
ANNUAL REPORT

2024



simula



ANNUAL REPORT

2024

TABLE OF CONTENTS

REPORTS

Managing director's report	3
Report of the Board of directors	5

SIMULA

Company overview	9
Research	12
Education	16
Innovation	18
Gender equality, social responsibility and working environment	21
Doctorates and master's degrees	27
List of publications	31

FINANCIAL STATEMENTS

Income statement	43
Balance sheet - assets	44
Balance sheet - equity and liabilities	45
Notes to the financial statements	46
Cash flow statement	54
Audit report	55

BOARD AND MANAGEMENT	57
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MANAGING DIRECTOR'S REPORT

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Lillian Røstad



2024 has been a year of significant progress at Simula. We have secured a number of new research projects and celebrated several important milestones in fulfilling our societal mission – to solve fundamental challenges in ICT that are important to society – through research, education and innovation.

An important part of Simula's societal mission is to educate future experts in ICT subjects. At any given time there are between 50 to 60 PhD candidates employed at Simula, who are closely integrated into the departments and supervised by our researchers. In 2024, we celebrated over 200 candidates supervised by Simula who have completed their PhD degree since the start of Simula in 2001.

New research projects are one of the most important drivers for an organisation like Simula, and securing new projects is a recognition of both the quality and relevance of our research groups.

In 2024, we continued to be successful with our applications to various EU programs. Several new projects were funded, and common to many of them is a focus on various applications of artificial intelligence, data sharing, digital security and privacy. Towards the end of the year, the AI4CopSec project began, where Simula is the coordinator and the purpose is to improve security in Europe through the surveillance of seas and borders.

In 2024, Chief Research Scientist Kent André Mardal was awarded a prestigious ERC Advanced Grant for the "aCleanBrain" project, which will look at connections between fluid flow in the brain and the development of diseases such as Alzheimer's and dementia. This project builds on the impressive work that has been done over a long period of time at Simula on mathematical modeling of fluid flow in the brain. In 2024, this research group also became part of a new K.G. Jebsen Centre for Brain Fluid Research, with a focus to go from research to practical medical applications.

Climate change is one of the greatest societal challenges we face, and use of data has the potential to make important contributions to solving this challenge. Simula wants to contribute with our knowledge and expertise, and we are pleased to be a key partner in the GASS project - Green AI for Sustainable Shipping - which started

in 2024. This is a project financed by the Research Council of Norway through the Green Platform initiative, and in the project, machine learning and digital twin technology are used, with the aim of optimizing shipping routes and reducing greenhouse gas emissions.

To get the most out of research efforts, it is important that results are disseminated and used by others. Therefore, it was very pleasing to note that no fewer than four of Simula's researchers were listed in Stanford's annual overview of the 2% most cited researchers in the world this year. In addition, two researchers were on the list of the 2% most cited researchers in the world, throughout their careers.

To ensure that our research has a real and positive impact on society, we aim to contribute to innovation and work closely with the private sector and industry. We want our expertise to benefit society and contribute to value creation and the development of new businesses. The last few years have been challenging for start-ups. It has been difficult to attract new investors. Throughout 2024, we see an improvement, and it is particularly gratifying that the company Augere Medical, which was established based on research at Simula and where Simula Innovation is a significant investor, received CE approval and can take its product for AI-assisted identification of bowel cancer to the commercial market in Europe.

In 2024, Simula was also awarded a contract with The Norwegian Directorate for Civil Protection (DSB) to assist them with the development of the new emergency communications network. This is a good example of how the authorities can utilise the unique expertise at Simula.

Interdisciplinarity is becoming increasingly important in research projects. It ensures a greater and broader understanding of a problem area, and helps maintain relevance. Collaboration between professionals and researchers with diverse backgrounds and understandings is key to solving complex societal challenges—an approach we also emphasise internally at Simula. Although all our research groups focus on technology, there can be surprisingly large differences when the topics become as specific as they need to be to be at the forefront of research. In June 2024, the first "Simula Knowledge Sharing Festival" was held where the purpose was to share knowledge and insights, to facilitate more collaboration between research groups at Simula.

Throughout 2024, a lot of effort was put into applications for research centres linked to the "AI billion". Of the total 50 applications submitted, Simula is responsible for 5, and partners in a further 14. Going into 2025, the outcome of the awarding of these AI Centres is something we are eagerly awaiting and which will have great strategic importance for Simula. Historically, evaluations of the research areas Simula is part of have also had great strategic impact. In 2025 we expect to receive the results of the latest of these, EVALMIT. In other words, we are entering yet another very exciting year for Simula!



Lillian Røstad
Managing director

REPORT OF THE BOARD OF DIRECTORS

SIMULA RESEARCH LABORATORY

The Simula Research Laboratory AS purpose is to conduct fundamental, long-term research in selected areas of software and communication technology and, through this, contribute to innovation in the business sector.

Administration and organisation

Simula Research Laboratory (SRL) is organised as a limited company with the Ministry of Education and Research as owner. The company combines academic traditions with management models known from the business sector. In 2024, SRL had four subsidiaries that are consolidated into The Group accounts. Simula Innovation AS is a wholly owned subsidiary and manages Simula's investment portfolio. Simula UiB AS is owned by SRL (51%) and the University of Bergen (49%). Simula Metropolitan Centre for Digital Engineering AS (SimulaMet) is owned by SRL (51%) and OsloMet - Oslo Metropolitan University (49%). Simula Consulting AS is 100% owned by SRL.

The parent company and its subsidiaries collaborate closely. Most of the companies are located in downtown Oslo (Tullinløkka and Bislett). Simula UiB is located in Bergen.

Activities

Simula conducts fundamental and long-term research in communications in data and mobile networks, scientific computations, methods for developing and testing large software systems, machine learning and information and communications security. The research is focused on fundamental challenges that combine technological development with utility value for industry, business, and society at large.

Throughout the year, Simula has particularly focused on developing research activities in artificial intelligence, the use of technology for improved health, and how to achieve a safer and more reliable digital society. As activities in 2022 were affected by major changes in external circumstances both nationally and internationally, Simula implemented significant measures in 2023 to adapt to changes in the framework conditions. The measures were continued and reinforced throughout 2024, and Simula has, at the end of 2024, completed a successful turnaround. We have reduced costs and worked purposefully to secure future income to achieve sound operations, e.g. by mobilising very broadly for the announcement of the "AI billion" that the government has allocated to research on artificial intelligence. Considerable effort has also been put into developing activity aimed at contract research and IPN projects. Throughout 2024, Simula has had great success with EU applications and has started several new projects where the use of artificial intelligence is a recurring theme.

In 2024, 108 articles were published in international journals, 1 book, 9 chapters in books and 87 peer-reviewed conference articles.

Simula's scientific staff supervised 17 candidates to complete their doctoral degrees and 65 students to complete their master's degrees. From 2001 through 2024, a total of 203 candidates have been supervised to doctoral degrees and 635 students supervised to master's degrees at Simula.

The University of Oslo, the University of Bergen and Oslo Met are the most important academic partners and degree-awarding institutions for doctoral students employed at Simula. In addition, Simula has supervised candidates to complete degrees at Kristiania University College, the Norwegian University of Life Sciences (NMBU), the Norwegian University of Science and Technology (NTNU), the University of Stavanger, UiT The Arctic University of Norway, as well as the University of Oxford, Technische Universität Berlin and Technische Universität Darmstadt in Germany.

At the end of 2024, Simula Innovation AS was the co-owner of 32 early-stage and growth companies. These companies had combined revenues of nearly 400 MNOK and around 230 employees.

Personnel and health, safety, and environment (HSE)

As of 31 December 2024, the Simula Group had a total of 185 employees, of which 166 were full-time employees and 19 part-time employees. Of the full-time employees, 119 were men and 47 women. Of the total number of employees, 88 were Norwegian and 97 foreign nationals. 75 people were employed in fellowship positions – 31 in post-doctoral positions and 44 in PhD student positions. In addition, 37 external PhD students are supervised by Simula's researchers.

At the end of 2024, Simula Research Laboratory had a total of 101 employees, of which 89 were full-time employees and 19 were part-time employees. Of these, 71 were men and 30 were women.

Simula will continue its focus on long-term HSE work. The sickness absence rate in 2024 was 3.9% for The Group and 3.7% for SRL. The Group has worked actively to keep the sickness absence rate low, and this work will be continued in the time ahead. This applies especially to close monitoring of both the physical working environment and mental health. No work-related illnesses or accidents were reported during the year.

In 2024, Simula became subject to the Security Act. IT security and adaptations of security routines to new frameworks and a changed geopolitical landscape have been important focus areas in 2024. Simula has also done extensive work on mapping values to ensure that we follow the procedures and orders that come from the Security Act and the Act on the Export of Knowledge.

