The Research Council of Norway

Evaluation of Mathematics, ICT and Technology 2023-2024

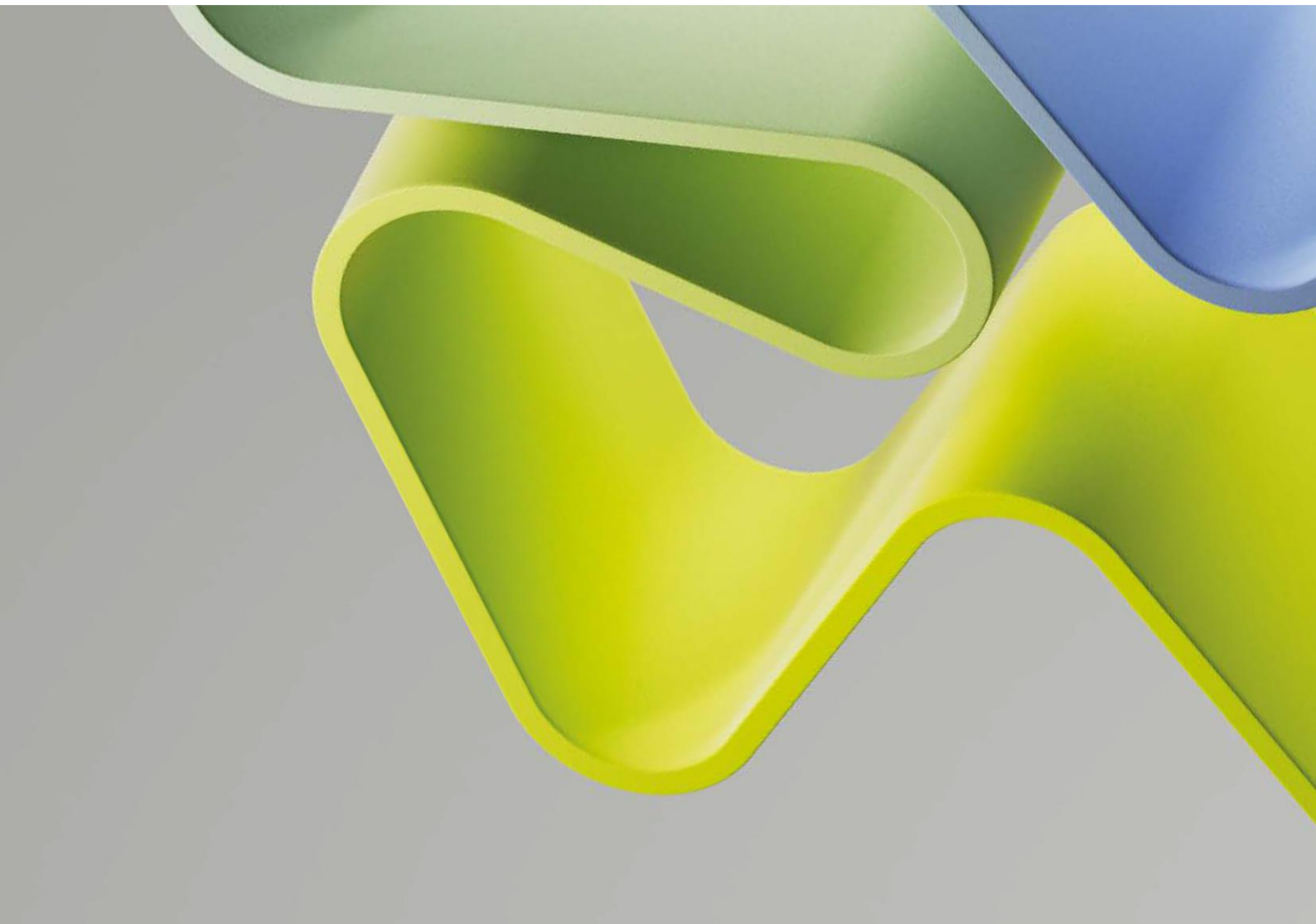
Evaluation Report for Administrative Unit

