

FACULTY OF INFORMATION TECHNOLOGY AND ELECTRICAL ENGINEERING

Norwegian University of Science and Technology – NTNU

Approved by the Board of the Faculty on 9 March 2018



How to read the document

The strategy comprises three parts:

Part 1 contains the vision, values, societal mission, challenges and overall goals for the IE Faculty.

Part 2 deals with the IE Faculty's core responsibilities, i.e. education and the learning environment, research and researcher training, innovation activities, and dissemination and communication.

Part 3 covers priority areas across our core responsibilities. They include internationalization, interdisciplinary collaboration, career and skills, work environment and student welfare, campus development, the IE Faculty's development capability, and the capacity, quality and efficiency of administrative services and systems.

The document concludes with a section on strategy realization. It describes how the main strategy will be realized through the priority given to focus areas, academic priority areas and annual plans.

Parts 2 and 3 make up the strategy. They describe the situation the IE Faculty wants to be in at the end of the strategy period (Goals 2025, specified in concrete terms for each area of activity). Development goals are then specified for the particular areas the Faculty is to develop during this period.

The strategy and the relevant development goals will help the IE Faculty and NTNU to realize the overall goals presented in the section 'Goals – IE 2025' and 'Goals – NTNU 2025' in NTNU's 'Knowledge for a better world' strategy.

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01

Vision, Values, Societal Mission, Challenges and Goals	4
Our Vision	6
Our Values	8
The IE Faculty’s societal mission	10
Challenges 2018	12
Goals IE 2025	14

02

Core Tasks	16
Education and Learning Environment	18
Research and Researcher Training	20
Innovation and Entrepreneurial Activities	22
Dissemination and Communication Activities	24

03

Interdisciplinary Priority Areas	26
Internationalization	28
Interdisciplinary Collaboration	28
Career and Skills	28
Work Environment and Student Welfare	28
Campus Development	28
Capacity for Development	28

OUR VISION

OUR VALUES

THE IE FACULTY'S SOCIETAL MISSION

CHALLENGES 2018

GOALS IE 2025

01



OUR VISION: WE WILL MAKE THE FUTURE SMART, SAFE AND SUSTAINABLE

The Faculty of Information Technology and Electrical Engineering is 'the Faculty of the Future'. We help to generate knowledge for a better world by enabling a smart, safe and sustainable future for people, organizations and society. This will be achieved through our core activities: research, research-based education, innovation and dissemination.

The Faculty's vision and strategies will contribute to high-quality research and education, and ethical knowledge development. They constitute the basis of sustainable restructuring, competitiveness, welfare and life quality. They will make a significant contribution to ensuring that the adopted national and international goals for research and education policy are achieved, that Norway continues to be a good, safe place to live and that the UN Sustainable Development Goals are met.



OUR VALUES

The IE Faculty endorses NTNU's overall values: creative, critical, constructive and respectful.





CREATIVE

Academic freedom is the basis for activities at IE Faculty. We thrive on challenging issues and responsibilities, and seek innovative solutions in all of our academic activities. The IE Faculty supports the development of disciplines, people and cultures, which helps to generate creativity. We value and encourage innovation among students and staff as well as innovative teaching, research and dissemination activities.

CRITICAL

Our activities build on fundamental democratic values and we represent an unprejudiced and independent voice. The hallmarks of our academic culture are debate, critical reflection, factually based knowledge, impartiality and ethical integrity. We challenge conventional ideas and solutions.

CONSTRUCTIVE

We engage in an open and solution-oriented dialogue with society and emphasize both external and internal collaboration. We take social responsibility and influence, advise and develop others and our environment through dialogue and the dissemination of knowledge. The IE Faculty emphasizes the need for co-determination and active involvement by staff and students.

RESPECTFUL

Every member of staff and all of our students has the responsibility to contribute to a work and study environment characterized by respect and consideration for others. We facilitate personal growth and professional development. We contribute to diversity and equal opportunities in society and in our own activities, and we promote equality and tolerance. At the IE Faculty we respect different attitudes and opinions.

