Department of Electrical and Computer Engineering

STRATEGY

2026 - 2030

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DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

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INTRODUCTION AND BACKGROUND

This document describes the strategy for the Department of Electrical and Computer Engineering (ECE) from 2026 to 2030. It is the first revision of the original 2024-2029 strategy, reflecting lessons learnt and introducing new priorities, aligned with our long-term goals. The introduction includes a brief background to allow the reader to familiarise themselves with ECE and its history.

ECE was officially "opened" as a new, independent department in January 2021, as a result of the comprehensive restructuring of the engineering area at the Faculty of Technical Sciences (TECH), at Aarhus University (AU). Since 2016, AU has invested intentionally and heavily in its engineering area, which has experienced rapid growth in both research activities, degree programmes, and number of students. To further consolidate and strengthen the area, the Aarhus School of Engineering and the Department of Engineering were closed and replaced by four new engineering departments, of which ECE is one.

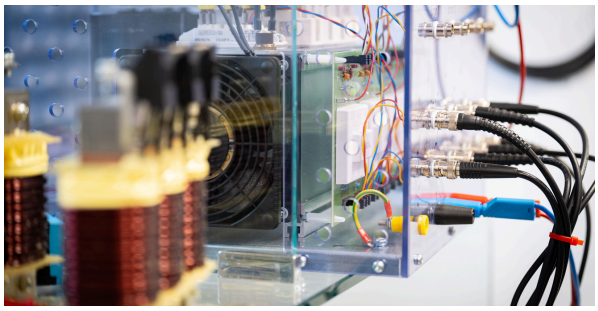
Today (April 2026), ECE employs 220 staff (including 36 postdocs and 44 PhD students) and has a total of 1479 enrolled students. Of these, 546 students were enrolled in 2025 and 312 are expected to graduate in 2026.

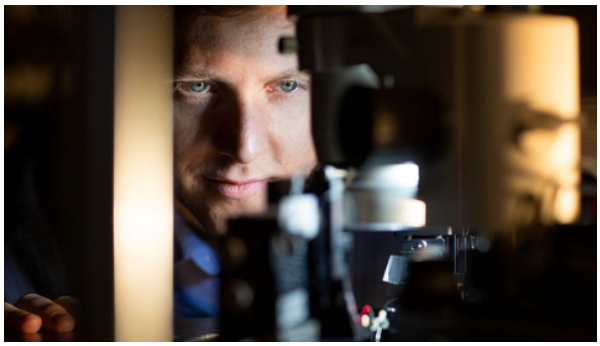
ECE'S VISION, AMBITION, AND STRATEGY "LIGHTHOUSE"

ECE's vision is to be internationally recognised for outstanding research, education and innovation in electrical and computer engineering, creating a positive and visible impact on society and the environment through interdisciplinary collaboration, excellence and diversity. Our mission is to create a positive impact on societal challenges, our students as well as private and public organisations.

ECE's overarching ambition for the period 2026-2030 is to create impact through our core activities: research, education and collaboration. The ability to create impact is firmly rooted in our research excellence, both fundamental and applied, with the inherent ambition to achieve meaningful and, ultimately, tangible results, which we translate into strong educational programmes. Our graduates are trained to address and engage in real-life challenges, for which they are valued and highly sought-after by employers. Career and salary prospects are good and the current demand from industry exceeds supply.

The combined outcome of our research efforts (including scientific contributions, technology transfer to industry, technology-focused spin-offs) and our continued supply of competent graduates to society contributes to solving national and global societal challenges and to creating value for private and public organisations.





The ECE strategy lighthouse

ECE's strategy for 2026-2030 is visualised by the ECE strategy lighthouse (figure 1), consisting of our vision and mission, tied together by overarching strategic focus areas, our values and core activities: research, education and collaboration.

The focus areas are specific activities that have been selected from ECE's overall portfolio of activities. Whilst all of ECE's portfolio of activities is important, we consider these focus areas to be particularly important for our continued development, growth and possibilities for moving forward as an organisation. The list of focus areas is dynamic and additional areas may be added, or current areas removed.

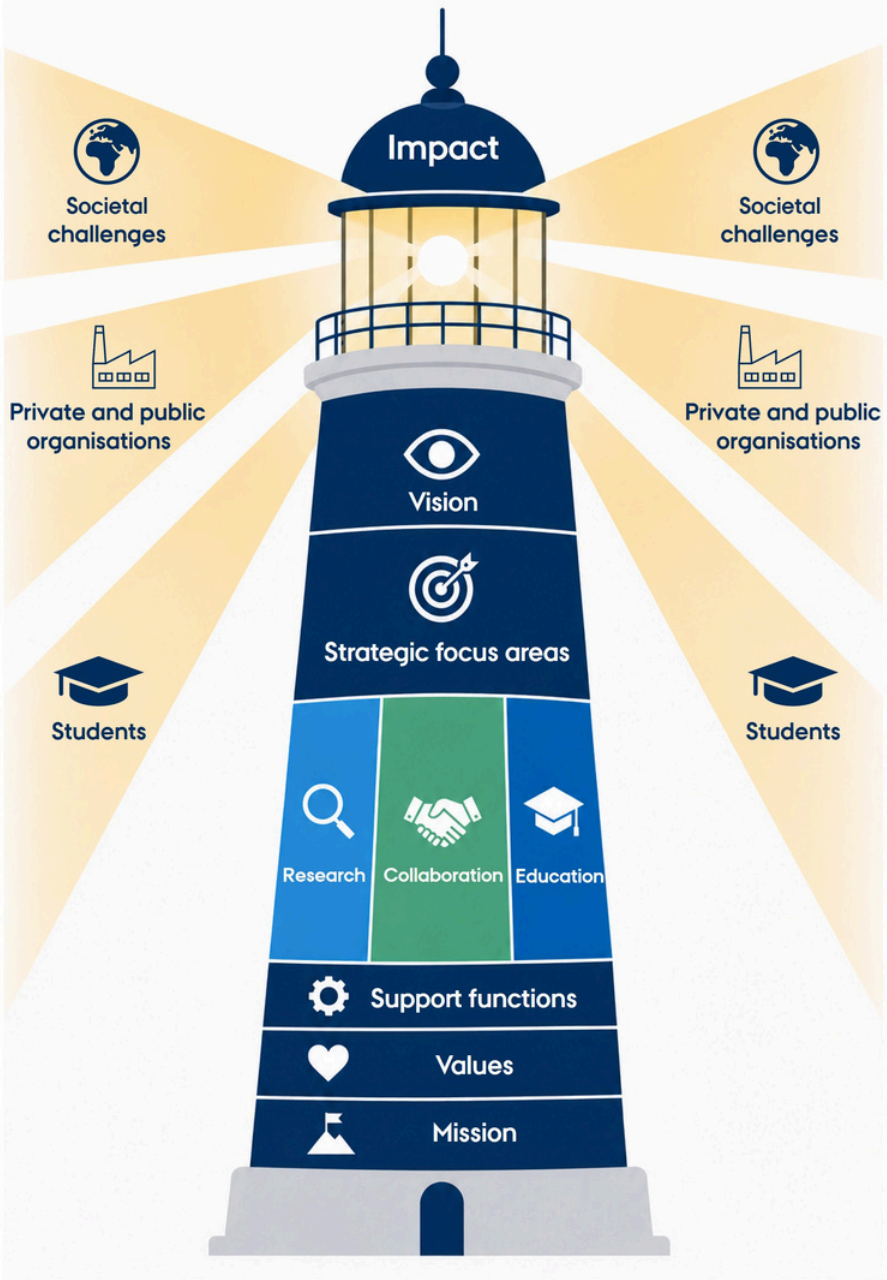


Figure 1: The ECE strategy lighthouse.

The intention of the strategy is to:

- Utilise our academic and practical engineering skills and knowledge to address the most pressing societal challenges and create global and local impact.
- Align our activities with both the current and future needs of our stakeholders, by engaging in active dialogue with our partners and collaborators.
- Raise external awareness of ECE's competences to position ECE as an appealing partner for collaborative research, development and innovation initiatives.
- Offer high-quality education, establishing ECE as an attractive and reputable place to study.
- Strive to withhold and develop ECE as an outstanding place to work with on-going initiatives and focus on strengthening our working culture.
- Maintain the relevance and effectiveness of ECE's strategy, by evaluating and revising it on a yearly basis.

ECE'S STRATEGY: WHY CHOOSE AN IMPACT-BASED STRATEGY?