HSE is reported at each board meeting. Regular updates are given on employee welfare, employee surveys

and initiated measures in The Group management team's (KL) meetings, and KL also conducts an annual management review of HSE.

Simula's operations do not pollute the external environment beyond what follows from a normal office operation. Simula is in the process of preparing climate accounts to make Simula's actual climate footprint visible. The targets for 2025 are a 2% reduction in emissions for Scope 2, and 10% for Scope 3, categories 1, 6 and 7.

Equal opportunities and integration

The Group works to promote the purpose of the Equity and Anti-Discrimination Act by promoting equality, ensuring equal opportunities and rights, and preventing discrimination in the business. As of the financial year 2020, Norwegian employers and public authorities have a strengthened duty to work on equality and non-discrimination and to account for this work and the actual situation. The statement is published in Simula's annual report under "Gender equality report, social responsibility and Working Environment". Simula is subject to the requirements that follow from the Transparency Act that entered into force in June 2022. We have continued to work on due diligence assessments in 2024 and will account for this work by 30 June 2025. An updated version will be published on our website.

In the Simula Group, 41 different nations are represented and 52% of The Group's employees come from countries outside Norway. Simula offers Norwegian language courses, social events and support in relation to visas, tax and housing, as well as other administrative matters for incoming employees.

At the end of 2024, the proportion of women in scientific positions, i.e. the average for recruitment positions such as PhD students, post-doctoral fellows and scientific staff with main positions at Simula, was 21%. The proportion of women among scientific staff with main positions at Simula was 17% and for recruitment positions the proportion of women at the end of 2024 was 23%. Simula's strategy going forward for the period 2018–2028 has the objective of achieving a 40% female proportion in the entire Simula Group (at the end of 2024 this female proportion was 27%). To reach the goal of 40% female employees by 2028, Simula will continue to focus on measures for both recruitment of new, talented female candidates and visibility, development and adaptation of work situations for qualified women who are already employed at Simula.

Ethics

Simula follows ethical guidelines that are summarised in a separate document, "The Simula Code of Ethics". The document also deals with research ethics based on the fact that Simula is an institution that places strong emphasis on values such as truth and the search for truth. The institution's reputation depends on outsiders being able to trust that the research results are correct and that they have been produced in a verifiable and ethically sound manner. In matters concerning research ethics, Simula's researchers must comply with the guidelines given by the National Committee for Research Ethics in Science and Technology (NENT). In addition, all Simula employees must comply with Simula's internal guidelines for scientific publication. These guidelines are based on the Vancouver Convention.

Financial risk

Simula is exposed to financial risk related to The Group's share investments. The value of the share portfolio is assessed continuously, and accounting write-downs are made if there is significant uncertainty related to the value of the investments. There is also financial risk related to surplus liquidity placed in funds and some currency risk associated with the EU projects that Simula participates in. Overall, the board considers the financial risk to be low. Credit risk and liquidity risk are assessed as low, and the board concludes that the risk for the business is generally low.

Financial development

Simula has worked on a number of measures in 2023 and 2024 to reverse the negative development from 2022. Cost-reducing measures have been introduced within several areas, while there is also a significant focus on securing future income. This has yielded results, and the annual result for 2024 is significantly better than in previous years.

In 2024, The Group had a turnover of 285 million kroner, compared to budgeted income of 304 million. The operating result was a deficit of 6.3 million, compared to a budgeted operating deficit of 3.6 million. Net financial items are positive with 6.5 million, and the annual result after tax is a surplus of 0.1 million. The total cash flow in The Group was 44 million. The Group's liquidity holdings were 89 million kroner as of 31/12/2024. The Group's ability to self-finance investments is good. The Group's short-term debt at year-end constituted 93% of The Group's total debt. The Group's financial position is good, and at year-end, The Group can repay short-term debt using its most liquid assets.

The operating income of Simula Research Laboratory AS was 173 million kroner. External project funding totalled 101.4 million kroner. The year's result was a surplus of 5.8 million kroner, which is transferred to other equity. The equity in Simula Research Laboratory AS amounts to 78.6 million kroner, which corresponds to an equity ratio of 47% of the total capital. The total cash flow in Simula Research Laboratory AS was 47 million kroner.

The operating income of Simula Innovation AS was 0.3 million kroner, net financial items were negative with 0.2 million kroner, and the annual result for 2024 was a deficit of 2.8 million kroner. The equity was 45.8 million, giving an equity ratio of 80%.

The operating income of Simula UiB AS was 29.6 million kroner, and the annual result was a deficit of 0.9 million kroner in 2024. The equity was 9.1 million, giving an equity ratio of 61%.

The operating income of Simula Metropolitan Center for Digital Engineering AS was 76.2 million kroner, and the annual result was a deficit of 4.2 million kroner in 2024. The equity was 15.2 million, giving an equity ratio of 46%.

The operating income of Simula Consulting AS was 27.3 million kroner, and the annual result was 0.9 million kroner in 2024. The equity was 3.3 million, giving an equity ratio of 31%.

Simula Consulting AS will be merged into Simula Research Laboratory AS with effect from 1 January 2025.

Developments going forward

The board believes that the annual accounts give a correct picture of Simula Research Laboratory AS and The Group. The equity in the individual companies and in The Group is satisfactory, even though several of the companies had a financial deficit in 2024.

At year-end 2024, Simula is active in the management of or in the role of research partner in 16 EU-funded projects. Simula has a generally good supply of projects from the EU, but in recent years we have experienced a significant decrease in NFR-funded projects.

In accordance with the Accounting Act § 3-3a, it is confirmed that the assumptions of continued operation are present, and that this has been used as a basis for the preparation of the annual accounts.



The Board, from the left: Mats A. Lundqvist, Hilde Brunvand Nordvik, Ada Johanne Ellingsrud, Lasse Olsen, Are Magnus Bruaset, Lillian Røstad, Pinar Heggernes, Ingolf Søreide, Paul Chaffey and Ingvild Myhre.

The Board's work

The board is informed that Simula has taken out directors' liability insurance limited to 40 million kroner. Information has been provided on the main features of the insurance cover to all board members.

Simula's board has had five meetings in 2024. The board hereby thanks all employees for their efforts during the year.

Oslo, 5 March 2025

Ingvild Myhre,
Chair of the Board

Pinar Heggernes,
Board Member

Paul Chaffey,
Board Member

Lillian Røstad,
Managing Director

Ingolf Søreide,
Board Member

Ada Johanne Ellingsrud,
Board Member

Mats A. Lundqvist,
Board Member

Hilde Brunvand Nordvik,
Board Member

Are Magnus Bruaset,
Board Member

Lasse Olsen,
Board Member

COMPANY OVERVIEW

2024

Simula consists of five companies located in three places in Norway. Since the establishment of Simula Research Laboratory AS (SRL) in 2001, several subsidiaries have been created under SRL to organise the company's expanding activities in research, education, and innovation. The companies are summarised below.

Simula Research Laboratory (SRL) AS

Managing Director: Lillian Røstad

Location: Oslo (Tullinløkka)

Ownership: 100% Norwegian Ministry of Education and Research

Simula consists of five companies located in three places in Norway. Since the establishment of Simula Research Laboratory AS (SRL) in 2001, several subsidiaries have been created under SRL to organise the company's expanding activities in research, education, and innovation. The companies are summarised below.

Director of SRL Research: Joakim Sundnes

Research Director: Are Magnus Bruaset

Research departments:

- Dept. of Computational Physiology (ComPhy) – Dept. Head: Hermenegild Arevalo
- Data Driven Software Engineering Dept. (DataSED) – Dept. Head: Leon Moonen
- Dept. of Engineering Complex Software Systems (ComplexSE) – Dept. Head: Shaukat Ali
- Dept. of High Performance Computing (HPC) – Dept. Head: Are Magnus Bruaset
- Dept. of Numerical Analysis & Scientific Computing (SCAN) – Dept. Head: Ada Johanne Ellingsrud
- Dept. of Validation Intelligence for Autonomous Software Systems (VIAS)– Dept. Head: Arnaud Gotlieb

Other department:

- Simula Academy – director: Rachel Thomas

Simula Metropolitan Center for Digital Engineering (SimulaMet)

Director: Olav Lysne

Deputy director: Marianne Sundet

Location: Oslo (Bislett)

Ownership: 51% Simula Research Laboratory, 49% Oslo Metropolitan University

SimulaMet's research activities are focused in networks and communications, machine learning and IT management. In addition to conducting research, SimulaMet also educates and supervises PhD and Masters' students at Oslo Metropolitan University and contributes to innovation in society through collaboration projects, startup companies and licensing of research results. SimulaMet is located at Oslo Metropolitan University. SimulaMet is located at Oslo Metropolitan University.