THE IE FACULTY'S **SOCIETAL MISSION**

Our mission covers both society's expectations of us and the societal issues that we wish to address. We have a general mission which is similar to other faculties at NTNU, and a specific mission, which makes us unique.



Photo: Geir Mogen

Our overall mission

The IE Faculty has the responsibility to generate new perspectives for long-term basic research and to educate outstanding graduates. We offer research-based education at all levels. We develop and disseminate knowledge, and maintain expertise in all our disciplines. The IE Faculty actively contributes to innovation in society and the labour market.

One of our responsibilities is to participate in knowledge-based public debate. We use our knowledge to the benefit of society. We are committed to solving global challenges. Our activities promote positive social and human development.

Our specific mission

The IE Faculty is Norway's core for research and higher education in ICT, mathematical and electrical engineering disciplines. The Faculty is the national source of knowledge and expertise that makes digitalization, automation and wider use of electrical energy safe, sustainable and ethical. With our partners, we work to set the agenda for technological and scientific development, both nationally and internationally. We contribute by producing generic knowledge and methodology development in our fields, to the general development of technology and basic research and research excellence that strengthen NTNU's and Norway's international reputation.

We achieve this by

- Having leading-edge ambitions and systematically developing excellence in all our activities
- Cooperating with other disciplines across the university and with society
- Using the UN's Sustainable Development Goals as a guide to helping to solve the challenges facing society

The IE Faculty's disciplines constitute a broad, enabling knowledge base that contributes to solving the greatest challenges facing society. In thematic terms, the IE Faculty is particularly well equipped to contribute to

- Digitalization and automation of industry ('Industry 4.0') and the public sector
- Well-functioning and secure infrastructure for human and machine-oriented communication and interaction
- Wider use of electrical energy
- Development of the energy sector of the future (renewables, energy rationalization and digitalization)
- Sustainable restructuring, value creation and welfare ('the green shift'), and new technology that addresses environmental and climate challenges
- Improving education, from primary school to continuing and further education
- Technological, commercial and content development in finance, media, art and culture

The IE Faculty is to actively initiate and participate in national and international research activities and interdisciplinary partnerships that seek to find solutions to the above-mentioned challenges.

CHALLENGES 2018

In its main strategy, NTNU has identified three trends that will be important for the university in the strategy period up until 2025: more intense competition, strengthened interaction with society and willingness to change. These trends will also be important to the IE Faculty. The Faculty also faces the challenge of having the capacity to respond to the widespread and rapidly growing demand for expertise, candidates, continuing and further education, innovation and the development of new knowledge in the Faculty's disciplines.



Intensified competition

The IE Faculty will experience intensified future competition both with respect to recruiting the best staff and students and securing research funding. The competition will become more international. To ensure that the best applicants choose NTNU and the IE Faculty, our study and learning environment must be recognized for their high quality. We must ensure that our students succeed in the labour market, maintain student throughput rates and prevent dropout. More research will be funded through external sources and international cooperation. The IE Faculty must be capable of succeeding in both national and international competition. The competition for the best staff will increase, which will place new requirements on the Faculty as an employer.

Strengthened interaction with society

Society expects the IE Faculty to cooperate in and contribute to finding the solutions of the future. This will enable us to increase value creation and find valid solutions to global challenges. Major technological changes lead to challenges, but also present new opportunities and improve competitiveness. Both NTNU and the IE Faculty must be at the leading edge of these developments. A culture of cooperation and innovation will become a greater part of all our academic environments.

Willingness to change

We must develop and improve our organization in order to succeed in creating a leading research and learning environment, and be an attractive partner for others. This requires processes that enable us to take advantage of our overall resources by defining clear priorities and making greater use of new technology. The increased pace of change in the world means that we also have to change more quickly than before. We must prioritize our resources so that we can constantly achieve improvements in quality.

Capacity to meet the challenges and expectations of society

The Faculty's disciplines are increasingly required. In order to provide the education, research and innovation that is demanded to meet the growing need for new expertise and lifelong learning in the labour market, our capacity must be increased accordingly. We must be able to recruit skilled experts at all levels in the organization, and establish a suitable balance between the different staff categories.