Interest is growing rapidly in the evaluation of non-academic benefits or "impact" of publicly funded universities. National and international political, private, and funding bodies are increasingly seeking evidence of the value of their investments and their impact on society. At the same time, society is facing major challenges that demand universities to contribute with sustained solutions through research, education and knowledge transfer, as well as innovation, collaboration and consultancy.

This expectation is also evidenced in the increased focus by funding agencies and governments to support mission-driven research as well as research focused on pressing societal challenges (e.g., the green transition and digital transformation). Our approach to ECE's strategy for 2026-2030 is inspired in part by these trends.

Creating impact is not new to ECE. We have a strong track-record and experience with collaborative and solution-oriented research as well as strong educational programmes that prepare our students for the professional demands of private and public organisations or for carrying out future research for the benefit of our society. Thus, we are well-positioned to take on these new challenges. In fact, the increased focus on creating societal impact is an opportunity for ECE to further leverage its core activities to the benefit of society, our students, and the industries and organisations we collaborate with.

Impact has various definitions but in our strategy for 2026-2030 we define impact in an ECE context as the measurable or demonstrable effects of our educational programmes, research, innovation and partnerships - beyond our academic efforts. These are effects that create lasting value and benefits for society and the environment, improving areas such as the economy, health, equity, wellbeing or quality of life.

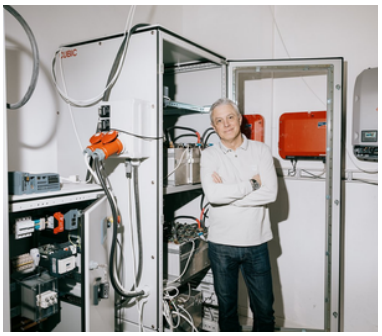
Our impact extends beyond immediate, every-day activities and outputs, and reflects how our work transforms technologies, systems, processes, services, organisations, and society in general. It is intentional, aligned with department, faculty and university strategies, and realised through sustained efforts and relevance within ECE's core and emerging focus areas. We demonstrate our impact through case studies showing how we have created benefits for society, our partners and stakeholders, industrial practices, policy, workforce capability and student success stories.

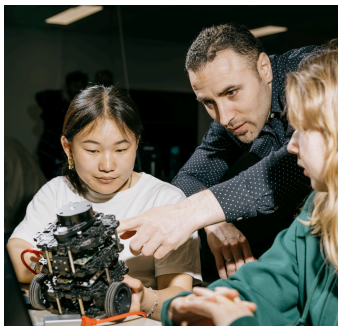
Impact may occur quickly in some cases, but it typically takes time. Therefore, ECE acknowledges that impact can be over the short-term, medium-term and/or long-term.

In the light of these considerations, we can describe ECE's ambition more concretely as creating a meaningful and positive impact on societal challenges, enhance students' development and learning experience and create value for private and public organisations.

We will achieve this by:

- Having a specific focus on societal challenges
- Continually strengthening our engineering degree programmes
- Being internationally recognised for our research
- Supporting private and public organisations in developing new or improved solutions, products, processes, systems, and services
- Ensuring that relevant stakeholders have access to up-to-date research-based knowledge as part of our public consultancy activities
- Creating an innovative and entrepreneurial environment
- Supporting start-ups to turn ideas into business
- Prioritising diversity and equality
- Ensuring a good working environment
- Being the collaborating department





OUR VALUES

We believe that to achieve our department's potential, we need to create an environment for our staff and students, where they can reflect, think deeply, develop, exchange ideas, and ultimately, thrive. Therefore, we will strive to offer a diverse, equal and inclusive environment that can attract a wide spectrum of researchers, educators, support staff and students and that also make us an attractive partner for external stakeholders to work with.

Our values include:

Innovativeness
We are curious by nature, often driven by a strong desire to know more, e.g. about a problem and its possible solution. We are open to explore new ideas and to challenge the norm.

Professionalism
We are familiar with and follow the standards, codes of conduct and other qualities that define the best practices within our professional fields.

Excellence
We aim for the highest quality in everything we do, and we take pride in our work. We actively search for new opportunities to develop our knowledge and skills.

Integrity
We act honestly and demonstrate strong moral and ethical principles.

Responsibility
We are accountable for our actions and strive to make the right choices under any circumstances to the best of our abilities.

Collaboration
We have a proven track-record for successfully working together and with others to reach a common goal. We are recognised for our collaborative approach, and we will continue to develop our relationships with existing partners and/or to build relationships with new partners.

Interdisciplinarity
We are aware that complex problems often require an interdisciplinary approach and have wide experience with working with other disciplines, ranging from other engineering disciplines to clinicians, chemists, physicists or business experts etc. We are comfortable leading interdisciplinary activities.

Inclusiveness
To create an inclusive environment, we value the need to respect individual boundaries, to maintain respectful communication, and to be aware of the biases that surround us in our daily lives. Creating a work environment that is inclusive and equitable is essential to the success of ECE's strategy. We are all a part of creating and ensuring a good and safe work environment.

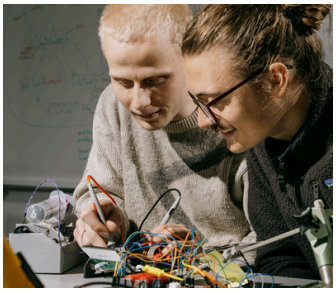
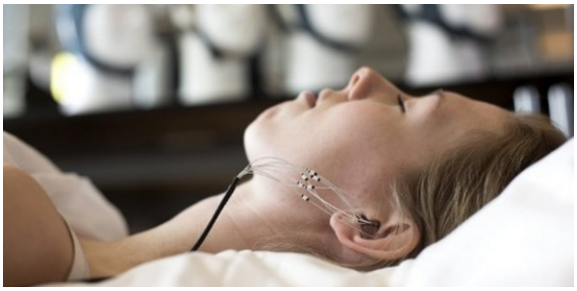
STRATEGIC FOCUS

ECE's strategic focus is linked to our ability to create a positive impact on societal challenges, students, private and public organisations and to strengthen ECE's internal processes and support functions. ECE's deep technical skills, practical knowledge and ability to understand industry's needs position us uniquely to carry out research and innovation and develop novel approaches and solutions to global challenges.

Therefore, our strategic focus is on:

- Societal challenges
- Students
- Private and public organisations
- Diversity, equity, and inclusion

For these overarching topics of strategic focus, specific focus areas that are linked to our ability to create impact have been identified and will be prioritised during this strategy period. These focus areas are dynamic by nature and additional areas may be included during future revisions of the strategy. Successfully addressing these specific areas will not only allow us to develop, grow and move forward as a department but will contribute to our brand, increasing awareness about the benefits of studying and working at ECE, or collaborating with us. It will make us more attractive to external stakeholders, including potential new employees, companies, other universities, international partners and potential new students. It will also bolster our on-going internal initiatives aimed at cultivating ECE into an outstanding place to work, retaining, developing and advancing our current staff members whilst strengthening our visibility and reputation towards the outside world.

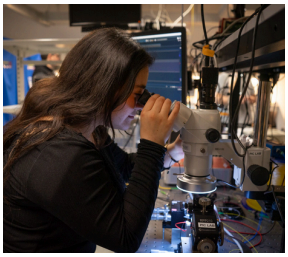




Societal challenges
Societal challenges address major global problems that potentially impact a vast number of people and call for innovative solutions, where competences within electrical and computer engineering often play an important role. Examples are sustainability (including climate change, the green transition, water), security, health and quality-of-life.

ECE will contribute to solving some of these major global societal challenges by leveraging our expertise in electrical and computer technologies. The focus areas that have been identified are aligned with the department's fields of expertise, addressing both the societal and technological aspects of these challenges.

Students
ECE focuses on creating a positive impact on the individual student's education. Students are introduced to the latest knowledge and technologies that are the necessary tools they will need to address societal challenges. They engage in project-oriented coursework in selected emerging research topics and in projects that address real-life problems that are experienced by private and public organisations facing these challenges. We encourage an entrepreneurial mindset and provide facilities for student start-ups.

The emphasis is on enhancing our students' development and learning experience and how we inspire, encourage and support our students, preparing them for the future and ensuring employability.



Private and public organisations
Collaboration is part of our DNA and ECE creates impact through, and in collaboration with, all types and sizes of private and public organisations in our ecosystem creating value for private and public organisations alike. We are recognised for our collaborative approach and we foster collaborative partnerships and knowledge exchange and we offer public and private consultancy services. We draw on unique skills, strengths and experiences within applied research and solution-oriented work, supported by a wide range of laboratories and experimental facilities.