Administrative Unit: **Department of Microsystems (IMS)**

Institution: **University of South-Eastern Norway (USN)**

Evaluation Committee Higher Education Institutions 3

December 2024



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Statement from Evaluation Committee Higher Education Institutions 3

The members of this Evaluation Committee have evaluated the following administrative units at the higher education institutions/research institutes within Mathematics, ICT and Technology 2023-2024 and has submitted a report for each administrative units:

- Department of Industrial Technology, UiT The Arctic University of Norway
- Department of Electric Energy (IEL), Norwegian University of Science and Technology (NTNU)
- Department of Marine Technology (IMT), Norwegian University of Science and Technology (NTNU)
- Department of Mechanical and Industrial Engineering (MTP), Norwegian University of Science and Technology (NTNU)
- Faculty of Engineering and Natural Sciences (FIN) / Faculty of Technology, Environmental and Social Sciences (FTMS), from 1.1.2026, Western Norway University of Applied Sciences (HVL)
- Department of Mechanical, Electronic and Chemical Engineering, Oslo Metropolitan University (OsloMet)
- Faculty of Computer Science, Engineering and Economics (IIØ), Østfold University College (ØUC)
- Department of Electrical Engineering (IET), UiT The Arctic University of Norway
- Department of Technology and Safety (ITS), UiT The Arctic University of Norway
- Department of Electrical Engineering (IT) and Cybernetics (EIK), University of South-Eastern Norway (USN)
- USN School of Business, University of South-Eastern Norway (USN)
- Department of Microsystems (IMS), University of South-Eastern Norway (USN)

The conclusions and recommendations in this report are based on information from the administrative units (self-assessment), digital meetings with representatives from the administrative units, bibliometric analysis and personnel statistics from the Nordic Institute for Studies of Innovation, Research, and Education (NIFU) and Statistics Norway (SSB), and selected data from the National survey for academic staff in Norwegian higher education and the National student survey (NOKUT). The digital interviews took place in the autumn 2024.

The members of the Evaluation Committee are in collective agreement with the assessments, conclusions and recommendations presented in this report. None of the committee members has declared any conflict of interest.

The Evaluation Committee has consisted of the following members:

Professor Lina Sarro,
Delft University of Technology (Chair)

Professor Stefania Bruschi,
University of Padova

Professor Khaled Ahmed,
University of Strathclyde

Professor Andreas Müller,
Johannes Kepler University Linz

Professor Maria Teresa Correia de Barros,
University of Lisbon

Professor Kostas J. Spyrou,
National Technical University of Athens

Description of the Administrative Unit

Department of Microsystems (IMS)

University of South-Eastern Norway (USN)

The administrative unit

USN has been created in 2016 by merging regionally focused colleges across eight campuses in SE Norway, got university status in 2018 and is still in the process of building and strengthening research capacity. It is based at the Vestfold campus in Horten by the Oslo Fjord. IMS works in mechanics, micro- and nanotechnology, computer technology, biotechnology, electronics, and electrical- and automation engineering.

The unit has 11.8 (male) FTE professors, 16 (2.5 female) FTE associate professors, 9 (2) assistant professors, 2 lecturers, and 6.3 (1.2) FTE researchers. There are 18 (5.3) research fellows[1] and 4 (male) postdocs.

The research groups of the administrative unit

IMS comprises five research groups and one innovation centre, of which the first two shown have been submitted to EVALMIT:

- BioMEMS
- Materials and Micro-integration
- Micro- and Nanoelectromechanical Systems
- Autonomy
- Secure Distributed Systems
- USN Innovation centre

The unit’s work and strategies

USN’s overall strategy focuses on the societal challenges but is otherwise rather generic in terms of developing the capacity and quality of the university across all three missions. The unit’s strategy defines focus areas in which to increase external interaction and project development both regionally, nationally, and internationally by building upon the study programs, research groups, the Innovation Centre, and the Micro- and Nano systems Technology lab (MST-lab), part of the National Infrastructure Norwegian Micro- and Nanofabrication Facility (NorFab).