GOALS **IE 2025**

IE 2025 is the overall picture of where the IE Faculty wants to be at the end of the strategy period. The goals sum up our ambitions in the strategy.



The overall goals in 'NTNU 2025' in its 'Knowledge for a better world' strategy also apply to the IE Faculty. The 'IE 2025' goals specify the areas that are particularly relevant to our Faculty. The subsequent development goals for each area of activity will support the 'IE 2025' goals.

In 2025, the IE Faculty is to

- Be recognized as one of the leading and most attractive university communities in the Nordic countries in our disciplinary areas
- Have a world-leading research or education environment in one or more core areas in all our departments, and be internationally competitive in all our disciplines
- Attract and retain the best students and staff to Norway in our disciplines
- Be the leading provider in Norway of continuing and further education in our disciplines
- Have laboratories at an international level for our experimental activities, and an advanced physical infrastructure for all of our activities
- Have excellent administrative and technical support for our core activities, and lead the field in the use of new technology suited for our administrative and organizational processes
- Be the preferred Norwegian academic partner in our disciplines for international and Norwegian industry, the public and private sectors, EU consortia and international academia
- Be a respected, active and ethically aware supplier of knowledge-based advice and recommendations on policy and strategy to the authorities, decision-makers and governing bodies
- Be a leading national contributor to entrepreneurship and innovation in our disciplines
- Be positive to promote collaboration in research and education, exchange experience and share best practice across the Faculty's entities, disciplines and campuses
- Have a high level of staff satisfaction in all entities, and a good and safe work environment for all staff
- Have the most satisfied students and the best learning environment in our disciplines in Norway