Diversity, equity and inclusion
We attract talent from around the globe and one of our strengths arises from this diverse community where everyone is openly invited to contribute with their own perspectives. We will continue to invest in people, strengthen our internal processes and support functions and strive to foster and promote an inclusive culture.

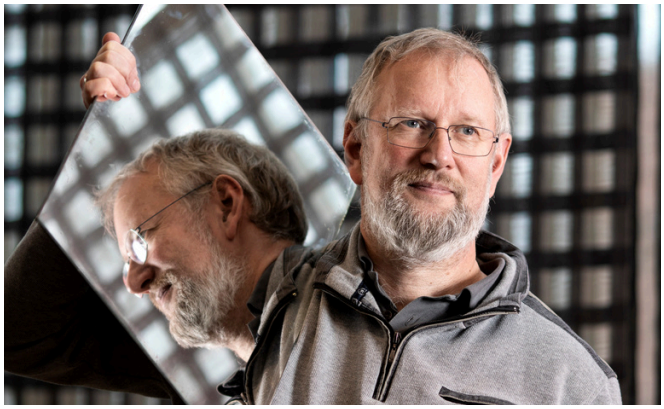
In 2023 ECE completed a process of analysing the needs and mapping key recommendations on Diversity, Equity, and Inclusion (DEI), resulting in the internal report "Strengthening (gender) equality at ECE. A report on the situation & how to move forward". In the strategy period 2026-2030 we will continue to implement these recommendations and undertake new initiatives to create a positive impact by actively promoting and working with DEI principles. We will create an even more inclusive and supportive environment, ultimately contributing to a diverse and equitable future in the field of electrical and computer engineering.

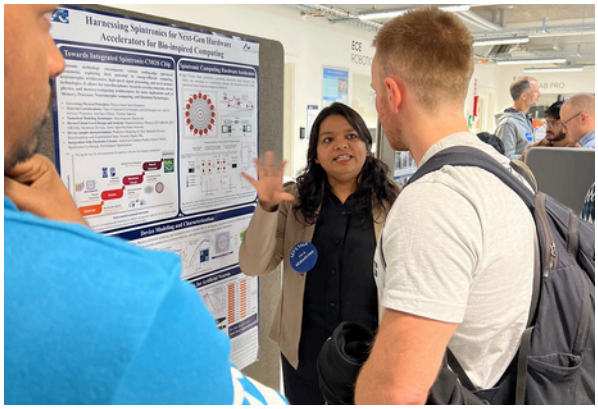
DEI efforts not only benefit the individuals directly involved but also contribute to a richer and more innovative academic community.

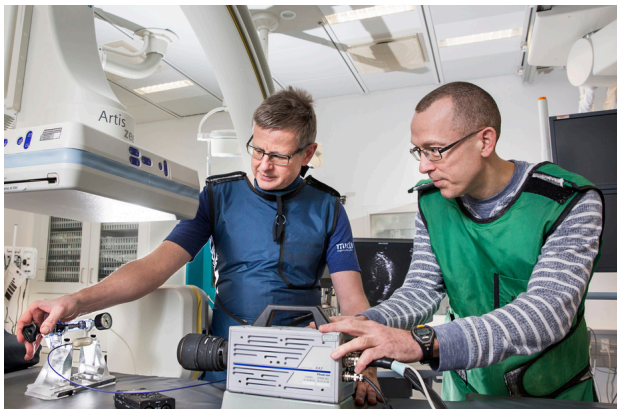
FROM STRATEGY TO IMPACT WITH "STRATEGIC PORTFOLIO MANAGEMENT"

To ensure ECE's resources are allocated to the right mix of activities to drive the strategy towards creating actual impact, the management team has introduced the concept of "strategic portfolio management". For ECE, strategic portfolio management refers to how the department selects, prioritises, balances, develops and supports its mix of educational programmes, research areas (including experimental/laboratory/infrastructure facilities), faculty expertise, support services, partnerships and relationships to achieve long-term academic and societal impact.

Portfolio management is thus related to impact – and vice versa. Impact and strategic portfolio management complement each other and are mutually reinforcing. Portfolio management helps ECE select and prioritise programmes, research areas, faculty expertise, and infrastructure that have the highest potential to create meaningful long-term impact. In turn, understanding where and how ECE generates impact - through activities such as research adoption, industry collaboration, graduate outcomes, or societal benefits – is used as a guide to which activities should be prioritised, strengthened, expanded, rebalanced, or phased out. In other words, impact provides the "success criteria" for portfolio decisions, while portfolio management ensures that resources are allocated to the right mix of activities and strategic focus is directed toward areas where impact can be maximised.







Current focus areas are described below. Looking forward, this will be an on-going process, where new focus areas can be taken up at later stages, i.e. during the annual review of the strategy. The areas have subsequently been collected into three groups, "research", "education" and "support functions". The areas and their associated activities are shown in table 1.

Portfolio focus area	Focus area activities
Research	**Cyber Security:** Countering the growing threats to a digitalised society
	Energy: Advancing the green agenda with digital technologies
	Digital Twins: Providing easily accessible digital services
	Healthcare: Increased support for a pressurised healthcare system
	Dual use: Addressing critical societal needs
	Generative AI: Leveraging new technology to create more impact
	Digital X: Promising new initiatatives within digitalisation technologies
Education	**Impact-based education and training:** Skills that solve real-world challenges
	Magic is human ("Mennesker er magien")
Support functions	**Work environment and culture**: Making ECE a great place to work and study
	Green Campus: Sustainability starts here
	Communications: Showcasing how ECE communicates, collaborates, connects

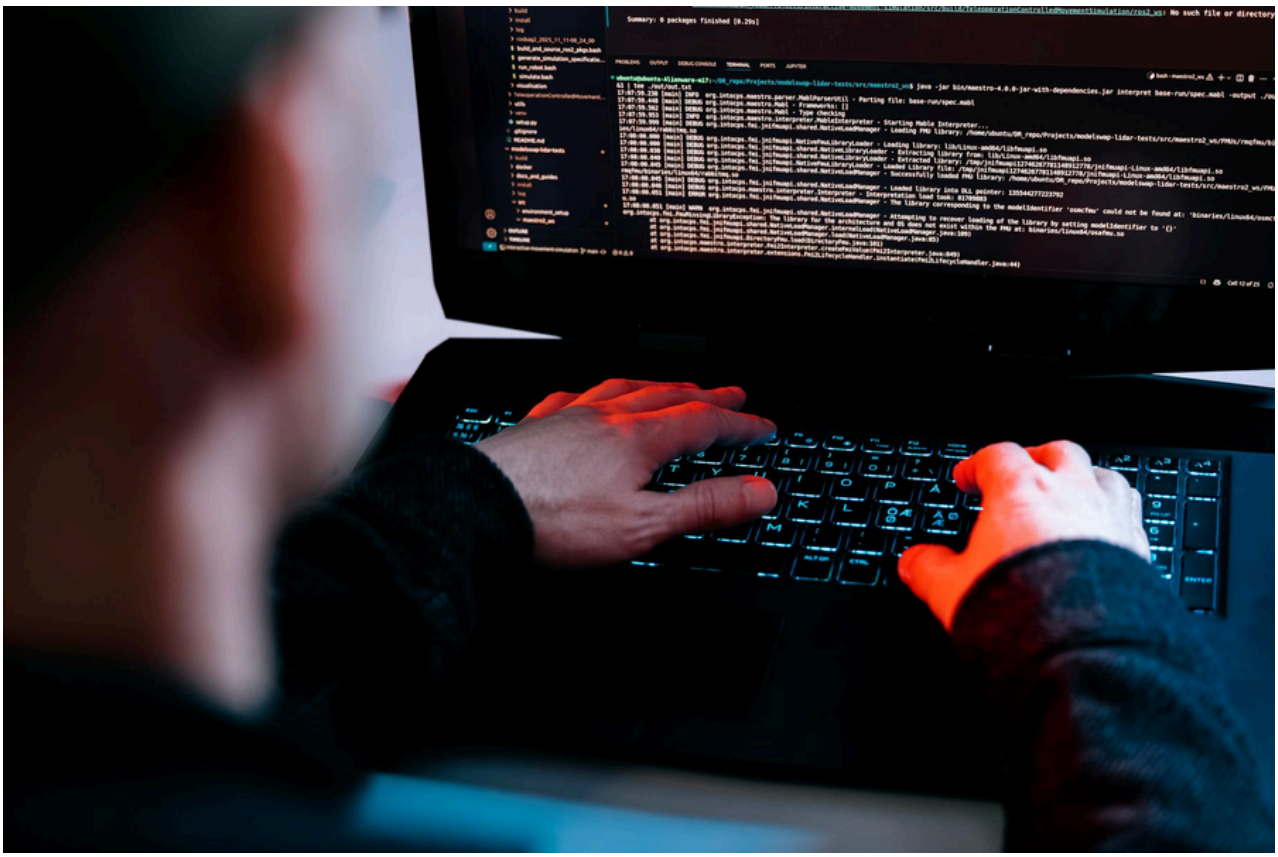
Table 1: Focus area activities.

