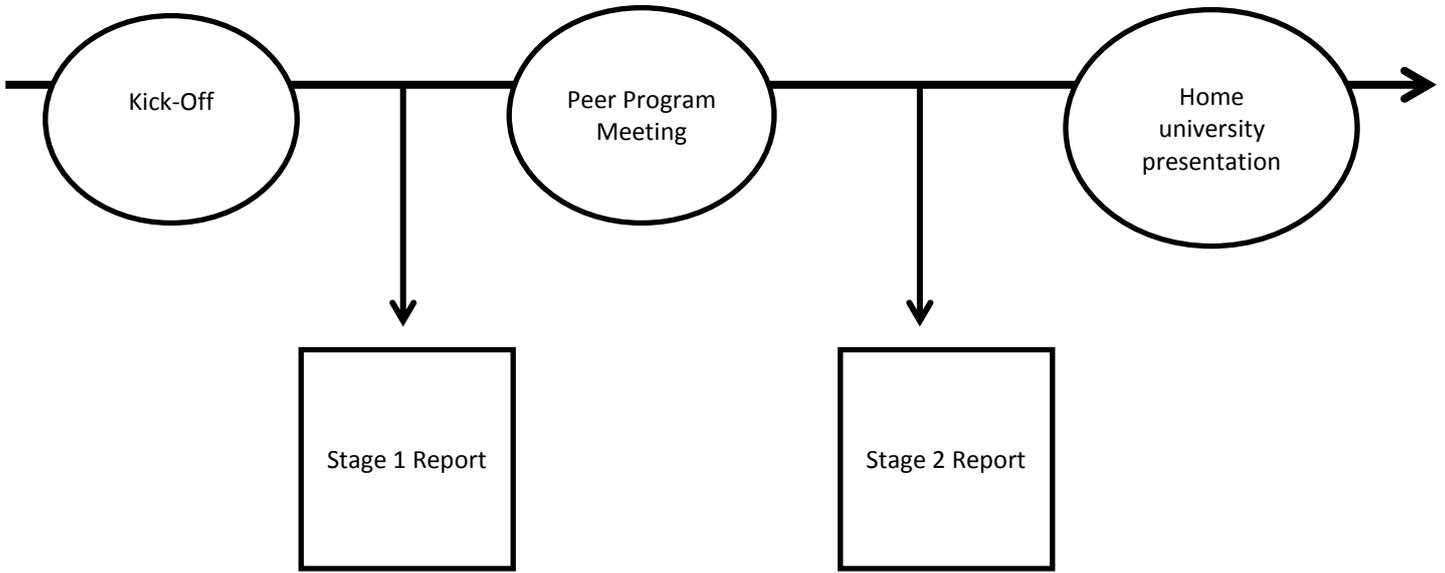
Organization

The project is lead and organized by one of the N5T members, according to a yearly agreement, with the support of an overall project group with representatives from all N5T institutions.

Project group members (2013-2014)

University	Name	E-mail
Aalto	Lena Levander (<i>coordinator</i>) Anita Bisi	lena.levander@aalto.fi anita.bisi@aalto.fi
DTU	Birgitte Lund Christiansen Randi Lindland Roest	bhc@llab.dtu.dk ranro@llab.dtu.dk
KTH	Anna-Karin Högfeldt	akhog@kth.se
NTNU	Åge Søsveen	age.sosveen@ntnu.no
Chalmers	Ulla Rilby	ulla.rilby@chalmers.se

Visual overview of the NST Peer Evaluation Proces



2. N5T Peer Evaluation Spring 2014

2.1 Appointment of participants

The call for participation started in early September. The participating programs were confirmed mid-October 2013.