CORE TASKS

EDUCATION AND LEARNING ENVIRONMENT

RESEARCH AND RESEARCHER TRAINING

INNOVATION AND ENTREPRENEURIAL ACTIVITIES

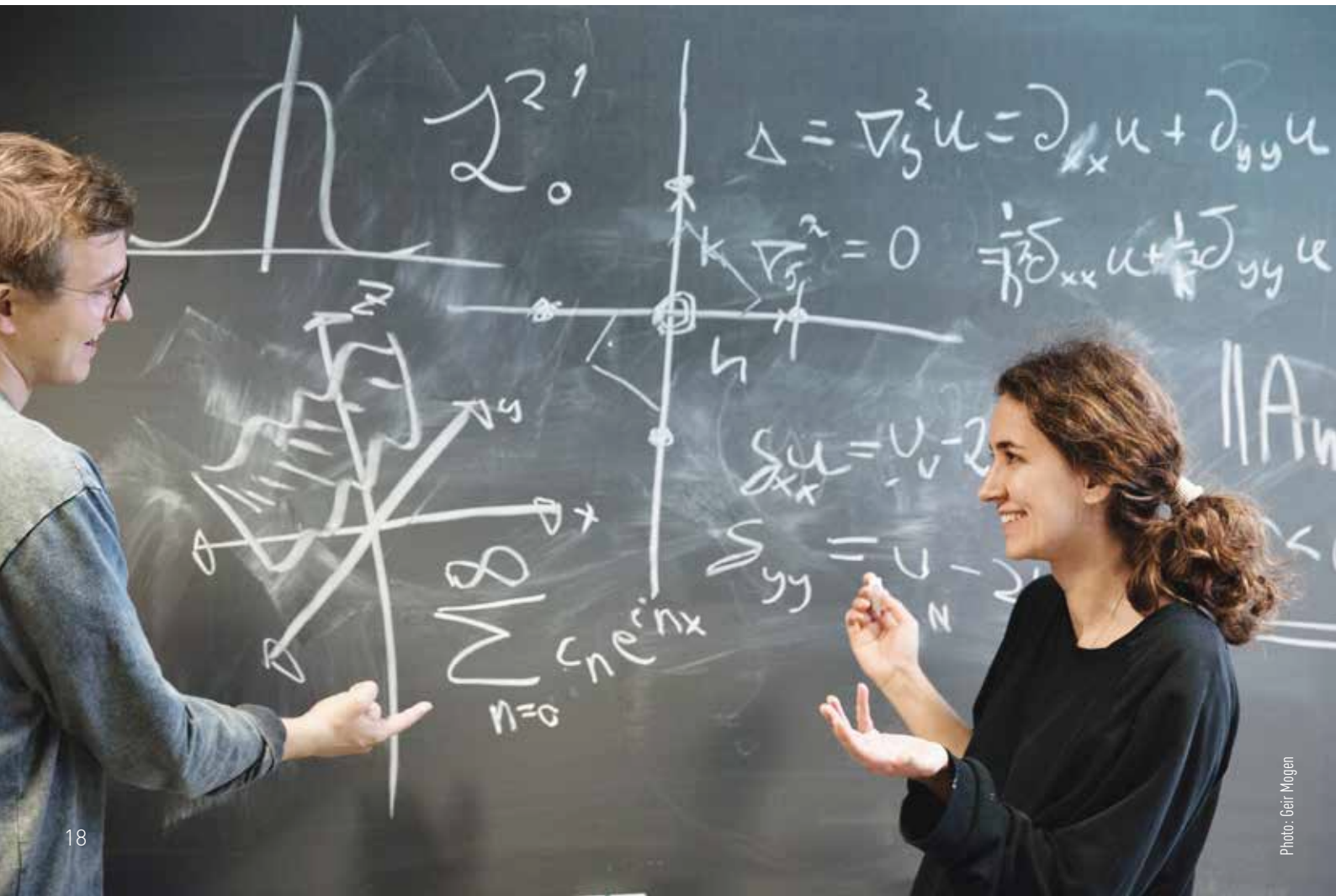
DISSEMINATION AND COMMUNICATION ACTIVITIES

02





EDUCATION AND LEARNING ENVIRONMENT



DEVELOPMENT GOALS

Targeted measures are to ensure that the IE Faculty

links all our programmes to active, robust academic environments that produce high-quality research and education

Emphasizes both research and educational expertise in connection with recruitment and development of academic staff

Develops excellent learning environments, innovative learning arenas and efficient educational tools that teach students to be responsible and obtain the greatest possible learning outcome

Facilitates digital assessment processes, and develops varied forms of assessment that are adapted to learning activities and the expected learning outcome

Contributes to the necessary digitalization and renewal of all the study programmes at NTNU

Increases strategic educational collaboration nationally and internationally, and strengthens interaction with all relevant parties in society to further develop the quality and relevance of our programmes

Develops leading-edge continuing and further education programmes that meet Norway's needs for lifelong learning and knowledge-based restructuring

Increases the proportion of exchange students by strengthening partnership agreements with other universities, and informing students at an early stage about the opportunities for exchanges

Our study programmes are highly relevant to society now and in the future, and will provide both specialist expertise and a sound basis for lifelong learning and interdisciplinary collaboration. The quality of our education leads the field in Norway and is internationally competitive.

The study programmes have a high rate of student satisfaction, a high throughput rate and few dropouts. Our students benefit from periods of valuable international exchange during their studies, and the IE Faculty is an attractive option for foreign exchange students.

We recruit capable and motivated students with relevant backgrounds, both nationally and internationally. We have the most attractive study programmes in our disciplines in Norway. All of our study programmes have a good gender balance.

Our candidates are the most sought-after, recognized, independent and innovative in Norway in the Faculty's disciplinary areas. The candidates are academically well-qualified and possess the right values for developing further knowledge during their careers. They are competitive on the international labour market.

We contribute to other faculties' study programmes with an extensive portfolio of high-quality, relevant basic courses. The Natural Science with Teacher Education programme educates excellent science teachers who will improve the quality of school education, and on the longer term will contribute to better recruitment to higher education science and technology programmes. Our introductory courses also play a key role in boosting recruitment nationally.

Our further and continuing education programmes are key factors in increasing expertise and restructuring in the labour market, and disseminate the results of our research to the public and private sectors.

Our education focuses on development and improvement, and research-based teaching forms the basis for our educational activities. Our teaching and assessment methods and learning arenas are relevant, varied and innovative. We employ modern teaching technologies and are internationally active in knowledge development to improve our programmes.