FOCUS AREAS ADDRESSING RESEARCH

Cyber Security: Countering the growing threats to an increasingly digitalised society

Increasingly digitalised societies with ever-growing numbers of interconnected devices and systems transforms the threat from cybercrime from a personal to a national problem. The availability of cybersecurity experts is limited, whilst demand is growing rapidly. Regulations and best practices dictate Security-by-Design, where cybersecurity is considered a prerequisite in e.g. software development projects, but our engineering graduates often lack the necessary technical knowledge and skills.

ECE has established a research group on cybersecurity that collaborates across sections and departments at Aarhus University, in particular the Department of Computer Science. Cybersecurity courses and electives have been designed for B.Eng., B.Sc., and M.Sc. students and ECE has entered a strategic collaboration with VIA University College to further strengthen student recruitment to cybersecurity study programmes. The ECE cybersecurity research group will play an active role in the newly announced AU Cyber Research Centre and further recruitment to the group will continue throughout the strategy period allowing an increased portfolio of externally funded activities within domains such as critical infrastructure (energy, water), healthcare technologies, dual-use/defence technologies and space.



Energy: We do not have an energy challenge. We have an energy-system transition challenge

Europe's (and Denmark's) journey towards climate neutrality and increased independence on fossil fuels calls for massive investments in renewable energy sources and energy infrastructure. Digital technologies and tools are critical enablers for ensuring the success of the green transition, for example in new GW-scale energy parks that are characterised by complex mixes of renewable energy systems. One of the major challenges facing this energy system transition is scaling up and integrating resilient electrical energy solutions at all levels of the system, across all sectors, whilst winning the accept of local societies. At the same time, transmission systems are increasingly challenged, which calls for a stronger focus on integrating more decentralised energy "islands" and resources at the distribution level, thereby supporting flexibility, resilience, and local balancing.

AU is investing heavily in AU Viborg, with the goal of becoming "Denmark's Green Campus", an international lighthouse for sustainable research, education and innovation and a platform for cross-disciplinary collaboration. A key activity at AU Viborg, where ECE is playing a major role, is to establish a complete resilient multi-energy micro grid offering unique opportunities for students, researchers and industrial partners to test and demonstrate integration, storage, energy security and cybersecurity solutions. In addition, ECE has a strong focus on key enabling technologies for the green transition, including energy storage systems, power converter design, and advanced simulation tools and energy optimisation tools. These areas are essential for ensuring efficient integration, stable operation, and optimisation of future energy systems, and they play a crucial role in supporting a secure, resilient, and scalable energy transition.

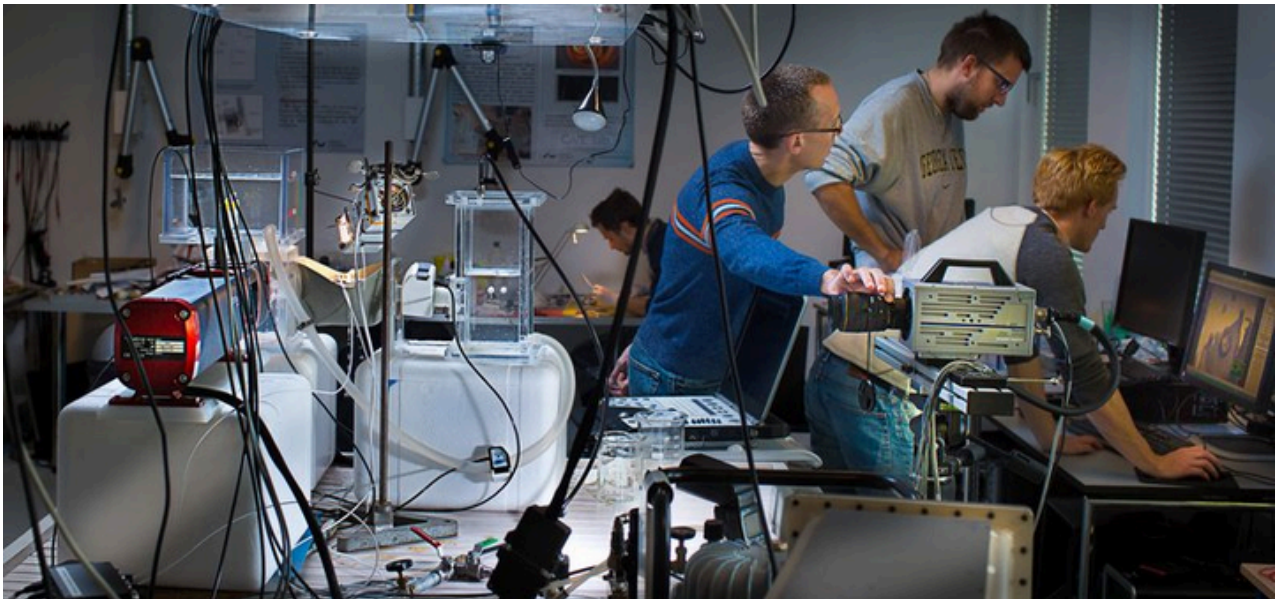
A derived effect of the green transition is the increasing demand for electrical engineers. ECE has initiated a new educational programme at AU Herning to increase the number of these graduates.

Digital Twins: Providing easily accessible digital services on top of physical products

The digital transition is important and necessary for the public and private sector alike. An essential, and challenging, part of any digital journey is to consider the digital services that can be offered on top of a physical product and not just how digitalisation will lead to producing a cheaper product. One of the possible solutions to this is establishing digital twins providing additional services on top of physical products. ECE has key competences within the digital twin area with a long and successful track-record of national and international collaborative projects and networks.

We apply our expertise across domains such as water, manufacturing, machinery, structures or robotics with a special emphasis on making it easier to establish and operate digital twins. A series of tools supporting this has been produced and are available as open source such as the Digital Twin as a service (DTaaS) platform. Digital twins are also the core focus of DTL, ECE's Digital Transformation Lab in Skjern, which is a vital showcase for reaching out to collaboration partners in Western Jutland. Our ambition is to develop technical solutions that make it easier and more cost-efficient for companies, in particular SMEs, and the public sector to get started with digital twins and embark on their digital transition.

Healthcare: Increased support for an increasingly pressurised healthcare system



Healthcare systems are coming under increasing pressure to provide preventive measures and deliver adequate and timely services to citizens with diseases or disabilities. Examples are improved disease prevention, diagnosis, treatment, monitoring, and rehabilitation of patients and citizens with acute and chronic diseases or disabilities. Biomedical engineering plays a key role in enabling such advances through integrated sensing, data-driven analysis, and medical technologies (e.g. wearable in-ear EEG for continuous monitoring and seizure detection, AI-based sleep and neurological analysis, and advanced cardiac imaging).

We see new opportunities within home-based monitoring and personalised care models, and we see a need to address the current gaps in digital integration, including more effective use of telemedicine, next-gen health systems, AI-driven decision support and real-time monitoring analytics (e.g. telemedicine platforms integrating multi-modal patient data and wearable sensing systems for long-term real-world monitoring).

At the same time, there is an increasing need for integrated experimental and translational approaches that support the development, testing, and validation of new technologies in clinically relevant settings (e.g. in vitro cardiovascular platforms for development and validation of procedures, devices, and diagnostics, as well as development of implantable technologies such as retinal prostheses for vision restoration and advanced micro- and nano-scale biomedical devices).

We co-chair and participate actively in AU's new interdisciplinary Health-Tech research network that will foster new, or strengthen existing, collaborative activities between clinicians, researchers and engineers to identify health challenges where technology can offer new solutions. All of these areas present promising biomedical engineering opportunities for ECE to expand activities and address exciting emerging technologies to support the healthcare system and healthcare industry (including emerging photonic and optical technologies for sensing and non-invasive diagnostics).