PE programs	University 1 Program director / contact persons	University 2 Program director / contact persons
Master's in Applied Mechanics (Chalmers) + Master's programme in Engineering Design & Applied Mechanics (DTU)	<u>Chalmers</u> Prog dir Lennart Josefsson lennart.josefson@chalmers.se	<u>DTU</u> Prog dir Ann Bettina Richelsen ann.bettina@mek.dtu.dk
Master's Programme Electrophysics (KTH) + Master's Programme in Radio Science and Engineering (Aalto)	<u>KTH</u> Assoc Prof Nickolay Ivchenko nickolay@kth.se	<u>Aalto</u> prof Ari Sihvola, contact professor Konstantin Simovski konstantin.simovski@aalto.fi Icheln Clemens clemens.icheln@aalto.fi
Master's programme in Engineering and Entrepreneurship (NTNU) + Master's programme Entrepreneurship and Business Design (Chalmers)	<u>NTNU</u> Prog dir Tim Kristian Andreas Torvatn tim.torvatn@iot.ntnu.no Øystein Widding lars.widding@iot.ntnu.no	<u>Chalmers</u> Prog dir Mats Lundqvist mats.lundqvist@chalmers.se

2.2 Kick-off meeting, Aalto University

Date: November 18-19, 2013

Location: Aalto University, Espoo, Otaniementie 17, TUAS Building.

http://www.aalto.fi/en/about/campuses/campus_maps/#otaniemi (the building no 37)

Agenda

18.11. Monday, Seminar room TUAS 1171-1172.

13.00 Welcome Vice President Martti Raevaara

13.15 Lunch

14.00 Presentation of participants

15.00 Experiences of participation

Prof. Markku Sopanen, Department of Micro- and Nanosciences,
School of Electrical Engineering

15.30 Short break

15.45 Programme Leadership in N5T – findings from a study, Päivi Kinnunen PhD,
Postdoctoral researcher, Aalto School of Science

16.15 Structure of N5T peer evaluation 2014

17.30 End of the day

Dinner 18.30 at Ravintola Ranta, Otaniemi (at Radissonblu Hotel) <http://www.radissonblu.com/hotel-espoo>

19.11. Tuesday, Seminar room TUAS 1023-1024

08.45 Morning coffee

09.00 Time for partners to plan the peer evaluation process

11.00 Sum up: each pair gives a short presentation of how they will proceed including a timetable

11.30 Lunch

12.30 End of meeting

Participants

Study program leaders for all involved programs.

Teachers and students from the involved programs (optional).

Project group members.

Costs

All travelling costs (including dinner) are handled locally as decided by the N5T. This years' organizer will arrange food, drinks and coffee during the kick-off meeting.

2.3 Submission of Report Stage 1: Description of Program x. (self-evaluation)

Deadline: decided at kick-off meeting by each peer team.

Content: self-evaluation of the study program – overview and more detailed descriptions of focus areas decided at the kick-off meeting. See Appendix 1 for a suggestion of topics for self-evaluation.

It is suggested to use a questionnaire to obtain view-points for the self-evaluation from students, teachers and graduated students of the program. Examples of questionnaires which have been used for earlier N5T Peer Evaluations will be available during the kick-off.

See suggested manual for this report in Appendix 1. During the kick-off meeting you will decide with your peer team on the interest areas and focus points in this report, and whether to use a questionnaire as part of your self-evaluation.

Please, send this report to your evaluation peer, to your N5T contact person, as well as to [lena.levander\(at\)aalto.fi](mailto:lena.levander@aalto.fi), in good time before your peer team meeting.

2.4 Peer Team meetings

Date and duration: decided at the kick-off meeting.

Location: at either your or your peer’s institution.

A 1-2 day meeting with more detailed presentations, discussions and feedback between the two study programs that are each other’s peers. Feedback can be given orally, during the meeting, and/or written after the meeting. The date and place will be decided by you and your peer team during the kick-off meeting. Please, invite to these meetings other teachers within the program as well as students.

In **Appendix 2** you will find a suggested agenda for the meeting. This agenda can be discussed and adjusted during the kick-off meeting.

2.5 Submission of Report Stage 2: Educational Development Implementation Plan

Deadline: decided at kick-off meeting by each peer team.

Content: Timeline and important steps for testing or implementing new ideas. Could be anything such as new courses for your students, learning environment development, team building for your program council etc. Moreover, include feedback from the N5T PE experience and a description of how you will present your experience at your home university/ department.

Suggestions and conclusions on follow-up actions can be organized like this:

Follow-up actions		Dimension:		
		Professional	Pedagogical	Administrative
Time perspective:	Immediate			
	Short Term (< 1 yr)			
	Long term (< 5 yrs)			

See suggested manual for this report in **Appendix 3**. Please, send your report to your evaluation peer, your university's N5T contact person and the coordinator of the peer evaluation (lena.levander(at)aalto.fi) by latest **30th of April 2014**.

