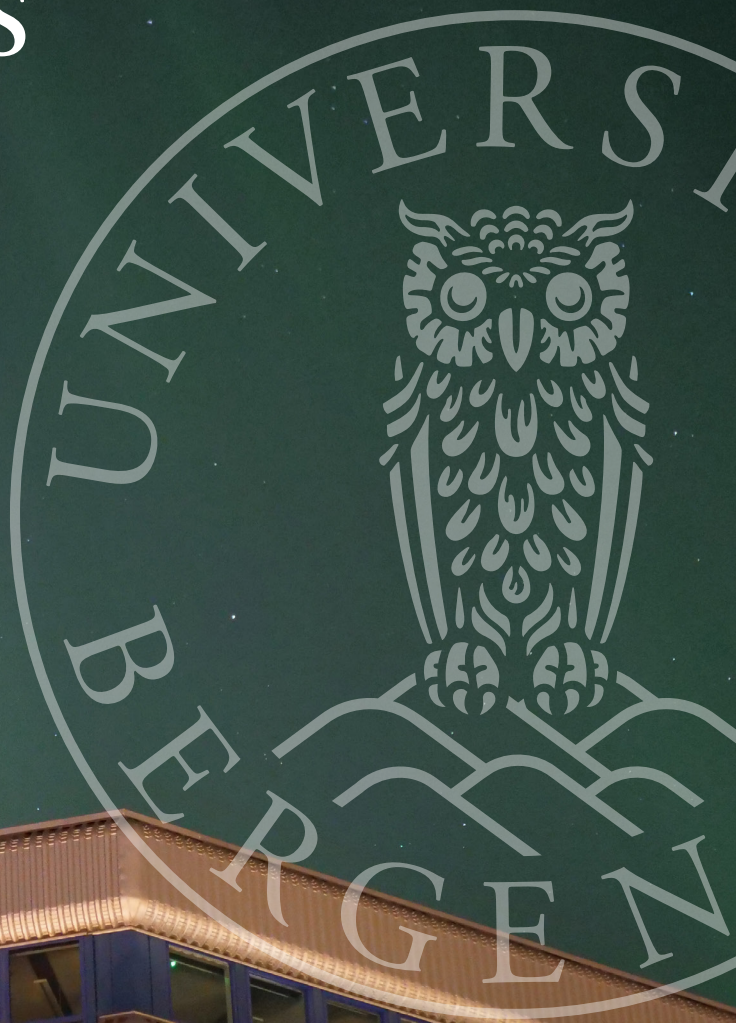


DEPARTMENT OF INFORMATICS

Strategy 2023-2030



UNIVERSITY
OF BERGEN





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PREFACE

This strategy document lays out the priorities of the Department of Informatics and describes how it will contribute to fulfilling the ambitions for the period 2023-2030 in the strategy documents of the University of Bergen and of the Faculty of Mathematics and Natural Sciences.

The strategy addresses important elements of the department's activities and summarises the status as of 2023, formulates goals for the strategy period, and lists several actions to achieve these goals. This document reflects how we want to maintain and develop excellent research and education as well as a good work environment.

Historical timeline

- 1963** First courses in (what later became) Informatics at the Department of Mathematics by pioneers Ernst S. Selmer and Kjell Overholt.
- 1984** Department of Informatics established as separate entity with the following initial groups: Programming Theory, Optimization, Coding Theory and Cryptography, Numerical Analysis; first Head of Department: Overholt; six permanent scientific positions; two administrative positions.
- 1986** Parallab established
- 1987** Artificial Intelligence group formed
- 1988** Algorithms group formed
- 1992** PhD education program established
- 1992** Artificial Intelligence group transformed into a Bioinformatics group
- 1995** Echo student organization established
- 2002** Computational Biology Unit (CBU) established (within Uni Research)
- 2003** The Selmer Center in Secure Communication established on the base of Coding and Crypto group
- 2004** Numerical Analysis group moves to the Department of Mathematics
- 2007** Visualization group established
- 2009** Bergen Language Design Laboratory established
- 2011** First out of five ERC Grants
- 2013** Computational Biology Unit becomes centre hosted by Department of Informatics
- 2014** ELIXIR Norway established (building on national infrastructure since 2002)
- 2016** NORBIS national research school for Bioinformatics established
- 2018** Centre for Data Science established
- 2018** Machine Learning group established
- 2019** Didactics group established
- 2022** Energy Informatics Lab established



The department today

The Department of Informatics was established in 1984 building on an activity dating back to the 1960s within the Department of Mathematics. Today, it is composed of eight research groups: Algorithms, Bioinformatics, Didactics, Machine Learning, Optimization, Programming Theory, Selmer Center in Secure Communication, and Visualization. The department also hosts the Computational Biology (CBU) and the Center for Data Science (CEDAS), and recently established the Energy Informatics Lab.

The Department of Informatics is a medium-sized department with 120 scientific staff, including 34 associate and full professors, 16 adjunct professors, and 23 administrative and technical staff. The department is very international with its staff representing 35 different nationalities. Our research staff collaborate across disciplines and borders with national and international research partners, as well as across sectors with Norwegian government and industry. The knowledge generated by the department shall be openly available, be actively disseminated, and debated.