Dual use: Addressing critical societal needs while advancing top-class engineering research

Denmark and our neighbours are currently experiencing the most significant geopolitical transformation since the end of the Cold War. Key trends include the increasing geopolitical unrest, heightened security concerns, hybrid-threats aimed at critical infrastructure, cyber-attacks, GPS-jamming, the new "Nordic-NATO" alliance between the Nordic countries, the strategic importance of the Baltic and Arctic and energy supply uncertainties.

The number and complexity of these challenges is an upward curve that calls for massive investments in dual-use technologies that can be developed for civilian use but can also be applied to the defence area. ECE has core research and educator competences within many of these technologies, thus offering excellent opportunities for ECE to address critical societal needs while advancing top-class engineering research and education. Examples include Arctic surveillance, sensor networks, early-warning systems, autonomous systems, counter-drone technologies, satellite communication and space-based Earth Observation. These are all fields where ECE already possesses strong research competencies that can be rapidly applied when opportunities arise.

The department is experiencing growing interest from researchers who wish to translate their work into impactful dual-use applications. Likewise, we are seeing an upward trend in the number of students who indicate an interest in working within the dual-use and defence areas. Engaging in these areas strengthens research relevance, supports innovation, and creates new pathways for funding, collaboration, and talent development. To gain further insights into the area we have widened our collaboration with national and international stakeholders such as NFC, STS, FMI, NATO and the EDF.

Generative AI: Leveraging new technology to accelerate research, modernise education and create more impact

Generative AI (GenAI), machine learning (ML), and artificial intelligence (AI) are rapidly becoming foundational technologies across electrical and computer engineering. They are no longer only general-purpose digital tools, but increasingly part of the research, design, verification, teaching, and innovation infrastructure of modern engineering. This is also the case at ECE, where we aim to actively shape how methods and technologies are developed, evaluated, taught, and safely deployed in practice. A strategic focus on GenAI, ML, and AI will strengthen ECE's research activities, educational relevance, and societal and industrial impact. We will do this in the following ways:

Pioneering research and specialised workflows:
In research, these technologies enable new forms of data-driven discovery, automated design, simulation, and decision support. Importantly, the value for ECE lies in highly specialised engineering tasks rather than just general-purpose writing assistance. Examples include FPGA and HDL testbench generation, circuit and PCB design review, embedded software debugging, wireless channel analysis, signal processing pipeline development, robotic simulation, agentic systems, digital twin modelling, medical image synthesis, and AI-assisted biomedical image analysis. Large language models (LLMs) expand our capabilities across disciplines, provided their use is grounded in rigorous scientific standards like validation, reproducibility, data governance, and energy-efficient computation.

Educating AI-practicing engineers:
For our students, AI-enabled tools enhance learning through adaptive instruction, interactive tutoring, and realistic simulation of complex systems. GenAI is especially useful in programming labs, electronics, and embedded-systems exercises, and debugging support. However, our ambition is not simply that students use AI tools; we strive to graduate AI-practicing engineers who understand how these systems work, when they fail, how to rigorously verify their outputs, and how to use them ethically. This includes leveraging ECE specific guidelines and customised educational chatbots that support learning while preserving academic integrity and deep technical understanding.

Accelerating industry collaboration:
GenAI and ML can strengthen ECE's collaboration with industry by accelerating experimentation, testing, rapid prototyping, and the co-development of intelligent infrastructure. LLMs empower ECE's industrial partners to accelerate innovation by synthesising dense technical specifications, generating rigorous test plans, analysing complex sensor and maintenance data, and supporting engineers through domain-specific AI assistants. Ultimately, GenAI serves as a powerful connective interface that bridges the gap between ECE's academic researchers and industry engineers. This enables both sides to interact seamlessly with complex computational models and strict industry standards, translating ECE's research into deployable commercial solutions faster than ever.

Leading responsible AI deployment:
To realise this potential, ECE combines ambition with responsibility. Because many ECE applications are safety-critical, resource-constrained, or deeply embedded in physical systems, the department promotes responsible experimentation. We actively develop clear practices for hallucination mitigation, output verification, IP protection, robustness, and sustainability. This positions ECE not only as an adopter of emerging technologies but also as a department that participates in the research on adapting GenAI to specialised engineering tasks and its responsible translation into practice with clear societal benefit.

Digital X: Promising new areas and funding opportunities within digitalisation technologies

ECE offers a broad spectrum of research, education and collaboration competencies, allowing us to fit nicely into new digitalisation initiatives as and when they appear. "Digital X" activities demand a unified effort, particularly for critical infrastructures, where breaking of internal silos enabling cross-discipline collaboration is key to attracting and securing large, long-term external funding and resources. Examples of some of these new opportunities are within the water, space, agriculture/smart farming and Generative AI domains.

Water:
AU has coordinated the winning application resulting in the European EIT Water-KIC (Knowledge and Innovation Community), a major EU initiative stretching over the next 15 years, dedicated to addressing critical challenges across the water, marine and maritime sectors and ecosystems. The headquarters for EIT Water will be in Aarhus and, along with other major efforts such as Water Valley Denmark, the Lighthouse of Water Technologies and The House of Water, it will address and accelerate solutions that respond to growing environmental, economic and social pressures on Europe's water systems, supporting entrepreneurial education and skills development, innovation projects, and business creation.

The new Water-KIC will contribute directly to EU priorities for a greener, more digital and more resilient Europe. It will enable larger efforts to address the uptake of digital technologies within e.g. forecasting models, digital twins, sensors (leak detection, water reuse, smart distribution) and (data-driven) services for optimising utility operations.

Space:
Space technologies are central to communication, security, climate monitoring, the green transition and defence, and recently an increasing number of attractive national and international opportunities for funding research, studying or collaborating with industry have become available. Denmark's new national space strategy, strengthened collaboration with the European Space Agency (ESA), and the largest-ever investments in space research create exceptional opportunities for advancing ECE-driven activities.

Examples of specific opportunities are research in satellite communication technologies, new generations of sensors, AI-driven analysis of space-based data, more resilient space infrastructure and applications across environmental monitoring, sustainable resource management, and climate-related decision-support systems. Engaging in the space area strengthens ECE's interdisciplinary research, attracts external funding, and supports collaboration with national and international stakeholders across industry, government, and academia. Offering space activities attracts students and space-related topics create powerful learning opportunities.

Agriculture/farming:
Agricultural sectors around the globe are undergoing a rapid transformation. Future food production depends increasingly on advanced digital technologies with a growing need for applying and integrating sensors and sensing, data analytics, automation, communication systems, and data-driven intelligence across the entire value chain. ECE's expertise and competences can play a central role within areas such as developing robust and reliable systems for crop and soil monitoring, pollution monitoring, water-quality protection, biodiversity monitoring, and land-use modelling, all of which are essential for sustainable and resilient food production.

"Smart" farming relies on technologies such as IoT-based sensor networks, autonomous field robots, satellite and drone-based imaging, edge computing, and AI-driven decision support. These are all areas where ECE can contribute core knowledge and skills to ensure more efficient resource use, stronger and more sustainable environmental management, and a more resilient food system for the future. By advancing the digitalisation of the agricultural area ECE supports national priorities for environmental protection and the green transition, while offering students unique opportunities to work on real-world, sustainability-driven engineering challenges. Not least, the area calls for interdisciplinary research collaborations with other disciplines such as biology and climate science, occupational health and safety, business management and industry partners.

FOCUS AREAS ADDRESSING EDUCATION

Impact-based education and training

We must create an impact on our students and the surrounding society. We will do this by developing our students' competencies both technically and in terms of their soft skills. Impact on the surrounding society will be achieved by involving companies and public authorities, both in the form of project collaboration and in education.

Life-long learning

1. **The work-integrated master's degree** will be of increasing importance. Employees in a company with a relevant bachelor's degree can be further trained to a Master of Science in Engineering and thus receive a significant competence boost. The potential is particularly great in areas that match our research focus areas, e.g. cyber security, energy and health technology.

2. **Courses for industry.** The opportunity to participate in individual courses must be strengthened. We have several courses that are of interest to employees in companies and public authorities with a view to professional updating and upskilling, for example in cybersecurity, digital health infrastructure and digital twins.

3. **Summer schools and August courses** should be used more actively, both for the sake of our own students and for companies. Other departments at AU actively use summer schools and courses as a solid business model, offering participants highly qualified and renowned international instructors. A similar model at ECE would provide many of the same benefits.