Research Director: Sven-Arne Reinemo

Research departments:

- IT Management – Dept. & Center head: Jo Erskine Hannay
- Data Science and Knowledge Discovery (DataSci) – Dept. Head: Evrim Ataman
- Center for Resilient Networks & Applications (CRNA) – Center head: Tarik Cicic
- Holistic Systems (HOST) – Dept. Head: Pål Halvorsen
- Signal and Information Processing for Intelligent Systems (SIGIPRO) – Dept. Head: Baltasar Beferull-Lozano
- EDOS - Effective Digitisation in the Public Sector – Center head: Magne Jørgensen

Director: Carlos Cid

Location: Bergen

Ownership: 51% Simula Research Laboratory, 49% University of Bergen (UiB)

Simula UiB specialises in cybersecurity and conducts research and education in cryptography and information theory. Simula UiB is based at the Department of Informatics at the University of Bergen.

Research Director: Øyvind Ytrehus

Research Departments:

- Cryptography Department – Dept. Head: Martijn Stam
- Information Theory Department – Dept. Head: Eirik Rosnes

Simula Innovation (SI)

Director: Ottar Hovind

Location: Oslo (Tullinløkka)

Ownership: 100% Simula Research Laboratory

Here, research meets the practical demands posed by society. SI manages Simula's investment portfolio and supports entrepreneurs from the start-up phase.

Simula Consulting (SC)

Director: Holger Hussmann

Location: Oslo (Tullinløkka)

Ownership: 100% Simula Research Laboratory

Simula Consulting offers high-quality R&D consulting services (research and development) within the core competency areas of Simula.

The word "simula" is written in a large, bold, lowercase sans-serif font. The background is a blurred office scene with people and lights. At the bottom of the page, there are several light-colored circles of varying sizes.

SIMULA KEY FIGURES

2024

Solving fundamental problems in
ICT that benefit society.

REVENUE

285 MNOK

EMPLOYEES

185

PROJECT PROPOSAL SUCCESS RATE
BY RCN

27%

REVENUE SHARE FROM INDUSTRY
PROJECTS

16%

NATIONALITIES

41

PROJECT PROPOSAL SUCCESS RATE
BY EU

33%

PUBLICATIONS (PEER-REVIEWED)

205

SIMULA

RESEARCH

Simula's research is primarily focused on five ICT areas: scientific computing, development and testing of large software systems, communication systems, machine learning, and cryptography. The research is conducted at Simula Research Laboratory, SimulaMet, and Simula UiB, in close collaboration with national and international partners.

SIMULA RESEARCH LABORATORY (SRL)

SRL's research is specialised in the subject areas of Scientific Computing and Software Engineering.

Researchers working with scientific computing develop advanced simulation tools based on mathematical models and high-performance computing. Computational models of this type are central tools in all branches of science and technology, and Simula is working to make the models more accessible, accurate, and efficient. One of Simula's main interests is to develop models for use in physiology and medicine, with a special focus on processes in the heart and brain. The models have the potential to be used in patient treatment and to provide increased understanding of important health problems such as heart failure, stroke, and dementia.

Several new projects have started in 2024. The "K.G. Jebsen Centre for Brain Fluid Research" has the University of Oslo as the host institution and Simula and Oslo University Hospital as research partners. The centre studies fluid flow in the brain and its importance for the development of diseases such as dementia and for the treatment of brain cancer. A closely related project is "Brain Fluids - Transport and Clearance," led by Professor Kent-Andre Mardal and funded by an ERC Advanced Grant, which is one of the most prestigious projects in European research. "Numerical Modeling of Cardiac Electrophysiology at the Cellular Scale (MicroCard-II)" develops the next generation of tools to simulate electrical signals in the heart and builds on a previous EU-funded project where Simula was also a partner. The project is led by the University of Bordeaux and has a number of European universities as partners, but the basis for the project is models that have largely been developed at Simula.



In recent years, Simula has taken a central role in international research on various challenges that arise in the development of software for quantum computers. Such machines are fundamentally different from the computers used today and require a completely different mindset around programming and software development processes.

Based on the national infrastructure for experimental research in high-performance computing, eX3, Simula is part of the preparatory phase for the development of SLICES - a European infrastructure for experimental ICT research. Together with Inria, which is also a SLICES partner, Simula is participating in the EU project "Online Data Intensive Solutions for Science in the Exabytes Era" (ODISSEE), which started in January 2025. This project will pilot an efficient processing chain for the enormous amounts of data that will be harvested from the world's largest scientific instruments, the Square Kilometer Array and the High Luminosity Large Hadron Collider at CERN.

One of Simula's main interests is to develop models for use in physiology and medicine, with a special focus on processes in the heart and brain.

Within software systems, our researchers use methods and tools to design, develop, maintain, test, and validate complex software systems. The goal is to ensure that the software we rely on is robust, reliable, safe, and secure, both for today's systems and for future quantum systems.

Simula's researchers in software systems have had success in 2024 with project applications to Horizon Europe. This has led to the start of a new MSCA network for doctoral education "Hybrid and Generative Intelligence for Trustworthy Autonomous Cyber-Physical Systems" (InnoGuard) and the project "Security enhancement through heterogeneous data fusion and improved AI/ML-powered Copernicus maritime and border surveillance services" (AI4COPSEC). This project is coordinated by Simula and will demonstrate the potential of using advanced machine learning to further develop Copernicus services for enhanced European security. Artificial intelligence is central to several ongoing projects, including those related to sustainability and the green shift in the Maritime sector, and to reliability in connection with autonomous vehicles. Simula is also involved in several projects funded by the European Space Agency, typically oriented towards earth and climate modeling with an emphasis on effective data management according to the FAIR principles. This is also central to the EU project "FAIR to Adapt to Climate Change" (FAIR2Adapt), which seeks to transform data into actions that can form strategies for climate adaptation. This project is coordinated by Simula.

In recent years, Simula has taken a central role in international research on various challenges that arise in the development of software for quantum computers. Such machines are fundamentally different from the computers used today and require a completely different mindset around programming and software development processes. This activity has continued with full force in 2024, including in the Nordic project NordiQuEst and in the EuroHPC project LUMI-Q.

SIMULA METROPOLITAN CENTRE FOR DIGITAL ENGINEERING (SIMULAMET)

SimulaMet's research is primarily specialised in Communication Systems, Machine Learning and data science, as well as IT Management.

Within communication systems, our researchers develop methods for exploiting the opportunities while reducing the risk associated with modern communication systems. Our goal is to make digital infrastructure more robust and secure and to develop advanced applications that can be used now and in the future. We also study interactions between these systems and society to help inform government policy. Based on our research activities in communication systems, Simula has entered into a framework agreement with the Directorate for Civil Protection and Emergency Planning (DSB). The agreement involves consulting and contract research related to the introduction of a new emergency network.

Our researchers develop methods for exploiting the opportunities while reducing the risk associated with modern communication systems.

Each year, a report on the state of Norwegian mobile networks is published as part of a mandate from the Ministry of Digitalization and Public Administration. The report presents results from over 100 stationary measurement points across Norway. In addition, it includes assessments from 5G-compatible mobile nodes placed on intercity trains in the Oslo area. This year's report also investigated two satellite technologies – the geostationary connection from Brdy and the low-earth orbit service from Starlink.

Within machine learning and data science, our researchers are focused on the mathematical foundations of machine learning, the experimental study of machine learning algorithms and the application of machine learning in real-world applications, including sports, health and software engineering. While machine le-

arning is integrated into research across Simula, the development of methods and mathematical foundations for machine learning takes place at SimulaMet.

Several new projects with different application areas have been granted funding in 2024. Among them is the project "Digitising and Automating the Diagnostic Psychiatric Assessment Process" (DADAP). In this project, SimulaMet will contribute to digitising and automating the diagnostic assessment process in child and adolescent psychiatry (CAP) using an AI-based solution. The main goal of this project is to make these assessment tools more intelligent by using AI to automate the process, and improve the capabilities of these tools. The project is coordinated by RISE Research Institutes of Sweden and is funded by the EU and the Research Council of Norway.

While machine learning is integrated into research across Simula, the development of methods and mathematical foundations for machine learning takes place at SimulaMet.