Educating the next generation of computer scientists is one of the key missions of the Department of Informatics. At the bachelor and master levels, our staff is teaching approximately 900 students in a wide range of courses across the whole university. In addition, we have been graduating on average ten PhDs every year over the past five years with a total 217 PhDs since 1984. Our graduates are highly sought after on the labour market, and we prepare them for highly diverse careers in academia and beyond.

The Department of Informatics has been ranked highest among all informatics departments in Norway in the national assessments of ICT research performed by the Research Council of Norway in 1992, 2002, and 2012. The Department has an excellent track record of attracting external funding (e.g., five ERC Grants, one TMS Elite professor, three TMS Starting Grants, one NFR ToppForsk, six Young Researcher Talents, four NFR Infrastructure).¹ The three top computer scientists in Norway are affiliated with our department (research.com).

¹ ERC, European Research Council; TMS, Trond Mohn Stiftelse; NFR, Norges Forskningsråd

RESEARCH

The Department of Informatics has eight research groups, each including at least three associate or full professors. Each group is responsible for a set of courses and drives or contributes to one or several study programs. Since its birth in 1984, the department has established new research groups, re-oriented and sunset groups after strategic considerations and scientific developments. The department will also in the future consider establishing new groups and phasing out or re-orienting existing groups.

The Department of Informatics is known for strong fundamental research in computer science performed by the research groups in collaboration with (mainly) international partners. Several of the groups have strong international visibility and standing.



GOAL FORMULATION

The Department of Informatics will host a collection of research groups each known on the international arena for performing research at a high level in an important area of computer science. The department will have internationally renowned faculty at various levels of seniority and be known for supporting young talents to develop into research leaders. It will foster a vibrant and ambitious research environment, stimulating and supporting cutting-edge research into pressing basic research questions in computer science. This work will be strengthened by external funding, and include prestigious grants like ERC, FRIPRO (NFR Ground-breaking research) and SFF (Centres of Excellence).

This will be achieved through:

- Strengthening and developing informatics as a discipline through strong fundamental research organized in groups large enough to have critical mass and robustness, with each group having at least three permanent scientific positions and a basic level of resources to conduct high-quality research that does not entirely depend on external funding.
- Working with research groups to identify pressing basic problems in computer science that can be addressed by the department and developing research programs to approach these problems.
- Working to increase the funding for research and education at the department given the increasing importance of informatics in society.
- Stimulating and supporting the research groups to seek external research funding, and offering incentives to encourage researchers to apply for ERC grants and coordinate large collaborative EU applications.
- Continuing to use the TMS recruitment program and tenure track positions to attract young research talents internationally, help them build their research profile, and further their development through mentoring and leadership programs.
- Work actively with the recently established groups to help them develop and obtain international recognition and visibility.
- Promoting Open Science, FAIR data management, and Responsible Research and Innovation practices.
- Engaging in centres and infrastructure efforts, and working with external partners including Simula UiB, helping to strengthen our fundamental research.

EDUCATION

The Department of Informatics provides a broad and research-based education in computer science covering the undergraduate, master and PhD levels. The department education programs include three bachelor programs, one five-year integrated master program (Siving), a general master program in informatics divided into several specializations, and a PhD program. In addition, the department participates in several joint programs both on the bachelor and master level.

It is an expressed goal to teach fundamental knowledge that the students can make use of throughout their whole career. In doing so, we use active learning methods with students and, to some extent, include external industry and research partners. At the master level, students typically work on projects related to real research problems that often result in innovative and publishable results.

GOAL FORMULATION

The Department of Informatics will provide a broad and relevant education in computer science. Teaching will be based on sound pedagogical principles and make extensive use of student active learning. The programs and subjects taught will cover fundamental aspects in computer science tightly integrated with research. Department courses will provide the tools for students to acquire new knowledge themselves as well as to tackle challenges in modern society.

This will be achieved through:

- Systematically working to improve the quality of teaching at the department. This includes making sure that teaching and evaluation methods are aligned with the expressed learning goals and that teaching is done according to proven methods.
- Strengthening teaching of ethics and integrity in all study programs.
- Increasing collaboration with industry and society. Examples include making use of guest lecturers, adjunct positions, and by offering all students the possibility to work with external partners.
- Promoting and enabling exchange of knowledge and experience among the department's teaching staff across research disciplines and courses. In addition, encouraging relevant teaching staff to apply for admission to the Forum for Excellent teaching practitioners at UiB.
- Supporting creation of new programs where informatics is combined with more applied sciences, while simultaneously continuing to offer courses in fundamental informatics to other programs at UiB.
- Supporting and strengthening the collaboration between the student organization Echo and the department.
- Involving PhD candidates and Postdocs in teaching to contribute to their career development.
- Applying for a Centre for Excellence in Education (SFU) if the possibility arises.
- Encouraging international student mobility through participation in exchange programs.