The unit’s work in its sector

The work of the unit aims to address societal challenges via the three traditional university missions, although with a particular regional focus. There is increasing focus on commercialisation and innovation, and the self-evaluation refers to three examples of company spin-off.

The future of the unit

From page 5 in the self-assessment: “The strategic goal for our research is to take and maintain a strong national and international lead within packaging technology for microsystems in close collaboration with industry and based on the NorFab national infrastructure. ”The strategy document defines that the department will “Develop research and education collaborations within USN’s strategic research areas in Energy, Climate and Environment, Future Health and Welfare Services, and Regional Value Creation”

Overall Assessment

The department of Microsystems (IMS) of the University of South-Eastern Norway (USN) offers research and education in several areas of engineering and technology, which are of great relevance to address important societal challenges and have great potential to support and increment national and international industrial activities.

The department is organised in 5 research groups, each corresponding to one of the identified priority research areas (BIOMEMS, Materials and Micro integration, Secure distributed systems, Autonomy, Materials and Micro integration and Micro-and Nano-mechanical systems) and an Innovation Centre. Only the first two groups have been assessed in the EVALMIT evaluation.

Very important to the execution of the research and education programmes of the AU, are several laboratories and the participation in the National Infrastructure Norwegian Micro-and Nanofabrication (NorFab). The availability of well-equipped and dedicated infrastructure is certainly a strength of the AU, making the various groups potentially interesting partners for international collaborations. This potential should be systematically exploited.

The Innovation Centre that has been set up has an important role in strengthening the department's relationships with national and international industry, as well as in the process of promoting technology-based sustainable value creation in the region.

The unit's research funding situation is good. RCN-funded projects provide the largest contribution. Diversification of funding sources should be targeted to ensure sustainability of the research activities and regular updating of the necessary infrastructure.

Research areas tackled within the unit are at different stages in their life cycles. Some, like the biomedical activities, have recently been started and are in an expansion phase; others, like the Microsystems packaging, need a dedicated strategy to maintain a strong international position.

The number of research publications produced is good, although there has been a decrease during the last years of the evaluation period. This could be linked to the pandemic, in which limitations access to the labs slowed down the research. In the coming period research output should be closely monitored to make sure the overall numbers are more in line with the potential and capability of the AU.

The mobility of staff is very low or non-existent, despite the availability of funding sources to support it. Gender balance is poor and requires attention.

The Terms of Reference for the administrative unit is attached to the report.

Recommendations

Based on the overall assessment of the Department of Microsystems, University of South-Eastern Norway, the Evaluation Committee recommends the following:

1. Strengthen the collaborations among the research groups in the department (and support/facilitate collaborations outside the department) to benefit from specific competences present in each group and create opportunities to address multidisciplinary scientific questions.
2. Although the amount of funding being obtained is good, diversification of funding sources should be targeted to ensure sustainability of the research activities and to

maintain or expand the necessary infrastructure. The unit should actively seek more EU- and industry funding, as well as funding through the Innovation Centre.
3. Identify actions and activities the Innovation Centre could undertake to facilitate more long-term collaboration with regional and national industry and to support the researchers towards increasing international industrial collaborations.
4. Monitor closely the numbers of research publications produced and reverse the declining trend of recent years.
5. Stimulate staff, especially young researchers and junior professors, to use a sabbatical or a short stay elsewhere to increase or strengthen their competences and to invest in building their own international networks. This is very important in order to gain visibility and create (more) international collaborations.
6. The gender balance in the research staff is poor. The unit should act to correct this, particularly by stimulating female participation in the education programmes, so as to increase the number of female potential candidates for future staff positions.

1. Strategy, Resources, and Organisation of Research

The department of Microsystems (IMS), University of South-Eastern Norway (USN) offers research and education in engineering and technology. It consists of 5 research groups directly linked to the Identified priority research areas: BIOMEMS, Materials and Micro integration, Secure distributed systems, Autonomy, Materials and Micro integration and Micro-and Nano-mechanical systems and an Innovation Centre. It participates in the Micro and Nano-fabrication facility (NorFab). Only two research groups (BIOMEMS, Materials and Micro integration) within the unit have been part of the EVALMIT evaluation.