Within IT management, our researchers are focused on the planning and implementation of large IT projects. Through the research program EDOS - Effective Digitisation of the Public Sector, surveys and analyses are carried out that provide knowledge about effective digitisation of the public sector and input on how to improve processes and methods for developing digital solutions. At the same time, EDOS contributes research-supported advice to the Ministry of Digitalization and Public Administration and other parts of the public sector. A new research report published in 2024 highlights the analysis and planning phase needed to obtain funding for agile IT development in the public sector. A key recommendation in the report is that the public sector should become better at adapting the start-up phase to the type of IT development. This involves both challenging current practices and project models and considering alternative start-up phases and financing methods where appropriate. The report was published on behalf of the research program Concept, the Ministry of Finance and the Ministry of Digitalization and Public Administration.

SIMULA UIB

Simula UiB's research focuses on Applied Cryptography and Information Theory.

Simula UiB's researchers study techniques within these two fields that can be used to provide secure, efficient, and reliable communication, storage and computation. The results of this research make it possible to create new applications for confidential communication and computation, data storage, machine learning, and collaboration between parties that do not fully trust each other. The research also considers how to maintain security and privacy even when full-scale quantum computers become available. Simula UiB's research had a common theme for 2024: "disruptive technologies for secure and reliable communication and computation."

Emerging quantum technologies will lead to new ways of performing calculations and communicating. Simula UiB's researchers made contributions in the areas of quantum error correction codes, quantum cryptography, and post-quantum cryptography. Cybersecurity in a quantum world is a topic of particular interest. Simula UiB, in collaboration with NCE Finance Innovation, organised a network meeting in March 2024 where quantum cybersecurity in the financial sector was discussed. Director of Simula UiB, Carlos Cid, gave a number of presentations on this topic, including at an event hosted by Europol in The Hague and the Financial Supervisory Authority of Norway. Later in 2024, Cid became a member of Standard Norge's expert committee for the standardisation of quantum technologies.

Simula UiB's researchers study techniques within these two fields that can be used to provide secure, efficient, and reliable communication, storage and computation.

The range of new applications in AI requires new mechanisms to protect the privacy of users and their data. Privacy-enhancing technology is a research area of great interest at Simula UiB, with contributions in topics such as private and distributed machine learning, secure computation and data sharing, fully homomorphic encryption (FHE), and zero-knowledge proofs (ZKP). In late summer, Chief Scientist Håvard Raddum spoke at the Sikkerhetsfestivalen (Security Festival) 2024 about the use of FHE techn-



iques to enable privacy-protected machine learning. In November, Simula UiB organized another network meeting, this time focusing on privacy-enhancing technologies. In December, the Research Council of Norway announced the funding of a 4-year project led by Chief Scientist and head of the Department of Information Theory, Eirik Rosnes, where the goal is to explore techniques for private and efficient distributed learning.

Simula UiB maintains close collaboration with several international academic partners. The three-year research project COSINUS with Inria Paris continued in 2024, with mutual visits from both teams. An important result of the COSINUS project was a joint research article published at the most recognized international conference in cryptography - CRYPTO. The CertiCoLab project with NOVA University Lisbon, which aimed to investigate new certifiable and secure computing primitives, supported academic visits between Lisbon and Bergen. The project concluded with a workshop in Portugal in December, co-organized by the two partners. In 2024, Simula UiB also hosted academic guests from Radboud University Nijmegen and Okinawa Institute of Science and Technology.

A key goal at Simula UiB is the education and training of early-career researchers. Two PhD students graduated in 2024, bringing the number of Simula UiB alumni to 15. They now work in industry, the public sector, and academia, both in Norway and internationally. Employees at Simula UiB actively contribute to teaching at higher education institutions in the region. In 2024, they delivered three courses at the University of Bergen and Western Norway University of Applied Sciences.

SIMULA

EDUCATION

At Simula, we believe that high-quality research goes hand-in-hand with educating and training the next generation of scientists and technology experts. This is achieved through a range of activities, including intensive graduate-level courses, thesis supervision for Master's and PhD students, and continuing education and training opportunities for all employees.



SIMULA ACADEMY

The Simula Academy is at the heart of our educational initiatives, coordinating research training, professional development, and the supervision of Master's and PhD candidates.

Highlights from 2024 include our two flagship PhD courses – Communicating Scientific Research and the Summer School in Computational Physiology, three supervisor seminars – one for supervisors of master's students and two for supervisors for PhD candidates focusing on excellence in supervision

and the supervisor's well-being, two writing retreats in Bergen and Oslo, a two-day PhD retreat, career development program for postdocs and multiple company presentations at Norwegian universities.

The traditional two-day PhD retreat included contributions from internal and external instructors for sessions on Open Access Publishing, Reproducibility and Open Science, Successful Career in Academia, and Academic vs non-academic CV. The two-day writing retreats were organised in collaboration with Simula's funding team, while the second cycle of the bi-annual

8-month career program for postdocs was commissioned externally. Two New Employee Seminars were also hosted in collaboration with Human Resources for new employees across all of Simula's units.

Simula Academy hosted two seminars for supervisors of PhD students, focused on defining excellent supervision, effective academic feedback, and the well-being of supervisors. To assure the quality of the supervision of Master's students, the Academy hosted the seminar Good Supervision of Master's Theses, which catered to new supervisors as part of Simula's researcher training activities for early career researchers. These seminars included the contributions of external instructors who are themselves researchers on the topic of supervision in higher education, and participants were introduced to concrete tools for dialogue-based supervision and how to give effective feedback on academic work.

In 2024, the Summer School in Computational Physiology was held in person with 21 students from 9 countries. Simula Academy has worked to create closer ties with students at Norwegian universities and actively uses student associations to advertise relevant courses, master's theses at Simula and the summer school. These represent important recruitment channels for Simula and a valuable way of attracting talented students to Simula; this was reflected in the level of interest in Simula's annual Master's Thesis Fair, rebranded from Master's Day at Simula, which had 60 participants from UiO, OsloMet and NMBU.

Free-standing workshops are held regularly throughout the year with the intent to offer competence-enhancing and career-promoting activities at all levels, as well as supporting researcher well-being. Some of the topics included Funding opportunities for early career researchers, Confident communication and networking, Tools for building resilience in academia, Mental fitness group coaching program, and A byte of AI: Diffusion models in image generation.

Enhanced focus was placed on public outreach in 2024, including training sessions on effectively leveraging social media to disseminate research findings and promote engagement with a broader audience. Additional offerings included public speaking coaching to equip researchers with the skills and confidence to present their work to diverse audiences. The Academy also coordinated the organisation of the Simula Seminars, which brings together academia, industry and the public sector to explore big-picture questions at the intersection of technology and society. Two Simula Seminars were held in 2024, both of which were open to the public: Personalised medicine and the digital transition in healthcare and Emerging Topics in Cyber Security. Furthermore, as a continuation of the 2023 Simula Seminar Exploring Norway's role in shaping future AI research, the Academy coordinated the full-day workshop Getting serious about RRI to support Simula researchers in understanding and integrating responsible research and innovation into grant proposals.

EDUCATION BY THE NUMBERS

2024

17

Candidates supervised to the completion of their PhD degree

65

Students supervised to the completion of their Master's degree

203

PhD candidate completions since the beginning of Simula

635

Master's student completions since the beginning of Simula

SIMULA

INNOVATION AND SERVICES

Innovation activities are an inherent part of technology research. Simula has several complementary approaches to innovation in ICT, including a deep-tech consultancy that solves customer problems and an investment company that gets early start-ups to market. Simula also conducts contract research within our core areas of expertise.

SIMULA CONSULTING

Simula Consulting (SC) has served as an important catalyst between research and industry, facilitating the transition of academic discoveries into practical applications. Through high-quality consulting services across various technology domains, SC has leveraged strong collaborations between its dedicated team and selected researchers from Simula Research Laboratory.

Over the years, SC has developed tailored technological solutions and conducted numerous technical assessments for both private enterprises such as Equinor, and public organisations like the Cancer Registry of Norway (Kreftregisteret). In 2024, SC successfully delivered over ten projects featuring deployed functional systems for its clients, with a primary focus on machine learning and artificial intelligence. Additionally, SC has provided technical due diligence services, strategic business advisory, and workshops aimed at fostering the effective adoption of emerging technologies.

The start of 2024 remained challenging, reflecting broader trends in the IT consultancy sector. However, despite initial market headwinds, SC achieved modest growth in the first half of the year, followed by an uplift in the latter half as market conditions improved. Our strong expertise in machine learning and artificial intelligence was a key driver of continued revenue growth in 2024.

By the end of 2024, Simula Consulting had sustained its trajectory of growth with solid profitability, achieving a 12% increase in annual revenue—from 24.3 million NOK to 27.3 million NOK.



On the 1st of January 2025, Simula Consulting was fully integrated into Simula Research Laboratory as a dedicated department called Applied AI. This transition enhances collaboration between Simula’s researchers and its IT consultancy services, ensuring the highest quality of service while aligning more closely with Simula’s overarching mission.