INNOVATION

Informatics is playing an increasingly important role in society. Academic curiosity, research, and research-based education are the foundations we provide for boosting innovation and external cooperation. The Department of Informatics performs cutting-edge informatics research in interdisciplinary efforts and collaborative projects with industry in areas of societal relevance including artificial intelligence, ocean, climate, energy transition, molecular life sciences, and health.

Many master students do their theses in collaboration with the public and private sectors. In their capacity as future employees, they will contribute towards innovation, business, and social development in a 50-year perspective. Key aspects of our innovation contribution include: providing means for students to create strong knowledge foundations through academic specialisation, and developing students' abilities to engage in innovation and interdisciplinary interaction.

GOAL FORMULATION

The Department of Informatics will support innovation and entrepreneurship among its employees and students and establish good organisational frameworks for its activities. It will develop fundamental knowledge to create new insights into sustainable, smart, safe solutions for society's needs. Efforts will focus especially in the areas of marine-related research and innovation, climate, energy transition, health, and medical informatics. The department will strengthen its partnership with society and non-academic sector and provide professional training for its students that can translate seamlessly into work in the public and private sectors.

This will be achieved through:

- Establishing and maintaining strong ties with innovative actors from the research, private, and public sectors. This effort will be helped by our more central campus location at Allégaten 64.
- Strengthening existing interdisciplinary and intersectoral activities in the department's research centres and labs (CBU, CEDAS, Energy Informatics).
- Priming and facilitating student-driven innovation and entrepreneurship through access to research infrastructure, workshops, knowledge clusters, and innovation arenas.
- Building expertise on innovation project funding from NFR, EU and other suitable sources.
- Continuing to include industry-related PhD and master theses.



COMMUNICATION

The Department of Informatics pursues an open, transparent, and proactive approach to communicating its achievements and activities. Our main target audiences include academia, the private and public sectors, and the general public. To ensure the relevance of our research and education, we engage in several regional, national, and international arenas enabling cross-sectorial and social dialogue with our stakeholders.

Communicating the department's high quality in research and education, its achievements, and the possibilities it offers is especially important when recruiting new staff and students. The department's administration, scientific staff, and student organization, Echo, work closely together to communicate the department's activities.

Besides using the traditional academic outreach channels like scientific journals and conferences, our researchers communicate their findings via social media, regularly participate in the annual Research Days in Bergen, and take part in public debate of relevant topics. In addition, our students have their own corporate committee (Echo-Bedkom) that regularly organizes events bringing together students and businesses.



GOAL FORMULATION

To further improve its national and international visibility, the Department of Informatics will strengthen its communication and engagement activities for relevant target audiences in the academic and non-academic sectors. In addition, the department will promote open sharing of research results and educational resources.

This will be achieved through:

- Continuing and improving the dissemination and communication of our research findings, as openly as possible, in both traditional channels and social media. Continuing to engage in cross-sectorial arenas.
- Specifically improving our communication to the general public to further increase their knowledge about informatics and the department's achievements and activities. This includes encouraging all PhD candidates to produce popular scientific contributions.
- Continuing to work with and support the student organization Echo in their efforts towards student recruitment, outreach, and contact with industry.
- Continuing to inform about Open Science and FAIR principles, including possibilities for open sharing of educational resources.
- More actively engaging the department's alumni in outreach activities.

ORGANISATION

The Department of Informatics provides an inclusive work and study environment where we strive to create a welcoming and safe place for all staff and students. Scientific, administrative, and technical staff all work together towards common goals, creating a supportive research and education arena striving to stimulate a sense of belonging and pride.

The department has high standards within research integrity and ethics, HSE (health, safety, and environment), and information security. It provides an efficient and well-functioning administration supporting the department's primary activities in research, education, outreach, and innovation. The head of department works with the department council, the research group contacts, student organizations, and the administration to implement a strong strategic and academic leadership.

GOAL FORMULATION

The Department of Informatics will continue to integrate the principles of diversity, inclusivity, equality, and equity into its organization to create a work environment known for its Inclusive Excellence. The department's systematic HSE work will play a key part in the process. We will ensure that our high standards for research integrity and ethics, HSE, and information security are continuously met. To promote excellent research and education, the Department of Informatics will ensure that all staff and students have access to appropriate infrastructure and support.

This will be achieved through:

- Continuing to improve gender balance among students and staff, building on the efforts initiated through the GenderAct project¹ and the department's Action Plan for gender balance, equality, and diversity.
- Raising awareness about inclusivity, diversity, and equality among our employees and students, lowering barriers to equal opportunities, and performing systematic surveys of our work environment.
- Continuing systematic integration and follow-up of staff through improved onboarding procedures and systematic annual assessment interviews.
- Providing appropriate office space, formal and informal meeting places for both staff and students, as well as appropriate study and teaching halls, to support our research and educational efforts. This will be helped by engaging with the Faculty of Mathematics and Natural Sciences in the design and plans for the new building at Allégaten 64.
- Making sure that the department's management, support functions, and necessary infrastructures meet high standards, and, if necessary, be developed in line with changing needs and conditions.



¹ <https://www.uib.no/en/genderact>



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