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Some representatives of the N5T organization group for the Nordic Summit on Universities for Impact at Trondheim June 2016

# **Nordic Five Tech (N5T): Annual Report 2016 – 2017**

The annual report gives an update on N5T collaboration relating to education, research, innovation and industry relations, communication and organization.

The N5T universities - Aalto, Chalmers, DTU, KTH and NTNU – celebrated their 10th anniversary in Trondheim 7-9 June 2016. In her anniversary speech, Tuula Teeri, President of Aalto, said that “the most tangible results thus far have been the establishment of 7 joint master programmes with Nordic Council funding, the launch of a joint PhD course database, and the peer evaluation of some 45 master programmes at the partner universities.”

At the Rectors’ meeting, the Rectors of the N5T universities adopted a new strategy and action plan for the coming year. There are high ambitions for [N5T](http://www.nordicfivetech.org/) as an arena for mutual learning and quality development across administrative and academic functions, as well as an arena for academic collaboration in education, research and innovation – utilizing complementary competencies, infrastructures, activities and networks.

The “[Nordic Summit on Universities for Impact](https://www.ntnu.edu/nordicsummit2016)” which took place on June 8th in Trondheim, gathered some 80 leaders from industry, public sector and universities. The presentations and cases clearly demonstrated that the university eco-system for innovation, co-creation and collaboration has a substantial impact on the competitiveness of the Nordic countries, societies and companies. International rankings of the N5T universities confirm that it is possible to combine academic excellence with industry collaboration.

# Education

# Joint Master Programmes

The joint master programmes (JMP) are important trademarks of the alliance as well as serving as strategic platforms for wider academic collaboration.

In the past year, the working group for joint master programmes (JMP WG) has been involved in the administrative coordination and implementation of the centralized admission process. For the 2017 intake the admissions have been split between three universities (DTU – three programmes, NTNU – one programme and KTH – one programme). At the meeting in September 2016 administrative coordinators discussed and agreed on deadlines, common templates and practices in order to facilitate and unify the process. Moreover it was decided to update the N5T Student Handbook. The N5T joint Admission Days were again organized in March 2017 and gathered all consortia on one campus, this time at DTU, in order to discuss common issues, challenges, positive experiences and the applications from students to the programmes. The outcomes of the new admission process were - generally positively - assessed by the JMP WG at their meeting during the Admission Days.

In collaboration with Consortia and Secretariat the JMP WG has also identified possible challenges in the N5T thesis supervision and assessment. Based on the past experiences and received feedback, the JMP WG prepared a presentation for the participants of the Admission Days regarding common challenges regarding thesis supervision. In the second half of year 2017 the JMP WG is planning to focus on the further elaboration of the new guidelines for students and supervisors as well as on new recruitment methods and marketing initiatives to increase the number of applicants to N5T programmes.

To facilitate joint student activities, strengthen student satisfaction, and stimulate contact between the departments involved, an institutional funding scheme was set up as a trial case for the academic year 2015-16 and for the academic year 2016-2017 it was decided to make this funding scheme permanent.

To facilitate planning and budgeting, the responsibility to host the joint student activity shall rotate between the consortium universities according to a long-term plan adopted by the N5T Committee.

The master programmes Innovative Sustainable Energy Engineering, Maritime Engineering and Polymer Technology organized joint activities in the form of winter schools/introduction weekends.

# Entrepreneurship Education

The working group with representatives from Chalmers, DTU, KTH, and NTNU has continued to meet and interact (on site as well as on-line) on a recurring basis in order to exchange insights and experiences.

The most interesting experience during the year was that the group received funding from Nordplus, based on an application that had been developed during a meeting in Copenhagen. The funding strengthens the bonds between the participating universities as it supports the meetings and exchanges between the parties. The funding from Nordplus also contains scholarships for students to travel on express mobility during a week at the different hubs. This is very much in line with the working group’s intentions to facilitate interaction between entrepreneurial students around the Nordic area.

