

Workshop proposal for NIKT 2025

Title

Sustainability in higher IT education: Addressing sustainability in bachelor's and masters' theses

Workshop description/summary

Candidates from higher IT education have an important role in solving the great societal challenges of the future. For this, the candidates need relevant competence on sustainability and digitalization. To facilitate these efforts, there is a significant need for teaching staff and study program leaders to exchange experiences and build shared knowledge about good practice and useful resources related to sustainability and digitalization.

One of the key steps towards professional competence for a student is the bachelor's or master's thesis. The thesis represents an authentic learning setting where students, individually or in groups, handle problem solving under complexity and uncertainty, often creating a product for an external client. Sustainability needs to be addressed as part of this work, both as required from the university e.g. through guidelines for learning outcome descriptions, and as an inherent aspect of real-life project work, e.g. for the client to comply to sustainability requirements and reporting. At the same time, the traditional form of a thesis does not make it evident how sustainability concerns should be integrated: As separate chapters or sub-chapters, e.g. background or discussion? As an element of addressing ethics? As a separate or integral part of analysis of design? Both students, teaching staff/supervisors and examiners struggle to find good answers to such questions, which seem to be insufficiently addressed by the institutions.

At NTNU we have applied a framework for sustainability analysis in various course settings in IT study programs over several years. In the spring 2025 we adapted the framework and made it part of a web resource for students and supervisors in bachelor's and master's project courses. This measure is being evaluated in the autumn 2025 with the aim of further developing the resource and better integrating sustainability in the project courses and preceding courses. It is however clear that multiple issues and concerns need to be addressed.

The challenge of integrating sustainability in students' final projects is common to all higher education institutions and study programs in IT education. We would greatly benefit from experience sharing, comparing practices and learning from each other. Our workshop at NIKT 2025 will have active participation from various universities and explore concrete challenges and opportunities linked to the integration of sustainability in bachelor's and masters' projects.

After an introduction to the topic and a brief presentation of experiences from NTNU, the workshop will **systematically address the various practices in the participants' institutions**. We will do this through **structured discussion** in groups or in plenary, depending on the number of participants. The discussion will focus on the relevant learning objectives, learning activities, artifacts (including the thesis itself), and the integration of sustainability both on a course and a study program level. Also, participants will discuss how the various practices can be addressed in a **joint scientific publication** as a continuation of the workshop, possibly with UDIT 2026 as a first step.

The workshop will be **the fifth in a row of similarly themed workshops** held in conjunction with NIKT. With these workshops we seek to contribute to engagement and continuity the IT education community related to the integration of sustainability and digitalization in teaching and learning.

Workshop schedule

09:00 Welcome and introduction

09:15 Practices and challenges; example from NTNU Department of Computer Science

09:45 Groupwork; comparison of practices across institutions
(coffee break)

11:15 Presentation of groupwork

11:30 Discussion/groupwork: What is needed for a joint study and publication; next steps

12:00 End of workshop

Organizers

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Birgit Rognebakke Krogstie is Associate professor of Applied information technology at the Department of computer science, NTNU. She holds a Cand.Phil in Education and a PhD in Computer Science. Her research fields comprise computing education as well as technology support for cooperation, learning, and reflection. Krogstie is Director of the Excited Centre for Excellent IT Education, where IT education for sustainability is a focus area. She was part of the group starting GoForIT in 2020.

John Krogstie (1967) holds a PhD (1995) and a MSc (1991) in information systems from the Norwegian University of Science and Technology (NTNU), where he is currently a full professor in information systems at the computer science department (IDI). At IDI he was Department Head 2017-2021. Currently he lead the unit on information systems and computer-human interaction (ISCHI). Director NTNU Digital 2022-2023 and Center for Sustainable ICT - NTNU 2022- He was part of the group starting GoForIT in 2020 and is member of its board. His research interests are information systems development, information systems engineering, quality of models and modelling languages, neuro-conceptualization, eGovernment, sustainable smart cities and sustainable digitalization in general.

Recruitment of participants

This workshop will be open to all participants at NIKT, with no maximum number of workshop participants. Information about the workshop will be made available at a dedicated webpage (under the NTNU/Excited website). When participants have signed up, we would like to collect some high-level information from them about their practices in integrating sustainability in master's and bachelor's projects, for better preparation of the workshop.

Equipment

We would like to have a room with space for a minimum of 30 participants, with possibility to gather participants in smaller groups for discussion and groupwork. (Most likely this means a flat floor and tables and chairs that can flexibly be moved around). We need facilities for showing a presentation/slides. The workshop will be on-site only.