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Contract Research

Contract research serves as a vital link between Simula's researchers and industry, addressing specific challenges of our clients, both in the private and public sectors. We have established a seamless integration between commissioned research and consultancy services, ensuring that each project benefits from the combined expertise of both researchers and consultants.

We leverage the knowledge and experience of over 150 researchers across our five core research areas in information and communication technology, we can assemble specialised teams capable of tackling even the most complex challenges.

In 2024, we conducted industry-funded contract research projects in addition to the consultancy projects managed by Simula Consulting. These activities combined generated a revenue of 46 million NOK in 2024.

SIMULA INNOVATION

Simula Innovation (SI) has focused on building a portfolio of companies spun out of Simula Research Laboratory's research projects, or investments in other promising companies that link their operations to new technology, especially where it is relevant to Simula's research areas.

At the end of 2024, Simula Innovation AS was a co-owner of 32 early-stage and growth companies. These companies had combined revenues of nearly 400 million NOK and around 250 employees. Simula Innovation also has ownership in a company listed on the Oslo Stock Exchange as a result of settlement in shares for one of the companies in the portfolio. SI also had a minor ownership in 24/7 AB listed on the Stockholm Stock Exchange after the acquisition of one of the companies in the portfolio. These shares were sold at a profit in the fall of 2024.

The companies in the portfolio currently have products in the areas of Telecom infrastructure, business software, networks, PropTech, FinTech (insurance tech), MedTech, media, and MarketTech.

There has been positive development for several of Simula's spin-out companies. For example, the company Augere operates in medtech through a technological solution that identifies polyps in the in-

testines. The solution is developed in collaboration with the gastrointestinal environment of Vestre Viken Hospital and Oslo University Hospital. The global market potential for AI colon screening is estimated to be 26 billion NOK.

After many years of developing the solution, Augere achieved MDR-CE approval in August 2024. This was a key milestone, and in November 2024, the company completed an issue of 23 million NOK at a valuation of 142 million NOK post-money.

The money from the latest issue in November 2024 provides funds for increased investment in the next 12 months. This includes a "soft launch" in the Nordic market, developing a strategy for the US and Japanese markets. The goal is to install 80 PolypAID™ systems in Europe, proving the solution's commercial viability. The launch of the solution in German-speaking countries will be part of this.

As another example, the company Celeway has developed a mobile communication solution that covers high demand in transport, emergency services such as health and police, and other sectors with a great need for communication solutions. The company has had a solid increase in turnover in 2024 and has attracted large, strong investor environments. The company is now rigged for further international growth.

Lastly, the company Forzasys extended a contract in the winter of 2024 with both SEF (Swedish Elite Football) and SHF (Swedish Hockey Federation) with the Swedish Football Association. This has resulted in a complete end-to-end media system. The technological solution, which is AI-based, handles and produces searchable sports content in a variety of formats.

Simula Innovation AS has had 9 profitable exits since 2019. The latter occurs through the sale of parts or a portion of the shareholding in a company.

SIMULA INNOVATION BY THE NUMBERS

2024 PORTFOLIO

250

People employed*

32

Companies

380

MNOK in total revenue

*These figures do not include Arribateck, which is listed on the stock exchange and has 70 employees.

GENDER EQUALITY, SOCIAL RESPONSIBILITY AND WORKING ENVIRONMENT **2024**

GENDER BALANCE AT SIMULA

As of December 31, 2024, the Simula group consisted of a total of five companies in Norway: Simula Research Laboratory (SRL), Simula Metropolitan Center for Digital Engineering (SimulaMet), Simula UiB, Simula Innovation, and Simula Consulting. Simula also has a subsidiary in the USA, Simula Inc., to handle employment relationships in the USA. The Group has a total of 185 employees, of which 166 have their main position at Simula. SRL has a total of 101 employees, of which 89 have SRL as their main workplace. The gender balance in the Simula group, SRL, and SimulaMet is shown as the number of male and female employees with their main position at Simula in Table 1, and employees with other employ-

ment relationships in Table 2. To preserve the anonymity of the employees, several positions have been grouped so that each category has at least five men and five women at The Group level.

Due to the nature of the work, Simula has many employees in temporary and part-time positions. For example, a large part of the workforce consists of temporary recruitment positions (fellows and post-doctoral fellows), and the position category 'adjunct research scientist' consists of part-time employees who have their main position with another employer. Although the exact number of employees in these positions will vary somewhat from year to year and in line with the number of externally funded projects, the total number is relatively stable over time.

Table 1: Gender balance amongst employees with Simula as their main employer. Position categories with less than five women and five men are not reported, and are marked with '-'.

Position categories at Simula	Simula Group		SRL	
	Women	Men	Women	Men
Total	50	135	30	71
Scientific positions	13	60	8	27
Recruitment positions	18	58	10	48
Administrative positions	20	7	12	5
Group Management	5	6	-	-

Position categories in Table 1:

- Research positions: includes Researcher I, II, III (not adjunct positions), as well as engineers
- Recruitment positions: trainees, PhD students, postdoctoral.
- Administrative positions: HR, finance, communications, operations, IT operations, management
- Group Management: includes the CEO and the company's directors, as well as other managers who are part of The Group management. Members of The Group management are also counted in the position categories above as their main position is either administrative or scientific.



Table 2: Gender balance in terms of other employment groupings

	Temporary employees		Actual part-time		Involuntary part-time		Parental leave	
	Women	Men	Women	Men	Women	Men	Women	Men
Simula Group	19	67	-	16	-	-	-	-
SRL	10	37	-	9	-	-	-	-

The Groupings in Table 2 are defined as follows:

- Temporary staff: mainly recruitment positions (PhD students and postdoctoral fellows), adjunct positions, interns, and assistants/substitutes. Stated in number.
- Actual part-time: employees, both researchers and administrative. The majority of employees in this category have other positions in addition to those related to their work at Simula (mainly adjunct research scientist positions). Stated in the number of employees.
- Involuntary part-time: we have no permanent employees in part-time positions who have expressed a desire to work more.
- Parental leave: Stated in number of weeks. The total number of weeks per gender is then divided by the number of women or men who have taken parental leave to show the average leave taken by that gender.

OUR WORK FOR EQUALITY AND ANTI-DISCRIMINATION

Simula depends on competent and motivated employees with specialised expertise to achieve its goals. By recruiting highly qualified researchers from around the world, Simula has become an increasingly diverse workplace. Simula's employees currently represent 41 different nationalities and 52% of the employees come from countries other than Norway (see Figure 1). A total of 27% of Simula's employees are women (17% of Simula's scientific employees, see Figure 2).