The department contributes to several BSc and MSc programmes and focuses on innovation through the Innovation Centre, state-of-the-art lab facilities and in close collaboration with industry. It also has a strong role in the national Micro and Nano-fabrication facility (NorFab).

The unit has a good funding situation and well-equipped facilities to carry out the research work. An increase in overall funding and diversification of funding sources should be targeted to ensure sustainability of the research activities and periodical updating of the necessary infrastructure.

Several collaborations with regional and national industry are in place and international collaborations, mostly through EU projects, are present.

Research areas tackled within the unit are at different stages in their life cycles. Some are expanding; others need consolidation to maintain their international position.

1.1 Research Strategy

The department strategy is directly linked to the USN strategy for the coming period, aiming at being regionally based and internationally recognised.

The main strategic goal for IMS research is to take and maintain a strong national and international lead within packaging technology for microsystems. Essential elements to implement this strategy are close collaboration with industry and with a strong participation in the NorFab national infrastructure, in which their Micro-and Nano systems Technology lab constitutes one of the four nodes.

Recently, dedicated laboratories have been established. to support research in BIOMEMS and medical applications of micro and nanotechnology. The activities in the biomedical area, could benefit more from the materials and technology expertise present in other groups of

the department, and by intensifying their interaction with medical hospitals and biomedical companies. They have good potential to grow, and, with the right strategy, to improve the international visibility and positioning of the department.

Another important aspect of the research strategy of the department is to increase its impact through the education programmes offered at all three levels, BSc, MSc and PhDs. These address the strong industrial demand for people educated in the areas addressed by the department.

Recommendations to the administrative unit.

- To support the successful implementation of the research strategy, the unit should facilitate and strengthen the collaborations among the research groups in the department. This will more effectively exploit their expertise, covering materials, design skills, integration technologies and systems aspects.
- Support and facilitate interaction and collaborations of department staff members with other departments and organisation within the university. This will create opportunities to address multidisciplinary scientific questions, increase impact of the research work and provide good development and competence growth of the staff members.
- Make sure the department truly benefits from the presence of the Innovation Centre, to maximise impact of the research and visibility of the researchers.

1.2 Organisation of Research

The unit's research activity is organised in five research groups plus the USN Innovation Centre. Each research group has a leader, who is expected to prioritise initiatives, initiate research and manage the group budget. The budget is based on the number of participants, number of student project supervisions (BSc, MSc and PhD), publication, and funded project activity, thus encouraging better performance to get more funding. The head of the department is responsible for allocating research time to members of staff.

The Innovation Centre, established in 2020 to contribute to increased value creation and business activities, forms a link between research groups and companies to facilitate commercialisation of research results. However, it is not clear whether the Innovation Centre leader has the same responsibilities as the other group leaders, and whether they report directly to the dean or to the head of department.

The unit has well-equipped laboratories, allowing the research groups to validate their ideas and concepts directly, thus strengthening the value of and interest in their research work and ideas.

The IMS offers several courses in various MSc programmes and hosts several PhDs' students, researchers and post-doctoral fellows.

A research leadership programme is offered by the human resources department, while the Research and Education Unit offers a PhD supervisors programme. Most of these programmes are offered by the central USN organisation, not specifically at the IMS department level.

The IMS department has no policy for sabbaticals, but staff can apply for mobility grants for shorter periods (up to several months).

Recommendations to the administrative unit.

- Make sure all staff members are aware of the role and potential of the Innovation Centre and stimulate the researchers to take advantage of the potential support the Centre can offer them in increasing their interaction with the industry and the overall impact of their research.
- Although in line with national policies, the limited amount of time Assistant professors are allocated for research is an obstacle to increasing their competences and networks. This is especially important where they need to operate in an international context. Clearer distinctions and career paths should be established for teaching-oriented staff versus research-oriented staff. Both types should be equally valued and encouraged to grow and strengthen their competences.
- The mobility of staff members seems to be very low, despite the availability of funding sources to support it. It is important to encourage staff members to get experience outside their institution and also to increase the overall competence and potential impact of the department.