Develop students' collaboration skills

The TECH Faculty's strategy, Tech 2030, explicitly highlights interdisciplinary collaboration as a core competency our graduates must master. Collaboration, both with fellow students and with external actors, must therefore be a guiding principle in our pedagogical approach. All students complete an Insights Discovery test and receive a personalised profile to increase their self-awareness about their personality. This helps the students to understand their own working style, understand others' styles and strengthens their personal and collaborative abilities in an otherwise highly complex technical field.

1. **Collaboration** with companies and public authorities must be an integral part of the students' education. Across all ECE's degree programmes, students must have opportunities for academic collaboration with industry throughout the course of their studies. In the first semesters this will be primarily between the students, and in the later semesters in close collaboration with companies and public authorities.

2. **Interdisciplinary collaboration across ECE sections** on education must be the standard, so that students get accustomed to drawing on several disciplines at the same time.

3. **Cross-institutional cooperation** must be strengthened, both at TECH and inter-faculty. The working group where HEALTH and TECH are starting clinical project collaborations is a concrete example of the kind of structure we should support and build on.

Integrate technical and societal challenges into educational programmes

The engineering programmes at ECE help to solve societal problems. This must be clear to prospective students even before they start their studies and it must be an experienced reality throughout the course of study.

1. **External visibility.** In recruitment and communication, we must clearly show which societal challenges ECE's programmes contribute to solving, so that applicants choose us on an informed basis.

2. **Perceived relevance during studies**. The students must experience societal challenges as an integrated part of the teaching, through application-oriented courses, real-life cases and projects where they actively contribute to finding solutions.

3. **Link to ECE's research focus areas**. The students must acquire the right competencies within our strategic areas, e.g. cybersecurity, health technology, energy, digital twins and dual-use. This ensures that the education portfolio carries ECE's research impact out into society.

Continuous educational development
Our educational programmes must be up-to-date and relevant. This requires a close, continuous dialogue between ECE and employers and other stakeholders: companies, public authorities and industry organisations, so that the students acquire the right skills for the labour market they are about to enter.

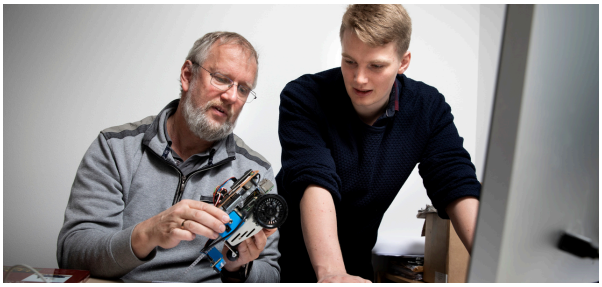
Future-proofing the students' competencies
Generative AI (GAI) is changing both the way we teach and the labour market our graduates are going to enter.

1. **Appropriate use of GAI** must be the starting point, not prohibition. Our approach is active and reflective application in teaching, where students learn both to use the technology and to relate critically to its outputs, limitations and blind spots.

2. **Competence building** must take place through a semester-based progression - from introduction in the first semesters to advanced, critical application in the thesis process - so that students graduate with both skills and judgement.

3. **Teachers** must be equipped to integrate evidence-based GAI into their teaching. This requires joint forums, exchange of experience and access to existing research literature within the field. At the same time, both teachers and students must be ensured up-to-date access to relevant GAI tools, so that teaching and learning match the same technological level as the labour market that the graduates are going to enter.

4. **Exams** and the way examinations are held must be included. We must develop formats that both allow the use of GAI as a working tool and at the same time ensure that the students' independent academic competencies are properly assessed.



Magic is human ("Mennesker er magien")

Everything that is developed in the field of electronic systems ultimately ends up being used by humans. Therefore, it is important that the students achieve a good understanding that everything we work with must ultimately be used by people. When studying, people work together to learn, both between students and from teacher to student. After graduation, the students enter organisations where collaboration is a necessity. It is always people who are interacting. Our work with retention, study environment, DEI and meeting the students at eye level are therefore not complementary activities alongside the academic aspects — they are the very prerequisites for deep academic skills to be developed and unfolded.

Retention
Our students have chosen to study with us. We must ensure conditions that give them the best possible opportunities to stay with us and not drop out.

1. **Professional development** is the strongest retention driver. The students stay with us when they experience that they become skilled, build real competencies and can see the value of what they learn. It is the perceived relevance and progression throughout their studies that retains them.

2. **Clear progression** must be visible throughout the programme, so that the students experience that they become more proficient semester by semester, and so that the relevance of what has been learned becomes visible already in the early semesters.

3. **Lifelong learning** as a horizon. The same sense of academic value forms the basis for our graduates returning to ECE later as work-integrated masters, industrial PhD students or as course participants (cf. the section on lifelong learning).

4. **Mentoring and tutoring schemes** must be well-structured already in the early semesters, and we must work with early identification of students at risk of dropping out.

Study environment
The interaction between people - students, teachers and all other ECE staff - must take place in a good, supportive environment. There must be a strong study environment, both physically and psychologically. It is not only the framework itself, but the quality of the professional interaction - feedback, collaboration and application - that drives learning, well-being and retention.

1. **Academic interaction** is the focal point of a strong study environment. It is not only measured by physical facilities, but by whether the students experience meaningful academic dialogue with fellow students and teachers, feedback that helps them progress, collaboration that develops them, and application that makes what they learn concrete.

2. **The workload** must be predictable, professionally meaningful and be part of a reasonable work-life balance.

3. **Psychological safety** must be a working principle in teaching and project groups, so that the students feel safe to ask questions, make mistakes and take responsibility. We will further develop ECE's work with Insights Discovery as a framework for this.

Meeting the students at eye level
In teaching situations, the students must be met by well-prepared teachers with the capacity to provide the best possible teaching. The lecturers must ensure good pedagogical, but also challenging teaching, with an appropriate level relative to where the students are in their studies.

1. **Mutual responsibility** is at the heart of meeting each other at eye level. Good teaching requires not only well-prepared teachers, but also students who come prepared and participate actively. It is through the interaction between prepared teachers and prepared students that academic competence and learning outcomes are enhanced.

2. **Professional communities with industry**, e.g. ERFA groups, company visits and professional networks, play a central role, so that the teachers' own contact with practice is maintained and nurtures impact-based teaching.

3. **Pedagogical development** must be an ongoing part of the career path, not just a one-off course.

4. **Onboarding** of new teachers should be structured, including meeting invitations, mentoring and an introduction to ECE's pedagogical culture.

All of these activities ensure that students are in an environment where they are happy to be. Ultimately, this ensures that more students complete their studies, and that they do so with a deeper understanding that electronic systems are not just electronics, software, forms of communication, signal processing, and mathematics, but something that is ultimately used by people. Magic is human ("Mennesker er magien").

FOCUS AREAS ADDRESSING SUPPORT FUNCTIONS

Work environment and culture: Making ECE an outstanding place to work and study

We are already committed to on-going efforts for improving working and studying conditions and strengthening gender-equality and inclusion aspects at ECE. We emphasise Diversity, Equity and Inclusion (DEI) as part of our work culture and include it in our strategic development activities. Our ambitions include creating a good working and studying environment and making ECE an outstanding place to work and study, for everyone and at all levels. This focus area will not only implement the recommendations from the work carried out earlier but will build on and expand these efforts with renewed focus on selected focus areas, e.g. onboarding, staff-retention, communication, nudging and constructive dialogue. We organise regular ECE-seminars for all staff members to ensure knowledge-sharing, align research and teaching agendas, encourage social interaction and to build personal relationships across sections and disciplines. Similarly, we organise joint competence development events, e.g. "Magic is human" ("Mennesker er magien"), to engage and include staff members of all levels in important new ECE activities. To address the needs of our students we will strive to continually adapt their overall study environment, such as improving facilities and allocating dedicated areas for students to meet and socialise or study together or alone.

Green Campus: Sustainability starts here

We are committed to optimise how we use our building spaces, possible ways of using them more intelligently and ways to save or recycle resources. ECE is already well-established at the Katrinebjerg Campus and the continued growth of the department places increasing demands on our buildings and how/when the staff and students use them. We have begun separating our waste, starting with the largest fractions that can most easily be sent to recycling and will expand into other fractions as and when this becomes possible. We believe that there are potential savings to be made by using our building spaces more intelligently, by separating and sorting waste and by altering behaviour to reduce consumption of resources such as electricity, heating and water. This also applies to potentially empty offices and/or unused rooms, classrooms, labs and other spaces. We encourage colleagues to use the local "Dalux" QR-code reporting system to report problems with defect furniture, missing inventory or other important items in our offices, shared spaces, meeting rooms or classrooms. This system allows individuals to easily report defects and deficiencies to facility staff allowing prompt and professional action to be taken.