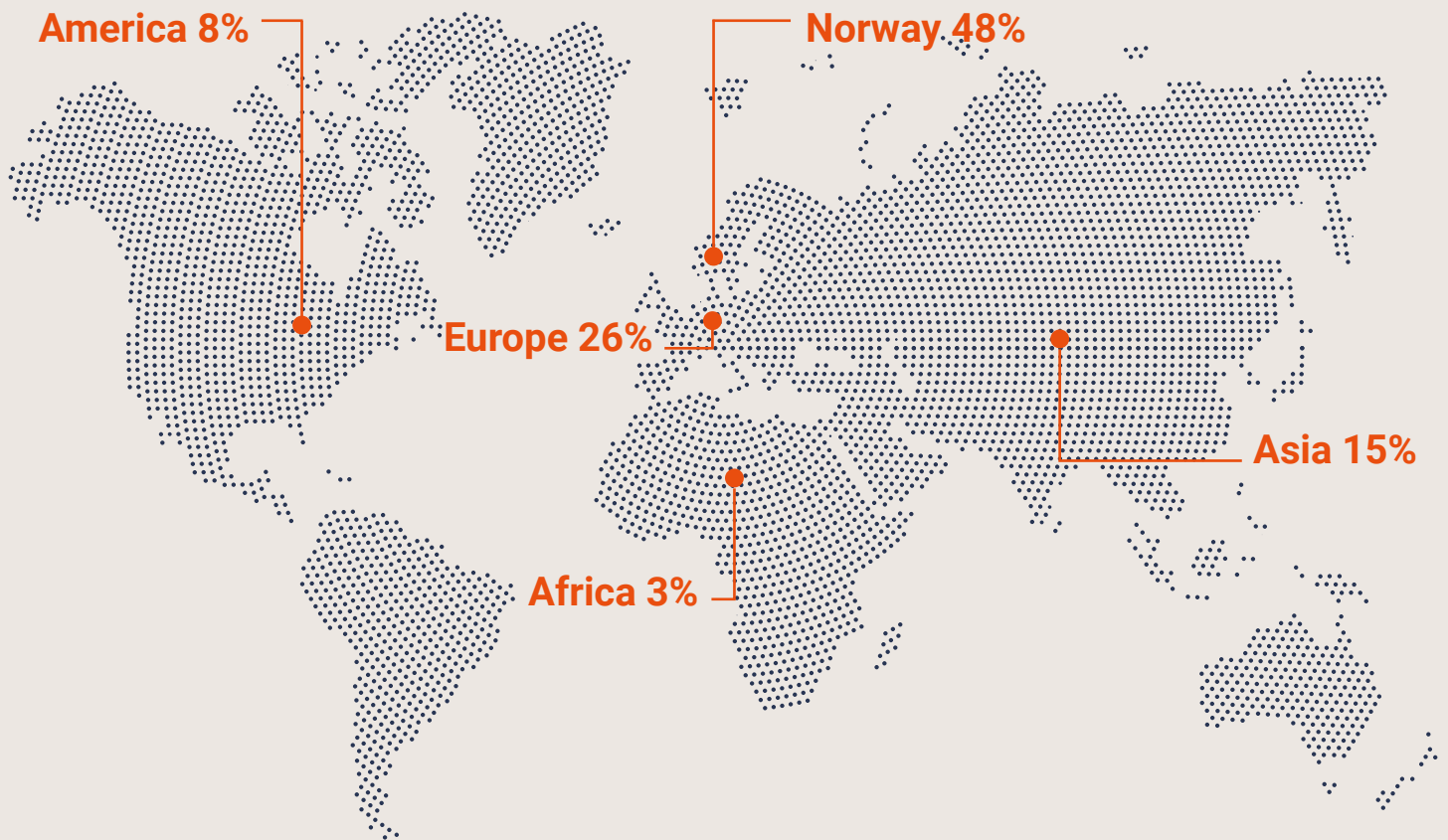
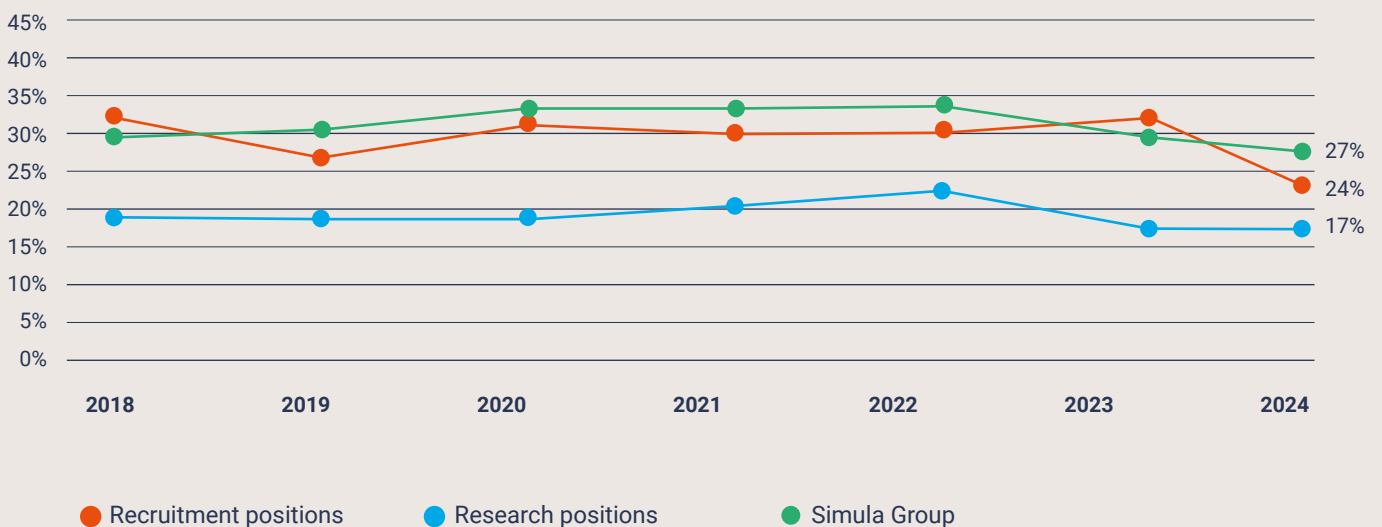


Figure 1: Simula is a diverse workplace. The figure shows the proportion of employees from different continents.

Figure 2: Proportion of scientific positions held by women at Simula.



GENERAL PRINCIPLES FOR GENDER EQUALITY AND ANTI-DISCRIMINATION

Work towards gender equality is anchored in Simula's management approach and in various strategies and guidelines:

- Simula has worked purposefully to recruit and further develop female research talents for over ten years. The first goal of achieving 25% female representation among research positions was reached in 2013. Simula aims to achieve a total female proportion of 40% of all employees by 2028.
- Extensive work on health, safety, and environment (HSE) is carried out regularly. Health and safety representatives, the working environment committee, the PhD forum, HR, and the welfare committee are involved in the work. In addition, regular employee well-being surveys and broader working environment surveys are carried out.
- The boards of the Simula companies receive ongoing reports on the employees' welfare, both routinely (for example, HSE reports for each board meeting), and on important issues that affect employees.
- Simula's culture is described in detail on the website. This description especially conveys Simula's core values and expectations for a good and inclusive workplace.
- Simula has clear guidelines for preventing all forms of harassment, with an associated reporting system in place.

PRACTICAL PROCEDURES FOR EQUALITY AND ANTI-DISCRIMINATION

Simula works actively and deliberately with gender equality and anti-discrimination, are essential components of Simula's efforts to ensure good working conditions in practice. Responsibility for this work is distributed among several functions at Simula, including health and safety representatives, the working environment committee, HR, managers at all levels, The Group management, and the boards of directors. Measures that are decided are implemented by the administration, and in several cases it is done in cooperation with representatives of the employees (working environment and safety representatives, or trade union representatives). Information flow is ensured through regular meetings between department heads and selected administrative functions, as well as the intranet. In addition, all employees at Simula have an independent responsibility to maintain the Simula culture and contribute to an inclusive working environment. Employees also have a duty to report if they discover any form of harassment at work.

As a result of this extensive work over many years, Simula has implemented measures that contribute to equality and anti-discrimination. The current measures are described below.

WORKING ENVIRONMENT

Quality assurance and continuous workplace development is an ongoing task that is facilitated through an internal inspection system that includes health, safety, and working environment. The working environment committee at Simula strives to develop and maintain the working environment quality and follows up on questions regarding safety, health, and welfare of the employees. Simula conducts regular working environment surveys across all companies. The results show that Simula has a good working environment compared to previous surveys at Simula and compared to the research institute sector in general. The results from the quarterly surveys are used as a basis for discussions about the working environment at various levels.

FACILITATION AND OPPORTUNITIES TO COMBINE WORK AND FAMILY LIFE

Simula facilitates a good balance between work and leisure, including family life. With flexible working hours and arrangements for home office, employees can combine a demanding career with activities and responsibilities outside of work.

With these measures, Simula aims to contribute to being a good workplace for all employees, regardless of the individual's background and life situation.

RECRUITMENT AND COMPETENCE DEVELOPMENT

Simula is constantly working to attract, develop, and retain skilled researchers with different backgrounds. The company has developed guidelines that require qualified candidates of both genders to be called for an interview during recruitment. Especially for newly hired employees recruited from abroad, Simula facilitates a quick and positive transition to a Norwegian workplace through, among other things, administrative support, social measures, and Norwegian language training. Norwegian language training is also offered to newly hired employees' spouse/partner who moves to Norway.

Simula facilitates competence development. From a research perspective, this involves access to professional and administrative resources that are necessary to establish oneself as a researcher. All employees are encouraged to sign up for courses or participate

in other training offers that can contribute to development, both as a professional and a leader. Simula organizes seminars for supervisors with a focus on current and difficult topics and offers courses for fellows and postdoctoral fellows to develop their understanding and skills so that they can supervise themselves. Simula Academy, which works with researcher training and competence development at Simula, conducts a wide range of courses and activities for Simula's employees that have direct relevance for a further career in research and contribute to an inclusive working environment. In 2024, these activities included career guidance and planning for postdoctoral fellows and newly hired permanent researchers (Postdoc Career Success Program), an intensive PhD course called Communicating Scientific Research, as well as tailored workshops and coaching in scientific communication.

SALARY STRUCTURES

Every two years, Simula conducts a thorough review of salary conditions within the organisation, the last time being in 2023. The goal is twofold: To assess whether the salary level at Simula is competitive (external perspective) and whether the salary level reflects the individual's level of responsibility and job category (internal perspective). In this process, equal job levels (e.g., PhD students), work of equal value (e.g., advisor in HR and communications staff). Additionally, individual assessments related to variables such as education, experience, and contributions, as are any differences according to gender, are considered. Deviations that are identified are processed and corrected.