1.3 Research Funding

The overall funding situation is good. RCN projects form the largest contribution, but in recent years, revenues from EU and other external funding sources have been increasing and are expected to exceed the RCN funding in the future. This is a positive development which requires management if it is to continue. The department is already seeking more EU- and industry funding to compensate for an expected reduction in basic funding linked to the declining number of (foreign) engineering students.

It is less clear if the department provides adequate administrative support to research staff for proposals preparation and project execution. The Innovation Centre is expected gradually to bring more funding from industry.

The large costs related to the maintenance and upgrading of the technology laboratories is also a point of concern. A well-thought-out strategy is required for this.

Recommendations to the administrative unit.

- Diversify funding sources further to ensure sustainability of the research activities and maintenance and upgrading of the laboratory infrastructure.
- One of the weaknesses identified is the lack of coordinated industry relations. The Innovation Centre could play an important role in addressing this point and support researchers in establishing more long-term collaborations with regional and national industry, as well as increasing their visibility and offering their competences in the international academic and industrial arena.
- A good strategy should be worked out to ensure regular funding for the maintenance and consolidation of the research infrastructure.

1.4 Research Infrastructures

The department is a partner in two national infrastructures. The first is the NorLHC “Enabling LHC Physics at Extreme Collision Rates”, for which the department develops hardware for the high-speed detection system for the Large Hadron Collider upgrade. The second is the NorFab national infrastructure for Micro- and Nanofabrication, for which the department has been a partner since the beginning. The department has a key role in packaging and bonding and can offer services to both academic and industry research. Students and researchers benefit from the open access to the infrastructure. Moreover, the department is

a member of EuroNanoLab ESFRI infrastructure through the NorFab national infrastructure, with a large number of academic nanofabrication centres across 14 countries in Europe.

The availability of these infrastructures is of great relevance for conducting the groups research, providing them with a significant advantage for research in several areas.

Uploaded data sets are curated by USN's data stewards, who make sure that the FAIR principles are being met to the highest degree possible.

Recommendations to administrative unit.

- The research done in the unit is critically dependent on having access to good infrastructure, with direct involvement to from the researchers to ensure high standards and optimal operation of the facilities. Therefore, participation in and support of infrastructure is an important task for the department.
- In the strategy planning for the coming years, include a plan on how to participate, strengthen and support the infrastructures, and where appropriate assume leading positions in them.

1.5 National and international collaboration

Several national and international collaborations are in place, which enable the creation of research collaborations. These include visiting scholars' opportunities (Erasmus Mundus) and strategic memberships (EPoSS).

Some collaborations are more structural, like the collaboration through the SFI-CIUS aiming at being a world leading centre for research and innovation in ultrasound imaging or the collaborations with other universities and Sintef through NorFab. Other collaborations, especially internationally, are linked to IMS' participation in projects. The unit should plan its approach to use these collaborative projects to build a more long-term cooperation with some of the (industrial) partners.

Recommendations to administrative unit.

- Stimulate staff members to enlarge and strengthen their network, so to increase collaborations in national and international programmes or projects.
- Establish a strategy on how to establish long-term collaborative activities with academic and industrial project partners based on the experience acquired in the current research projects.

1.6 Research staff

The gender balance in the research staff is poor, with no female employees present at many levels. While female presence in engineering education and research environment is limited in many places, the unit should act to address the gender imbalance. During the interview, members of the unit described changes in the recruitment process, aiming at increasing the opportunities for female researchers. This seems to be a fair process. However, dedicated actions or plans should be worked out to promote engineering sciences to the public, and in particular to high school students. Extra support should also be provided to young female researchers who often need to combine research and teaching tasks with family responsibilities at the early stage of their career.