RESEARCH AND RESEARCHER TRAINING



DEVELOPMENT GOALS

Targeted measures ensure that the IE Faculty

Increases the scope of our research activities, and encourages all research staff to actively publish their work in high-quality publication channels

Strengthens our international research network through more researcher exchanges and participation in important international arenas

Increases our participation in and the amount of funding secured through quality-based research competitions, particularly funding for leading international research and Centres of Excellence

Makes clear priorities that develop the Faculty into an internationally leading research group in numerous strategically important disciplines

Strengthens the cooperation between our academic environments with industry and the public sector through strategic recruitment, further development of cooperation arenas and a joint focus on identifying important challenges and technology gaps

Secures good academic leadership and administrative support for all phases of the Faculty's research, with particular emphasis on strategic academic management, project acquisition and implementation

Further develops the PhD programme in line with the EU principles on 'Innovative Doctoral Training'

Strengthens didactic research expertise and encourages research on our own teaching

Promotes ethical reflection and integrity in our research and in the application of research

The IE Faculty's research is of high international quality. We are at the leading edge of research and have sound international networks. Our academic environments are robust, well managed and have a clear research profile for education and innovation. The Faculty has internationally leading research communities in strategically important areas, and initiates the development of existing and new research areas. Our academic environments are attractive partners for institutions in Norway and abroad.

Our research exploits national advantages, strengthens national priority areas and meets global societal challenges. We are a clear initiator of and partner in interdisciplinary collaboration. The Faculty enjoys strategic collaboration with SINTEF.

The Faculty complies with ethical guidelines in order to produce responsible research and innovation. Our research is published in open, high-quality channels. Research data, methods and software are generally openly available. Our data processing systems work in accordance with established guidelines.

Our external funding increases our capacity and networks, and enhances the relevance and quality of research. All of the Faculty's academic environments assert themselves in the national and international competition for research funding. There is a good balance between basic and innovation-oriented research in our portfolio, and the Faculty has a well-functioning support system for research projects, from acquisition to conclusion. The Faculty has a modern and professionally-run research infrastructure that is internationally competitive.

Our research helps to further develop the quality of education through the development of study programmes, the course portfolio and teaching methods, and through students actively participating in research.

The Faculty offers relevant PhD programmes of excellent quality. They provide an attractive career path both nationally and internationally. Our PhD candidates are highly esteemed in academia, industry and the public sector.

■ INNOVATION AND ENTREPRENEURIAL ACTIVITIES



DEVELOPMENT GOALS

Targeted measures are to ensure that the IE Faculty

Increases our innovation activities based on the ideas from our academic staff, PhD projects and students, and strengthens our expertise and related support systems

Integrates innovative competence as a central learning outcome in the IE Faculty's study programmes

Promotes open innovation through a greater focus on open access, open data, open software, living labs and cooperation with industry and the public sector

Increases and further develops our cooperation with important national and international parties and networks that promote innovation

Exploits our proximity to regional industry and clusters of expertise on all of NTNU's campuses as a means of creating new activity and added value for Norwegian industry

Provides society with expertise and knowledge that develops new enterprises and industry in Norway

The IE Faculty is the leading contributor in the Norwegian university sector to internationally successful innovation and entrepreneurship based on academic research in ICT, mathematics and electrical engineering disciplines, the ideas of our staff, students and cooperation with other parties.

The IE Faculty makes a significant contribution to increasing innovation in ICT and digitalization for Norwegian industry and the public sector that enable the latter to exploit their national advantages and resources.

The Faculty contributes to innovation by producing candidates, research partnerships with industry, the public sector and international partners, start-ups and entrepreneurship, and open and user-driven innovation. We have a deep-rooted culture for innovation in all the Faculty's activities.

Our innovation activities make a significant contribution to societal restructuring and the green shift.

The IE Faculty collaborates closely and systematically with parties in the NTNU innovation system, through an expedient division of roles between the Faculty, the departments and the university as a whole.