Communications: Showcasing how ECE communicates, collaborates, connects

ECE's rapid growth has resulted in a growing need to increase awareness of who we are, what we do, what we can offer our external and internal stakeholders and how we can engage with them. More specifically, how can they adopt and implement our research outcomes into viable products, services or methods in the short, medium and long-term. We do this by showing and telling case stories aimed at inspiring existing and potentially new partners, and updating them on latest news, events, organisational changes and strategic priorities. Examples of case stories are research breakthroughs, major funding achievements and exciting external collaborations. It can also be presentation of new colleagues, interview of successful alumni and students telling their own story about why they have chosen to study at ECE.

HOW WILL WE REALISE OUR STRATEGIC GOALS?

ECE's strategy continues to map well into the overall strategy and strategic goals of both AU and TECH. AU and TECH have both recently launched new 2030 strategies with an emphasis on leveraging our comprehensive disciplinary reach, interdisciplinarity and collaboration with external partners to develop research-based solutions to complex societal challenges. AU's strategy is still grounded in foundational research, education and collaboration as does ECE's. TECH's strategy is firmly based on being collaborative and solution-oriented and on creating societal impact. TECH's strategy shows how the strategic directions of the individual departments feed into the faculty's strategy, which in turn supports AU's strategy. This is illustrated in figure 2.

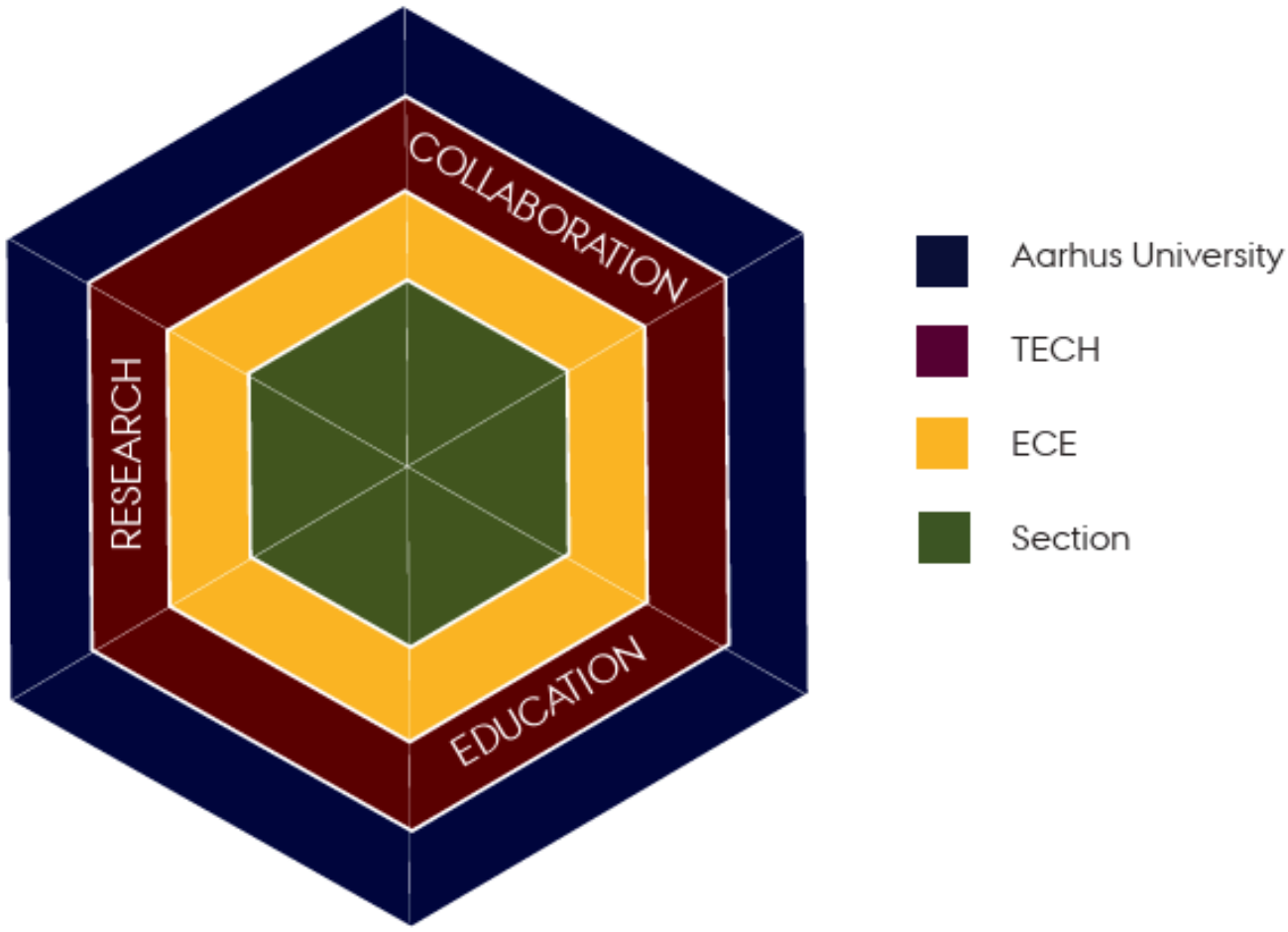


Figure 2: Relationship between AU's, TECH's and ECE's strategies.

On a daily basis, ECE's research, education and collaboration activities are carried out in our five sections, each representing a core, but broad research field in electrical and computer engineering. The technical knowledge and skills necessary to run our degree programmes are provided by staff from the different sections. This allows us to build strong and robust programmes based on solid technical and scientific knowledge, including insights into the latest technologies, as well as providing flexibility and robustness by having multiple potential lecturers for each subject.

Our focus during this strategy period on strategic portfolio management will further strengthen this flexibility and robustness by providing a valuable overview of resources along with on-going and coming activities within research, education, innovation and internal services. The principle of this is illustrated by the matrix structure in figure 3.

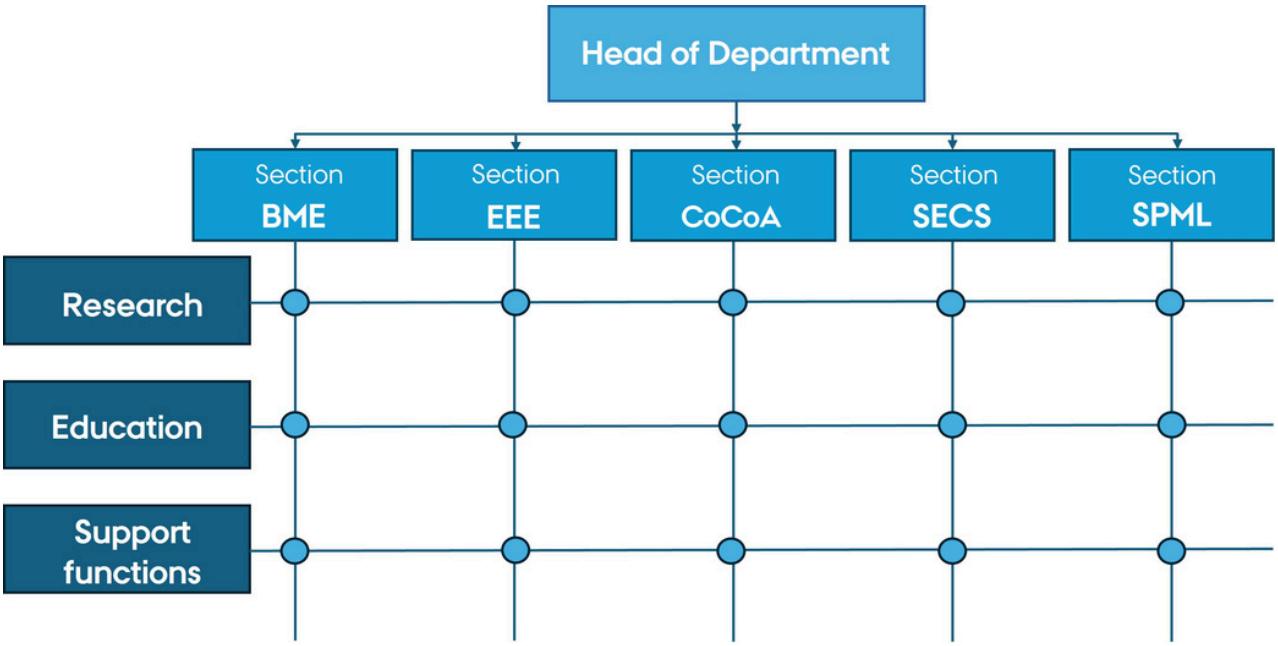


Figure 3: **BME**: Biomedical Engineering, **EEE**: Electrical Energy and Electronics, **CoCoA**: Communication, Control and Automation, **SECS**: Software Engineering and Computing Systems, **SPML**: Signal Processing and Machine Learning.