2.6 Presentations at home university.

Each program team gives presentations of their N5T project at the home university.

Date, form and content: Decided locally.

Appendix 1

Suggested manual for Stage 1 Report (self-evaluation)

Content: Description (self-evaluation) of Program x.

Deadline: Decided at kick-off meeting by each peer team.

At the kick-off meeting you decide with your peer what you would like to emphasize, explain and compare during this project. The list below will be discussed during the kick-off. Use this as a suggestion of relevant topics that could be explored and as a basis for defining the areas of interest you want to focus on in the self-evaluation and at the peer meeting.

A. Introduction

- Key indicators: Ex.: **Acceptance ratio, tuition fees, number of students etc.** To be decided at the kick-off meeting
- Admission requirements
- Distinctive national conditions or circumstances important for the specific engineering domain/field

B. Program leadership – Description and development ideas

A description of the framework that for the study program directors' role(s) and their opportunities to conduct program leadership.

- The organizational structure and actors within the program (i.e. dean of education, director/coordinator of the program, study boards, student representation etc.)
- The management and strategic planning of teaching and programs
- Communication with teachers and between teachers, students, other staff about education program quality and development issues.
- How are teachers encouraged to share ideas and discuss teaching and assessment methods?
- What is your opinion on your own role(s) and their opportunities to conduct program leadership?

C. Learning Outcomes of the study program – Description and development ideas

A description of the guiding principles of the program, including the main content and the competence profile.

- What are the objectives of the program, national and local, the content and the central elements of the program (program aim, program profiles, compulsory and optional courses, learning outcomes, carrier opportunities)?
- What is your opinion on how – and to what extent - the students reach the intended learning outcomes of the program?
- What are the essential challenges and opportunities regarding the learning outcomes of the program?
- Development ideas, new/changed learning outcomes?

D. Program and course design – Description and development ideas

An overview of the program design: mandatory and elective courses through the program, recommended study lines, relationship between courses, research base.

- How are the courses connected to the program's learning outcomes?
- How is the program made into a meaningful whole and how are overlaps and unnecessary reiterations avoided in the curriculum.
- How do you secure that teachers and especially students are familiar with the program aim and how the separate courses contribute to the learning outcomes of the program? How are

teachers trained in designing programs and courses, how can teachers share ideas and peer coach each other in course design?

- How are competence profiles, learning objectives, and the curriculum interlinked?
- How and why is the program linked to the research in the organization?
 - Do research results have an impact on the content of courses/program?
 - Are students in the master program taking active part or linked to research projects?
- What is your opinion on how well the program is designed?
 - What are the essential challenges and opportunities regarding program design?
 - Suggestions for actions/improvements.

E. Training of engineering competences Description and development ideas (if not included earlier)

A description of the measures taken to ensure the training of engineering competences in the program.

- Which engineering competencies are essential for your students?
- How are students trained to apply and integrate knowledge from the various elements in the program when solving engineering problems? How are teachers encouraged to integrate the training of engineering competence and skills in their courses? How does the program director secure this integration?
- How are the students trained in defining and understanding engineering problems as well as constructing, implementing and operating solutions to those problems while regarding this as a whole and integrated process?
- How is creativity in reasoning, problem solving and innovation enhanced?
- How is the students' collaboration with industry facilitated, and what is the scale and character of the collaboration?
- What is your opinion on how well the program manages the training of engineering competences?
 - What are the essential challenges and opportunities regarding the training of engineering competences?
 - Suggestions for actions/improvements.

F. The students' way through their education – Description and development ideas

A description of the student's perspective on how it is to be a student at this education program.