■ DISSEMINATION AND COMMUNICATION ACTIVITIES



DEVELOPMENT GOALS

Targeted measures are to ensure that the IE Faculty

Strengthens our dialogue with the authorities and important decision-makers by creating and participating in relevant forums for dialogue and networking

Increases our visibility as a supplier of knowledge to society, enterprises and individual citizens by actively participating in public debate and in the media

Promotes and develops our management and leading researchers to become spokespersons in the media and the public debate

Develops relevant and informative web pages for the Faculty, departments and staff, and good profile pages on service portals that are important to national and international academic environments

Increases the strategic use of social media for effective dissemination of our research, education and innovation to relevant target groups

Professionalizes communication with and the support system for external relations and events

The IE Faculty's dissemination activities build on our academic expertise, results and merits, and use the channels that are most relevant to the target group. Our academic environments act as door openers for and translators of new knowledge and expertise for industry and the public sector. We provide knowledge-based advice to the authorities, and exert a significant influence on research and education policy.

Our academic activities enjoy a high profile in society. The Faculty's dissemination and external communication increase society's understanding of the importance of our disciplinary areas and core activities for all areas of society.

Our dissemination and external communication focus on the Faculty's experts, academic environments and what NTNU means for society. This will improve the Faculty's framework conditions for resources, recruitment to the Faculty's programmes and positions, gender balance in our academic environment and programmes, and our general academic and social reputation.

The Faculty's dissemination strategy will create a greater understanding of the social significance of the university's contribution to value creation and innovation. The Faculty documents and communicates the significance of our candidates at all levels for societal creativeness and value creation.

The Faculty ensures that society and the academic environments have expedient meeting places, and provides knowledge-based content to these meeting places.

INTERDISCIPLINARY PRIORITY AREAS

INTERNATIONALIZATION

INTERDISCIPLINARY COLLABORATION

CAREER AND SKILLS

WORK ENVIRONMENT AND STUDENT WELFARE

CAMPUS DEVELOPMENT

CAPACITY FOR DEVELOPMENT

03



INTERDISCIPLINARY PRIORITY AREAS

IE has the same interdisciplinary priority areas as NTNU:

- Internationalization
- Interdisciplinary collaboration
- Career and skills
- Work environment and student welfare
- Campus development
- Capacity for development

The IE Faculty has also defined 'Capacity, quality and efficiency in administrative services and systems' as a separate interdisciplinary priority area.

The IE Faculty endorses the goals and development goals in NTNU's main strategy in the above-mentioned areas. The Faculty's technical-administrative support system and infrastructure is to help to rationalize our core activities. We are to have common high-quality standards for important administrative processes and for staff and students' working conditions.

IE-SPECIFIC DEVELOPMENT GOALS FOR THE INTERDISCIPLINARY PRIORITY AREAS

Targeted measures are to ensure that the IE Faculty

Removes bureaucratic obstacles, rationalizes our activities and promotes interaction across organizational boundaries by renewing, simplifying, digitalizing and standardizing administrative procedures and processes

Improves the administrative support system by modernizing support systems and the use of space, and by continuously raising administrative competence and adjusting capacity

Strengthens the Faculty's HSE competence and systematically uses work environment surveys and performance appraisal interviews to build a culture that promotes a good and inspirational physical and psychosocial work environment, and prevents all forms of harassment

Strengthens all the Faculty's managers and management teams' capability for restructuring and change