The working group meetings are normally “lunch-to-lunch” where the parties can update each other as well as participate in interesting visits. As a tradition the meetings include staff and students in order to have interaction on multiple levels.

In September 2016 NTNU hosted a meeting where the group visited the student incubator to hear pitches from the current ventures, followed by a visit to Troll Labs (a research laboratory dedicated to “the early fuzzy front end”). In February the group met again, this time at KTH. The meeting coincided with REEF (the Royal Entrepreneurial Enterprise Forum), which allowed the group to attend presentations from financier and advisor ALMI, and law firm Cederqvist. Additionally, there was an opportunity to visit the fair connected to the forum. The next meeting will be hosted by Chalmers in the beginning of the autumn 2017.

# Quality Assurance - Peer Evaluation

Between the years 2009 and 2016, 41 programmes have been evaluated. In 2016/2017 the programmes in “Medicine and Technology” and “Naval/Marine Technology” were evaluated.

One area for future development is to see how the N5T Peer Evaluation work can be combined with follow-ups by the N5T Pedagogical group, so that the N5T Pedagogical group can support the realization of the development of ideas that are the result of the peer evaluations.

The group has also identified differences in the local quality assurance systems on programme level at the N5T universities and would like to investigate and establish linkages to the N5T Peer Evaluation process.

In addition, the members within the N5T PE project group authored a conference contribution to the CDIO conference in Finland, in June 2016.

# Pedagogical Collaboration

The N5T pedagogical group had its annual meeting at Chalmers in August 2016, with participation from all five universities. This was a fruitful meeting where two main topics for engineering education development that could be further explored together within N5T, were identified.

The first topic is the ambition to search for ways to come closer to evaluation and analysis of the pedagogical quality of a course than the current methods, with data on throughput and scores from student evaluation questionnaires together with follow-up meetings. A comparative study among the N5T universities, with a current post doc at NTNU having the capacity to do the coordinative work, is suggested.

The second topic identifies that there is a need for pedagogical development units to contribute to programme development, e.g with giving courses and seminars on pedagogical leadership for heads of programmes and other leaders.

In addition, the group comments on that N5T contributions should be more visible on CDIO conferences as well as SEFI and other engineering education arenas.

# Student “extended campus” activities

Since 2012, DTU has every two years invited N5T students to its Grøn Dyst innovation competition. In 2016, teams from Aalto and NTNU participated.

In2016, DTU started up an Engineering World Health programme in Nepal (www.ewh.dtu.dk). Engineering World Health has previously only run projects in South America and Africa. N5T students were invited and students from Aalto and NTNU took part at the intensive preparatory course at DTU in June before they spent the next six weeks engaged in volunteer work repairing medical equipment at local hospitals in Nepal. The students cultural, creative and innovative skills were tested to its full. At NTNU the activity is linked to the student chapter of Engineers Without Borders.

* 1. Engineering education workshop

In October 2016, KTH arranged a workshop on leadership for quality enhancement and development of engineering education, with some 35 participants from all the five universities.

This initiative is the starting point to establish a forum where not only the pedagogical leaders of the universities meet, but one where also second tier leaders and engaged educators at the N5T universities can meet regularly and exchange experiences, challenges and ambitions.

It is a cornerstone of engineering and science to learn from mistakes and failures as well as good examples and success stories. By sharing experiences with the intention of learning, modifying and amending procedures, the quality of engineering education at the N5T universities is enhanced.

Some areas where exchange of experience and examples are desirable concern the treatment of issues relating to gender, diversity, universal design and education for sustainable development.

# Research, Innovation and Industry Relations

# PhD Collaboration

With the signing of a *Memorandum of Understanding on PhD collaboration* in June 2016, the Rectors expressed an ambition to strengthen collaboration at the PhD level, related to supervision and assessment, specialized courses and infrastructure, as well as quality assurance. The N5T PhD course database is seen as an instrument promoting collaboration, and it was confirmed that courses listed will be offered without charging fees from PhD students enrolled at N5T universities.