PROMOTION

Each year, Simula conducts a process where scientific employees are evaluated for promotion according to established job criteria. Those who meet the requirements are promoted to a higher scientific job category.

SICK LEAVE

Sick leave is generally low at Simula. In 2024, sick leave was 3.9% in the Simula Group (3.7% in SRL and 5.4% in SimulaMet). Simula has measures in place to prevent and reduce sick leave, strengthen job attendance, and prevent dropout from the workforce.

CONFLICT MANAGEMENT AND WORK AGAINST HARASSMENT

Simula aims to ensure a safe and secure working en-

vironment in line with The Group's principles for culture in the workplace. Simula takes into account the individual needs of each employee and neither accepts nor tolerates any form of harassment, exclusion, or discrimination based on religion, gender, sexual orientation, age, nationality, disability, or political views. Simula has developed guidelines for conflict management and reporting. The guidelines encourage employees to actively contribute to a working environment where conflicts are handled in an open, honest, and constructive way, and to try to prevent destructive conflicts from occurring in the first place.

ETHICS

Maintaining high ethical standards is of great importance to Simula as an organisation and to our employees. Simula's ethical guidelines are developed to raise awareness of and to comply with the high ethical standards required of each individual employee. The ethical guidelines include points such as research ethics; working environment and inclusion; confidentiality and conflicts of interest. Compliance with the guidelines helps to create credibility in collaboration with partners. The guidelines are available to all employees on Simula's intranet.

HOW SIMULA WORKS FOR EQUALITY AND ANTI-DISCRIMINATION

Simula's work for equality and against discrimination is a continuous interaction between many actors in The Group, including management, the Board, the administration, employees, and union representatives. Simula's administration bases much of its work on the cycle of a 4-step working method that involves:

1. Investigating the risk of discrimination and obstacles to equality
2. Analysing causes
3. Implementing measures
4. Evaluating the results of the work

In recent years, Simula has implemented a targeted process to identify discrimination risks for gender equality and develop measures for these. Several of the recruitment measures established as a result of this review, such as always inviting at least one candidate of each gender for an interview, are an established practice.

In 2024, Simula has continued its work for equality and against discrimination, and selected examples of this work can be found in Table 3.

Table 3: Selected examples from work on risk identification and measure development

	POTENTIAL RISKS	POSSIBLE CAUSES	IMPLEMENTED MEASURES	EFFECT OF MEASURES
1.	Possible risk of lacking a comprehensive picture of the need for skills development in the courses and offers at Simula.	Constantly changing needs and lack of comprehensive overview available in Simula.	Competence-developed measures are discussed in the management group, and strategic needs are mapped.	Simula maintains professional quality and relevance, has a stable proportion of women, and good results on working environment surveys.
2.	Possible risk that employees returning from leave find it difficult to get back into their work again.	After a longer leave, such as parental leave, employees will need an update on what has happened both professionally and organisationally since the leave began.	Fixed routine for conversations between immediate manager and employees returning from leave. This should facilitate a smoother transition (re-boarding).	We have planned an evaluation process of these measures in 2024.
3.	Are there unclear effects of the home office policy on the working environment and productivity? Possible risk that less contact between colleagues can be problematic for certain employee groups.	Increased flexibility resulting from a home office policy may lead to less professional contact.	Simula practices a 3:2 model for home office work, where three days a week are in the office and two days are flexible.	We assess the effects of this model continuously, e.g., in surveys and in connection with employee appraisals.

According to the requirements of the Duty to Activity and Reporting (ARP), the work for equality and against discrimination shall be carried out in active cooperation with union representatives according to the statutory working method. A structure that reflects this has been started and will be continued in 2025.

FURTHER MEASURES IN THE WORK FOR EQUALITY AND AGAINST DISCRIMINATION

The main features of Simula’s working environment surveys are that employees are satisfied with their workplace, they are motivated, proud to work at Simula, and experience great self-determination and professional development. We see that most employees report low perceived differential treatment, both in terms of gender and position.

We present the results of the survey at several levels in the organisation. Department heads hold working meetings for their respective departments and prepare action lists at the department level. The results are used as a basis for discussion and further work. This is a positive approach that leads to constructive discussions.

Some of the measures for 2025 will be further developments of measures started earlier. Several of these were organised under Simula’s HiddenFigures proje-

ct, a participation and action project in the Research Council’s BalanseHub¹ programme that was active from January 2021 to January 2023. HiddenFigures aimed to achieve long-term gender balance and diversity by creating a management culture across Simula that is inclusive of researchers’ diverse backgrounds and life situations. The measures, which included tailored leadership development and mentoring, have contributed to increased awareness and more open dialogue across the organisation around an inclusive and supportive working environment. Although it is too early to assess the long-term effect of these measures, the benefits are sufficiently recognisable that they will be continued in 2025. In 2024, Simula started the project HiddenGems - broader community benefit for academia’s perspective diversity. HiddenGems will identify new mechanisms aimed at diversity and inclusion that contribute to broader community benefit based on the diversity of perspectives among Simula’s employees.

In 2024, Simula has worked on recruitment routines. Going forward, greater emphasis will be placed on common routines throughout the recruitment process to ensure a better basis for comparison and overview across units and departments, as well as to ensure that candidates receive the same information even before employment.

1 BalanseHub: a network project from the Research Council that supports cultural and structural changes to promote equality and gender balance in research institutions.

DOCTORATES AND MASTER'S DEGREES 2024

DOCTORATES

Student	Title of Thesis	Supervisor	Co-Supervisor(s)	University*
Aizaz Sharif	Testing the Safety and Robustness of Autonomous Cars in a Multi-Agent Environment	Dusica Marijan	Arnaud Gotlieb, Are Magnus Bruaseth	UiO
Anastasiia Grishina	Software Engineering and its Automation with Large Language Models	Leon Moonen	Magne Jørgensen	UiO
Andrea Storås	Beyond the Black Box: Transparent Machine Learning Systems for Medical Applications	Pål Halvorsen	Michael Riegler, Tor Paaske Utheim, Inga Strømke	OsloMet
Andreas Oslandsbotn	Scaling kernel-based learning for big data	Alexander Cloninger	Nickolas Forsch, Aslak Tveito, Zeljiko Kereta, Kimberly McCabe	UiO
Andres Felipe Ocampo Palacio	On the realization of Cloud-RAN on Mobile Edge Computing for 5G and beyond generations of mobile systems	Haakon Bryhni	Ahmed Elmokashfi	OsloMet
Atle Eskeland Rimehaug	Computational modeling of electric brain signals across scales: From the spikes of single neurons to the local field potentials of brain areas	Gaute Einevoll	Marianne Fyhn, Anders M. Dale	UCSD
Chao Tan	A Language Model-Based Approach to Generate Dynamic Synthetic Test Data	Erik Arisholm	Magne Jørgensen, Razieh Behjati	UiO
David Bruneau	Fluid-solid interaction modeling of high-frequency wall vibrations in intracranial aneurysms	David Steinman	Kristian Valen-Sendstad	University of Toronto
Georgia Brennan	Mathematical modelling of clearance and proteopathy in neurodegenerative diseases with application to Alzheimer's disease	Alain Goriely	Marie E. Rognes	University of Oxford
Issam Maarouf	Coding for DNA-based Storage Systems	Eirik Rosnes	Alexandre Graell i Amat	UiB
Jan Marius Evang	Resilient Networks for Critical Services	Haakon Bryhni	F. Michelinakis, Olav Lysne	OsloMet
Lonneke Scheffer	Machine learning and computational analyses of adaptive immune receptors	Geir Kjetil Sandve	Victor Greiff, Bjoern Peters	UiO
María Hernández Mesa	A Computational Study on the Influence of Structural Organization of Receptors on Calcium Signaling in Excitable Cells	Kimberly McCabe	Padmini Rangamani, William E. Louch, Aslak Tveito	UiO
Nicolas Costes	Exploiting Redundant Designs with Side-Channel Attacks	Martijn Stam	Øyvind Ytrehus	UiB
Pierre Bernabé	Self-Supervised Machine Learning for Near Real-Time Anomaly Detection in Maritime Surveillance of the Open Sea	Arnaud Gotlieb	Bruno Legeard	UFCB, France
Siri Sofie Eide	Exploring Complexity in Meteorological Data: Enhancing Weather Forecasts Through Deep Learning-Based Post-Processing	Michael Riegler	Hugo Hammer, John Bjørnar Bremnes	OsloMet
Vemund Schøyen	Grid cells and their role in virtual navigation	Anders Malthesørenssen	Marianne Fyhn, Mikkel Lepperød	UiO