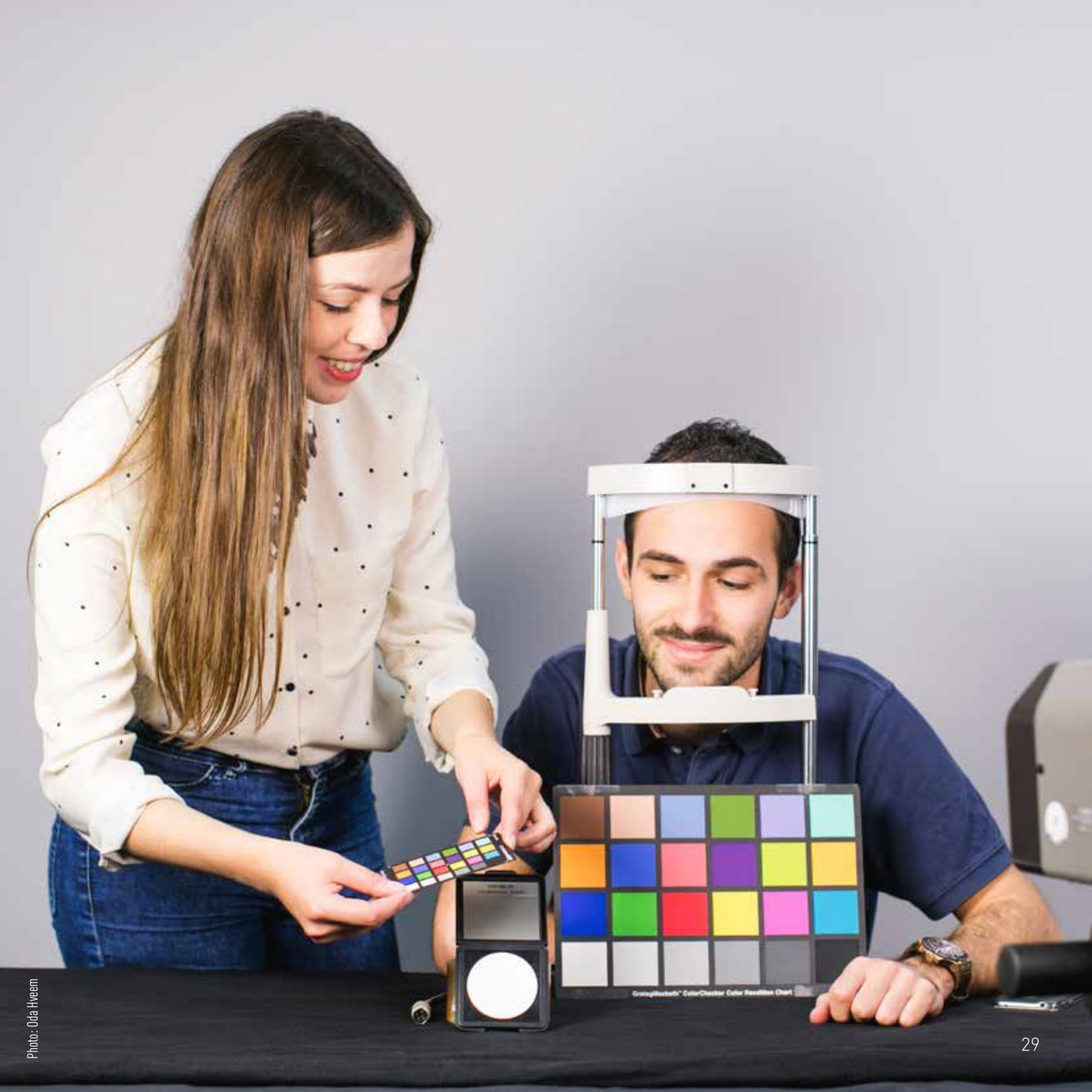
Supports the development and follow-up of career plans for all academic staff, particularly for those in recruitment positions and new staff in permanent academic positions

Gives all staff opportunities for professional and personal development in a way that benefits both the organization and the individual member of staff

Strengthens and clarifies participation schemes and procedures for internal communication linked to change processes

Offers expedient and sufficient space for reading and working and laboratories for all the Faculty's students and staff

Contributes to high satisfaction and a good psychosocial environment for all the Faculty's students, and strengthens the integration of international students at the Faculty







FROM VISION TO REALITY

2018–2025

The IE Faculty's 2018–2025 strategy is a specification of NTNU's 'Knowledge for a better world' strategy and will contribute to its implementation.

The IE Faculty's vision and strategies are specified in more detail in the strategies and priorities of our departments and administration.

A limited number of organizational focus areas that are of particular strategic importance will be defined as priorities. Each focus area will have a duration of one to four years. The portfolio of organizational focus areas will be revised annually.

A limited number of academic priority areas will also be identified at Faculty level. Each academic priority area will have a duration of at least three to four years. The portfolio of academic priority areas will be revised annually.

Annual action plans and budget priorities will be defined each year to support these focus areas and priority areas.