The limited time assistant professors are allocated for research raises some questions. More opportunities for promotion to Associate professors should be provided. These often require

more time to be dedicated to research. Also, for good career advancement, mobility (sabbatical or short stays) should be encouraged and facilitated.

Recommendations to the administrative unit

- More dedicated actions or plans to counteract gender imbalance should be pursued, especially stimulating female participation in the education programmes to increase the number of potential candidates for future staff positions.
- Stimulate mobility among staff at all levels.

1.7 Open Science

The Department of Microsystems adheres to the USN's open science policies. The guidelines for the management of research data (following the FAIR principles) and Open Access policy provided by the university are endorsed. A full-text copy of all academic articles is made available through the university's institutional repository.

The university also participates in national agreements with major publishers, offering researchers access to high-quality journals with open access options. Additionally, USN has a publishing fund to cover article processing charges for journals not included in these agreements.

2. Research production, quality and integrity

The research of the department of Microsystems (IMS) covers several engineering and technology areas, and focuses on the identified priority research areas, namely BIOMEMS, Materials and Micro integration, Secure distributed systems, Autonomy, Materials and Micro integration and Micro-and Nano-mechanical systems. Only the groups addressing the first two topics have been part of the EVALMIT evaluation.

Due to the multidisciplinary nature of the work carried out, publications are spread over a variety of international scientific journals, depending on the nature of the research results, some being more fundamental, some being more applied.

The IMS department does not have a specific policy on research integrity but follows the USN's policy. Guidelines are provided, with clear steps and multiple levels of evaluation and involvement, including head of department, vice-rector of research and in case appropriate an integrity committee and ethics advisor are available.

2.1 Research quality and integrity

NIFU bibliometric data provided to the evaluation committee show a slight decrease in the number of unit publications recently. The number of IMS author shares in most published academic fields shows some fluctuation, though this varies among fields. During the interview a possible explanation was given. The regulations related to Covid-19 pandemic implemented by the university have limited access to the labs and thus slowed down research progress and consequently publications. However, this should be an incidental factor and in the coming years an increase in output should be achieved. Close monitoring of the publications produced is therefore strongly advised.

Research group Biological Micro Electronic Mechanical Systems (BioMems) overall assessment

The MIS group demonstrates several strengths, including its focus on important and relevant research topics, its success in attracting external funding, and its multidisciplinary approach.

However, the group faces challenges in creating a sense of community due to its dispersed nature across campuses and departments. Additionally, the complicated funding structure and low ambition level in publishing research results are areas of weakness. Despite these challenges, the MIS research group has the potential to achieve its goals, particularly in contributing to societal impact through applied research. With a concerted effort to foster collaboration among members and streamline funding processes, the group can enhance its performance and make a more significant contribution to both national and international research environments. The group's multidisciplinary approach and focus on practical research topics does position it well to engage with global partners and address pressing challenges on a broader scale. By leveraging its strengths and addressing its weaknesses, the MIS research group can foster its international presence and establish itself as a leader in applied research within the field of management information systems.

Research group Materials and Micro-integration (matMicro) overall assessment

The research lines pursued by the matMicro group, although they have some common disciplinary aspects, are rather diverse. This on the one hand offers a potential to increase collaborations and penetrate different applications areas, but on the other hand might fragment resources and make it more difficult to reach an international leading position. The publications listed illustrate the different areas of research. All papers are published in international journals relevant to the field, although citations are higher for the energy/environment related work than for the other ones, which may be due to the characteristics of the two research fields.

There is a good degree of interdisciplinary collaborations both with academia and industry, and there is potential to intensify these collaborations and to generate more projects and increase international visibility. The mat Micro group, with its expertise in materials science and integration and the good infrastructure available, is in a good position to significantly contribute to the USN strategic research areas, especially Energy, Climate and Environment, Health and Welfare.

3. Diversity and equality

The department does not have a specific policy with respect to diversity and equality, but follows the USN Action plan for Equality, Diversity and Inclusion. This is a quite detailed plan, covering all different functions within the organisation. However, the self-evaluation report does not say how, specifically, it implements the plan.