- How are students introduced to the program in the beginning of their studies? How are the students introduced to the study environment, pedagogical fundamentals and assessment? What activities are used to integrate the students within the academic community?
- What methods are used to teach and to assess learning and on what grounds? How do teaching and assessment methods support the learning objectives?
- How are ICT tools and learning environments applied in delivery of education?
- How are discussions and active participation encouraged between students and teachers and how is interaction between students and teaching staff facilitated outside contact-teaching hours?
- How do students perceive their education, the progress of learning, their career opportunities, study environment, work load, level of difficulty etc.
- What does feedback and comments from alumni tell you?
- Is the student completion rate at a good level?
- What is your opinion on how well the program provides a good environment and education for your students?
 - What are the essential challenges and opportunities regarding this?
 - Suggestions for actions/improvements.

G. Quality Assurance Procedures – Description and development ideas

A description of what is done at your university, department and study program to gather information about the quality of the program - and react on this information.

It can be fruitful to send each other questions and results from earlier studies.

- How does the national QA system work?
- Which processes and procedures exist at university level, and at program level. Initiated by whom?
- How is quality assurance ensured at course level?
- What is asked for in evaluation at different levels? Is this fruitful for development and quality?
- Is there a regular procedure for education development in line with education evaluation?
- What is your opinion on how well the QA procedures work?
 - What are the essential challenges and opportunities regarding this?
 - Suggestions for actions/improvements.

Supplemental Material

In your report you can also bring all other material that you and your peer have agreed upon, such as:

- Study plan
- Curricula description
- Course descriptions and Course Learning Objectives
- Student evaluations (the evaluation group may delimit the number of evaluations to be studied by defining e.g. three types of courses and only use the evaluations from these three courses in the program evaluation).
- Master thesis, e.g. 3 examples from each programme
- Description of teachers' training courses
- Description of Program leadership training courses

Appendix 2

Suggested agenda for the Peer Team meetings that you hold at either your or your peer's institution, date decided at the Kick-Off meeting.

In this agenda, all topics listed in Appendix 1 are included. The agenda should be adjusted so that it reflects the special areas of interests that the partners agree on at the kick-off meeting.

Agenda:

Day 1:

1100	Opening of meeting
1110	General introduction to program No1 (A – Introduction)
1140	General introduction to program No 2 (A – Introduction)
1210	Brief discussion on clarifying questions and issues
1230	Lunch
1315	Discussion of Topic B. Program Leadership
1400	Coffee break
1415	Discussion of Topic C. Learning Outcomes of the study program
1500	Discussing of Topic D. Program and course design
1600	Site visits (lab facilities, teaching areas and/or student work spaces)

Day 2:

0900	Short summary of day 1.
0915	Discussion of Topic E. Training of engineering competences
1000	Coffee break
1015	Discussion of Topic F – The students' way through their education
1100	Discussing of Topic G – Quality assurance - Continuous development
1130	Sorting and prioritising major challenges at program No 1
1215	Lunch
1300	Sorting and prioritising major challenges at program No 2
1345	Self reflection on our work until now
1415	How to work from now? Peer review input to the other partner. Process and timetable for the Peer evaluation report.
1500	End of meeting

Appendix 3

Manual for Stage 2 Report - Educational Development Implementation Plan. This final report is important to wrap up the project. The format can be text document or power point slides.

In **part 1** you describe what you have learned and what ideas you have.

In **part 2** you give feedback on the N5T PE project process, what was good and what can be improved.

In **part 3** you give a short description/outline for your presentation at your home university.

1. EDUCATIONAL DEVELOPMENT IMPLEMENTATION PLAN

- What important and useful feedback was given?
- What did we learn from our peer besides the given feedback (report stage 1, peer meeting...)
- What will we test, implement or change with our study program? Could be anything from new courses for your students, learning environment development, team building for your program council and so on.
- Who will be involved? Program teachers, students, program staff, other staff at university, external invited?
- What is the timeline for the development plans you have?
- What will it take to do this?
- How can results be evaluated?
- What will you bring up at the local presentation at your home university about this N5T PE project.

Suggestions and conclusions on follow-up actions can be organized like this:

Follow-up actions		Dimension:		
		Professional	Pedagogical	Administrative
Time perspective:	Immediate			
	Short Term (< 1 yr)			
	Long term (< 5 yrs)			

2. FEEDBACK ON THE N5T PEER EVALUATION PROCESS

3. BRIEF DESCRIPTION OF YOUR PRESENTATION OF THIS PROJECT AT YOUR OWN UNIVERSITY/ DEPARTMENT.