As figure 3 also shows, the sections, along with the management group, are supported by – and highly dependent on – a comprehensive range of well-functioning and professional internal support functions. These shared services include administrative tasks, support for staff and students, workshops and labs, communication, project support, industry collaboration, business development.

Figure 4 illustrates the interplay between our core activities, internal support functions and ability to create impact on, and in collaboration with, our key stakeholders.

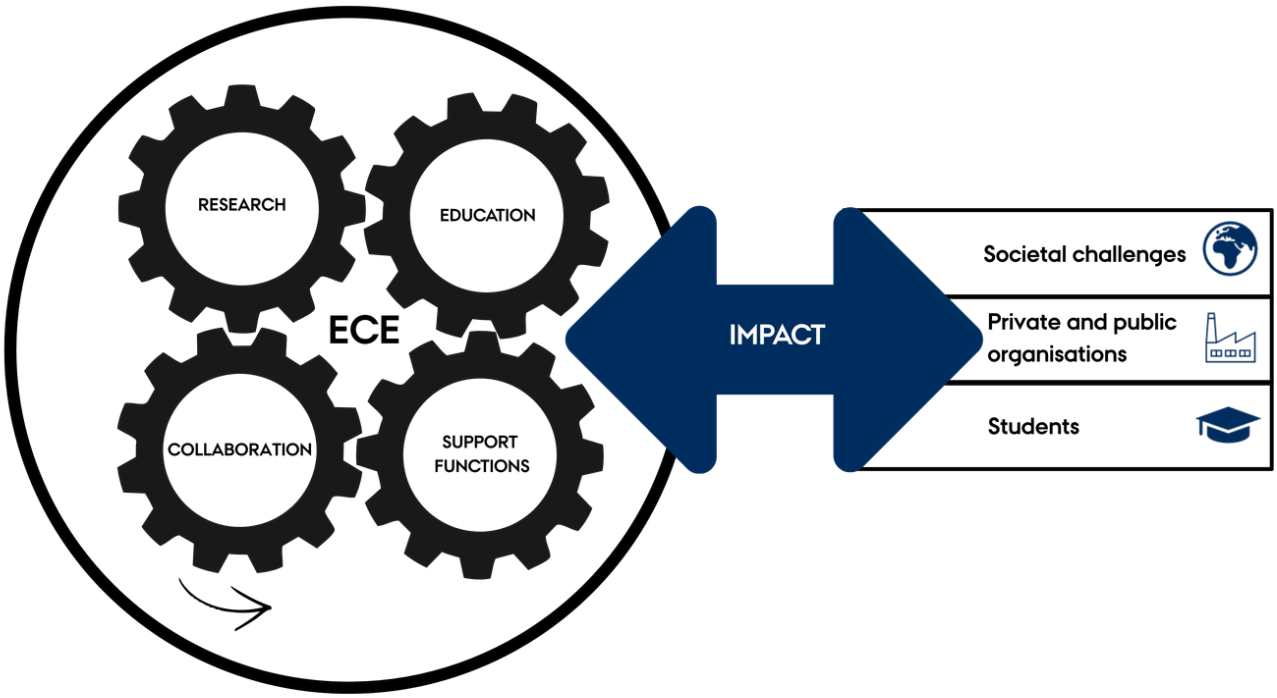
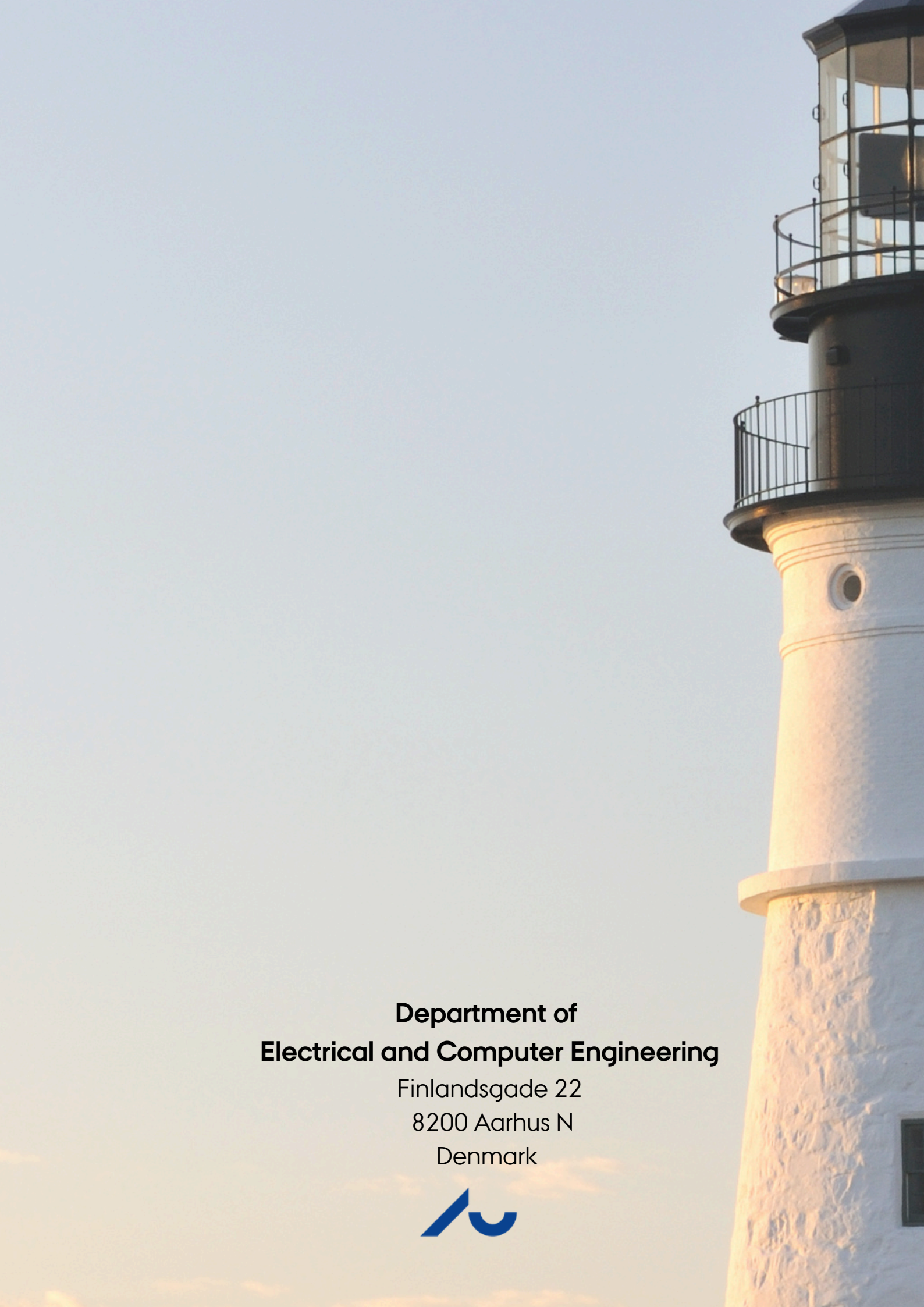


Figure 4: The interplay between our core activities and internal support services.

CLOSING REMARKS

At the start of this new strategy period 2026-2030, ECE is in a good position for further growth and development and with the ability to continue creating impact. The strategi identifies specific focus areas with potential to turn strategy into impact within selected areas. Each area will be assigned a "lead" who will be responsible for facilitating and driving the initiative. The introduction of portfolio management will strengthen our basis for decision-making and increase flexibility and robustness in our core activities. Progress will be followed by the management team and reviewed annually. New focus areas can be suggested and selected during the reviews.



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