4. Relevance to institutional and sectoral purposes

The department’s research priorities and collaboration with regional industry can contribute to the realisation of the USN vision to be regionally based and internationally recognised. The research carried out in the department is reflected in the educational programmes offered, and in the access for students and researchers from industry to advanced state-of-the-art equipment, thus increasing societal relevance and impact. The Innovation Centre offers expertise and services in connection with advanced laboratories that would otherwise be out of reach for small and medium-size businesses.

The department’s educational offer is structured in a way to make the education in engineering programmes accessible to more people. The department contributes to PhD level education, providing lecturing courses where research-based knowledge is an important element as well supervising theses. It actively contributes to the national research schools for PhDs and post-docs in the field of micro- and nanotechnology such as

Norwegian Nano-network, Research School for Training the Next Generation of Micro- and Nanotechnology Researchers in Norway (TNNN). Masters projects are often directly coupled to ongoing research projects or project ideas from companies, thus providing the student with a relevant and realistic research or development project.

5. Relevance to society

The IMS department works on highly relevant societal themes, like health, climate, environment and energy, through their research and higher education activities. The combination of the research groups and the Innovation Centre, with the advanced research facilities and dedicated laboratories available, enables the department to develop and test new materials, sensors, devices, packaging schemes, among others, and to play a relevant role in the recent actions launched at European level to reinforce the European position in the strategically relevant area of semiconductor technology.

Three impact cases are presented, which illustrate well the potential societal impact of the department's research.

5.1 Impact cases

Comments on impact case 1: CIUS – Centre for Innovative Ultrasound Solutions

This impact case relates to the establishment of a Centre for Innovative Ultrasound Solutions, that helps the department to coordinate and distribute tasks within the Norwegian ultrasound research community. This Centre has established excellent communication channels between the department and other universities. Thorough CIUS, the department has been able to better and more systematically honour one of its tasks, namely to support industry with knowledge and well-prepared graduates. In fact, 8 PhD candidates and several MSc-candidates are employed in R&D positions in the Norwegian ultrasound industry. The lab has also delivered prototype transducers to startup companies.

This is an example of a long-term impact the related research activities of the department can have on the related industry.

Comments on impact case 2: Arm neuroprosthesis equipped with artificial skin and sensorial feedback (ARMIN)

This impact case presents a collaboration project with partners in Romania and in Norway to work on an arm neuroprosthesis equipped with artificial skin and sensor feedback. The partners involved are from academia, institutes, medical research, hospitals and a manufacturing company. Several publications illustrate key research results. The encouraging results of the project have already generated a follow-up KDT-JU project.

This is a topic with great social relevance and thus with a potential high impact, especially if follow-up projects are created, moving towards the prototype or demonstrator stage.

Comments on impact case 3: Super Capacitors

This impact case relates to a startup, nanoCaps, which commercialises a technology for electrodes for supercapacitors with unprecedented higher energy and power density. The technology is based upon interconnected and cross-linked carbon nanotubes deposited on flexible or rigid substrates to create electrodes to be incorporated into supercapacitor devices. The applications are numerous and high-volume markets for supercapacitors are estimated. This is a good example of how research activities originated within the department, can translate into significant industrial activity.

Methods and limitations

Methods and limitations

Methods

The evaluation is based on documentary evidence and online interviews with the representatives of Administrative Unit.

The documentary inputs to the evaluation were:

- Evaluation Protocol that guided the process
- Terms of Reference
- Administrative Unit’s self-assessment report
- Administrative Unit’s impact cases
- Administrative Unit’s research groups evaluation reports
- Bibliometric data
- Personnel and funding data
- Data from Norwegian student and teacher surveys (only for HEI’s)

After the documentary review, the Committee held a meeting and discussed an initial assessment against the assessment criteria and defined questions for the interview with the Administrative Unit. The Committee shared the interview questions with the Administrative Unit at least two weeks before the interview.

Following the documentary review, the Committee interviewed the Administrative Unit in an hour-long virtual meeting to fact-check the Committee’s understanding and refine perceptions. The Administrative Unit presented answers to the Committee's questions and addressed other follow-up questions.