The PhD Administrative working group takes administrative responsibility for the continued development of the PhD course database and updated mapping of PhD education requirements at the N5T universities. The number of courses in the database is increasing due to work done at the respective partners to minimize technical and administrative problems. At meetings during the past year, information was shared on management system for ISP, training in innovation competencies and national and internal quality systems. Work was also done on a draft memorandum of understanding on co-supervision with mandatory mobility.

A two-day workshop on PhD education took place at DTU in Lyngby in August 2016. The point of departure was the discussion paper “Innovative Doctoral Training at Universities of Science and Technology” which the technical university alliances CESAER, CLUSTER, EuroTech, IDEA League and N5T published jointly in 2015 to contribute to the European debate on the future of doctoral training. The N5T universities were well-represented at the workshop both in the organizing committee and among the panelists and contributed to making the event a success. The recommendations from the workshop regarding quality assurance, supervision, interdisciplinary approaches and more can be downloaded <http://www.dtu.dk/english/About/Visits/phd-konference>

# Industrial collaboration

NTNU, Aalto and DTU engaged with the external consultancy Damvad to carry out an econometric analysis of the impact of university-industry collaboration.

The Nordic Summit on Universities for Impact 7-8 June 2016 in Trondheim marked the 10th anniversary of N5T collaboration. The N5T Industry Collaboration Network developed the concept and programme with administrative support from the partner universities. The workshop and summit hosted some 80 leaders from government and industry, research and innovation agencies, university leaders, staff and students. The aim was to develop a shared understanding of how universities contribute to societal impact and how this knowledge can be turned into effective policies and strategies.

In August the rectors wrote a common feature article to Adresseavisen, which took out conclusions from the conference.

In December, DTU met with the Nordic Council of Ministers to pave the way for a collaboration on the innovation agenda during the Norwegian presidency in 2017.

In January, the Norwegian Presidency (Kunnskapsdepartementet) invited representatives from NTNU and DTU to a meeting. Subsequently suggestions from N5T, mainly through the efforts of NTNU, were submitted as an input to the preparation of the chairmanship.

As a result N5T is now listed as a partner in the “Sektorprogram for Utdanning og Forskning”.

# Organization and Communication

* 1. Communication

The N5T WG Communication continued its work with developing the webpages for the joint Master’s programmes located on each university website. The transition to joint admission also led to some changes in how traffic is directed between the webpages. Website statistics from each university show no significant changes in the number of visitors, and the input from the programme administration at the universities has been predominantly positive.

During the year the working group has developed the alliance website based on a brief from the N5T Secretariat. The revised website launched in November. Traffic is still on the same level, but users tend to get to what they are looking for faster, mostly the joint Master’s programme websites.

The working group has supported the alliance in the development of internal communication to staff and students, for example the PhD course database and the student handbook.

* 1. CESAER and TU alliances speaking with one voice

Regarding the “TU alliances speaking with one voice initiative”, discussions regarding the implementation of this initiative have been ongoing during the past year. The conclusion was made that the various university networks should collaborate on a more informal level and that the focus of the different networks varies to such a large extent that a joint opinion in all matters is difficult if not impossible to obtain.

Showing a common standpoint on EU policy matters is still considered to be an important element in the TU-alliance initiative, and where possible statements should be circulated between the networks in order to be able to refer to each other’s statements.

After KTH took over the Chair in April, KTH has steered N5T through the challenging task of developing a joint statement on the highly debated European Innovation Council.

* 1. Gender Mainstreaming Workshop

On March 15th 2017 representatives from three of the Universities in the alliance met at Chalmers to discuss the gender mainstreaming process at the participating Universities. Thereafter the representatives from DTU presented the opportunity to make an application for gender mainstreaming funding within Horizon 2020. It was agreed that discussions will continue after the workshop regarding how we can collaborate on gender and/or diversity issues in the future.

Annexes:

1. N5T Activity Chart
2. Joint Master Programme Statistics

Committee

## Annex 1 – N5T Activity Chart 2016-2017



Annex 2 – Joint Master Programme Statistics