After the online interview, the Committee attended the final meeting to review the initial assessment in light of the interview and make any final adjustments.

A one-page summary of the Administrative Unit was developed based on the information from the self-assessment, the research group’s evaluation reports, and the interview. The Administrative Unit had the opportunity to fact-check this summary. The Administrative Unit approved the summary after correcting some historical information and referring to its strategy in the section on ‘The future of the unit’.

Limitations

The Committee judged that the Administrative Unit self-assessment report was insufficient to assess all evaluation criteria fully. However, the interview with the Administrative Unit filled gaps in the Committee's understanding, and the information was sufficient to complete the evaluation.

List of administrative unit's research groups

Institution	Administrative Unit	Research Groups
University of South-Eastern Norway (USN)	Department of Microsystems (IMS)	Biological Micro Electronic Mechanical Systems (BioMems)
		Materials and Micro-integration (matMicro)

Terms of Reference (ToR) for the administrative unit

The board of Faculty of Technology, Natural Sciences and Maritime Sciences mandates the evaluation committee appointed by the Research Council of Norway (RCN) to assess the Department of Microsystems based on the following Terms of Reference.

Assessment

You are asked to assess the organisation, quality and diversity of research conducted by the Department of Microsystems as well as its relevance to institutional and sectoral purposes, and to society at large. You should do so by judging the unit's performance based on the following five assessment criteria (a. to e.). Be sure to take current international trends and developments in science and society into account in your analysis.

a) Strategy, resources and organisation

b) Research production, quality and integrity

c) Diversity and equality

d) Relevance to institutional and sectoral purposes

e) Relevance to society

For a description of these criteria, see Chapter 2 of the mathematics, ICT and technology evaluation protocol. Please provide a written assessment for each of the five criteria. Please also provide recommendations for improvement.

In addition, we would like your report to provide a qualitative assessment the Department of Microsystems as a whole in relation to its strategic targets. The committee assesses the strategy that the administrative unit intends to pursue in the years ahead and the extent to which it will be capable of meeting its targets for research and society during this period based on available resources and competence. The committee is also invited to make recommendations concerning these two subjects.

Documentation

The necessary documentation will be made available by the mathematics, ICT and technology secretariat at Technopolis Group.

The documents will include the following:

- a report on research personnel and publications within mathematics, ICT and technology commissioned by RCN
- a self-assessment based on a template provided by the mathematics, ICT and technology secretariat

Interviews with representatives from the evaluated units

Interviews with the Department of Microsystems will be organised by the evaluation secretariat. Such interviews can be organised as a site visit, in another specified location in Norway or as a video conference.

Statement on impartiality and confidence

The assessment should be carried out in accordance with the *Regulations on Impartiality and Confidence in the Research Council of Norway*. A statement on the impartiality of the committee members has been recorded by the RCN as a part of the appointment process. The impartiality and confidence of committee and panel members should be confirmed when evaluation data from the Department of Microsystems are made available to the committee and the panels, and before any assessments are made based on these data. The RCN should be notified if questions concerning impartiality and confidence are raised by committee members during the evaluation process.

Assessment report

We ask you to report your findings in an assessment report drawn up in accordance with a format specified by the mathematics, ICT and technology secretariat. The committee may suggest adjustments to this format at its first meeting. A draft report should be sent to the Department of Microsystems. The Department of Microsystems should be allowed to check the report for factual inaccuracies; if such inaccuracies are found, they should be reported to the mathematics, ICT and technology secretariat within the deadline given by the secretariat. After the committee has made the amendments judged necessary, a corrected version of the assessment report should be sent to the board of Faculty of Technology, Natural Sciences and Maritime Sciences and the RCN no later than two weeks after all feedback on inaccuracies has been received from the Department of Microsystems.

Appendices

1. Description of the evaluation of EVALMIT
2. Invitation letter to the administrative unit including address list
3. Evaluation protocol
4. Template of self-assessment for administrative unit (short-version)

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