* UiB = Universitetet i Bergen, UiO = Universitetet i Oslo, OsloMet = OsloMet - storbyuniversitetet, UiS = Universitetet i Stavanger, NMBU = Norges miljø- og biovitenskapelige universitet, NTNU = Norges teknisk-naturvitenskapelige universitet, UCSD = University of California San Diego, HIOF = Høgskolen i Østfold, UFCB=Université of Franche-Comté Basançon, BI= Norwegian Business School, KTH= Kungliga Tekniska Högskolan, HCMUS=Ho Chi Minh City University of Science

MASTER'S DEGREES

Student	Title of Thesis	Supervisor	Co-Supervisor(s)	University*
Adam Jakobsen	Pathological Electrical Wave Simulation in the Heart Using Physics Informed Neural Networks	Molly Maleckar	Gabriel Balaban, Vajira Thambawita, Thu Nguyen, Morten Horth-Jensen	UiO
Agung Gumilar Saputra	Exploring Noise Dynamics: Identifying Most Active and Destructive Noises in IBM Quantum Computers	Shaukat Ali	Tao Yue, Sergiy Denysov	OsloMet
Aleksander Theo Strand	SoccerRAG: Multimodal Soccer Information Retrieval via Natural Queries	Pål Halvorsen	Sushant Gautam, Cise Midoglu	OsloMet
Alexander Torkelsen	Mearka: Architecting and evaluation of a Sports Video Tagging Software Toolkit	Pål Halvorsen	Dag Johansen	UiT
Andreas A. Kjernlie	Embedding-Based Explorative Synthetic Data Infusion Leveraging ViT's and Diffusion models	Michael Riegler	Vajira Thambawita	OsloMet
Ankana Singha	Modeling Noise in Quantum Computer and Optimization using Bayesian Optimization and Particle Swarm Optimization	Shaukat Ali	Sergiy Denysov	OsloMet
Birk Birkeland	Comparing different techniques for stimulating neurons - a computational study	Marte Julie Sætra	Geir Halnes	NMBU
Christine Rønning Abrahamson	Sentiment and Software: Exploring the relationship between Reddit and Opera Browser Usage Patterns	Leon Moonen	Francesco Ravazzolo	BI
David Svejda	Enabling Cluster Tracking for Community Detection in Temporal Networks	Johannes Langguth	Johannes Langguth, Daniel T. Schroeder, Morten Hjorth-Jensen	UiO
Dino Orucevic	Modern SoC Performance Characteristics	Håkon Kvale Stensland	Kristoffer Robin Stokke	UiO
Dominika Agata Limanowka-Pieniak	A system for collecting labelled data and evaluating AI algorithms for in-ear detection in hearing protection	Pål Halvorsen		OsloMet
Emilie Dørum	A Comparison of Classical and Machine Learning Based Approaches to Topology Optimization	Thomas Michael Surowiec	Henrik Nicolay Finsberg, Morten Hjorth-Jensen	UiO
Evan Jåsund Kassab	TACDEC: Developing Automatic AI-Based Tackle Detection for Soccer	Cise Midoglu	Pål Halvorsen, Kyrre Glette	UiO
Federico Ruilova Alfaro	Towards Sustainable Cloud Computing: A Systemic Framework for Leveraging Regional Energy Data to Empower Carbon-aware Computing	Sven-Arne Reinemo	Ernst Gunnar Gran, Ivy Bo Peng	KTH
Gard Åckerstrøm Aasness	Enhancing Norwegian Text-to-speech: Developing a Proof-of-Concept by Applying an Iterative Model Training Approach	Syed Zohaib Hassan	Ahmad Al-Shishtawy, Pål Halvorsen	KTH
Håkon Maric Solberg	PlayerTV: Player-Specific Highlight Generation for Soccer	Cise Midoglu	Pål Halvorsen	UiO
Ivar Lønning	Neural Operator-Based Optimal Control	Thomas Michael Surowiec	Morten Hjorth-Jensen	UiO
Joel Yacob Teklemariam	Automatic Detection of Soccer Events using Game Audio and Large Language Models	Cise Midoglu	Pål Halvorsen	NMBU
Knut Stautland Ivarsøy	Exploring Emotion Recognition in Conversational Data: A Focus on Explainability	Pål Halvorsen	Michael Riegler	UiO
Kutbettin Kizilkaya	Mathematical Modeling of Soccer Games and Leagues using Bayesian Statistics	Pål Halvorsen	Cise Midoglu, Hugo Hammer	UiO
Lakyn Alyse Piotrowski	Sentiment and Software: Exploring the relationship between Reddit and Opera Browser Usage Patterns	Leon Moonen	Francesco Ravazzolo	BI
Mansur Dudajev	Deep Energy Method for Heart Mechanics	Henrik Nicolay Finsberg	Xing Cai, Joakim Sundnes, Johannes Haubner	UiO
Marcus René Gullerud	Leveraging LSTM and Language Embeddings for Age Group Estimation in Child Language Data	Pål Halvorsen	Michael Riegler, Syed Zohaib Hassan	UiO

MASTER'S DEGREES

Student	Title of Thesis	Supervisor	Co-Supervisor(s)	University*
Markus Leitvoll	Quantum Diffusion Model	Shaukat Ali	Noah Oldfield, Michael Kirkedal Thomsen,	UiO
Martin Storvoll	A Benefit/Cost Analysis Tool for Better Benefits Management	Jo Erskine Hannay	Magne Jørgensen	UiO
Martin Toft	Solving Large Combinatorial Optimization Problems Using Tensor Network Quantum Circuit Simulations of QAOA	Shaukat Ali	Noah Field, Michael Kirkedal	UiO
Md Mohaiminul Islam Emon	Predicting Injuries in Norwegian Women's Soccer Players: A Machine Learning Approach	Cise Midoglu	Pål Halvorsen, Michael Riegler, Lars Vidar Magnusson	HIOF
Mehdi Houshmand Sarkhoosh	Multimodal AI-Based Summarization and Storytelling for Soccer on Social Media	Cise Midoglu	Pål Halvorsen, Saeed Shafiee Sabet	OsloMet
Mohammad Awais Hameed	An Investigation into using Deep Convolutional Neural Net- works for ECG Analysis	Vajira Tham- bawita	Syed Zohaib Hassa, Pål Halvorsen	OsloMet
Mohammed Zain Farooqi	Architecting In-network memory access with FPGA-based SmartNIC for programmable data centers	Xing Cai	Masoud Hemmatpour, Tore H. Larsen	UiO
Mubariz Ahmad Rai	Examining eXplainable AI in Customer Churn Prevention	Hugo L. Ham- mer	Michael Riegler	OsloMet
Muhammad Mugheera Basharat	Enhancing Cyber Physical Systems through Digital Twins and LLMs	Shaukat Ali	Hassan Sartaj	UiO
Nguyễn Thị Kim Hoàng	Scene Text Recognition in Vietnamese Shopsign	Thu Thi Nguyen	Nguyen Thi Thu	HCMUS
Nikolai Theien Kivijervi	Quantum Diffusion Model	Shaukat Ali	Noah Oldfield, Michael Kirkedal Thomsen	UiO
Nikshubha Kumar	Investigating the Role of Reddit in Cryptocurrency Price Fluctuations	Johannes Langguth	Masoud Hemmatpour, Vegard Høghaug Larsen	BI
Olutomi Samuel Okubadejo	Anomaly Detection in Mobile Broadband Networks Using Federated Learning	Azza Hassan Mohamed Ahmed		NMBU
Oriana Presacan	Leveraging Machine Learning to Unravel Autophagy Dynamics in Cellular Biology	Michael Riegler		OsloMet
Oskar Pieniak	Generative Machine Learning for Precision Medicine	Luis M. Lopez-Ramos	Hugo Lewi Hammer	OsloMet
Pål Andreas Hoven Bentsen	Semi-Supervised Learning and Data Refinement for Sperm Detection	Vajira Tham- bawita	Steven Hicks, Pål Halvorsen, Eric Jul	UiO
Phuong Van Hua Thi	Missing data imputation methods for time series: A case study of Air Quality	Thu Thi Nguyen	Minh Son Dao	HCMUS
Pratima Kumari	Generative Properties of Image to Image Translation Methods	Hugo L. Ham- mer	Michael Riegler	OsloMet
Ramesh Upreti	Conditional Deep Generative Models for Generating Synthetic Electrocardiograms	Vajira Tham- bawita	Michael Riegler, Pål Halvorsen	OsloMet
Roman Machacek	Automated Program Repair using Large Language Models On fine-tuning transformer-based language models for code repair	Leon Moonen	Anastasiia Grishina, Andrei Kutuzov	OsloMet
Sander Sæther	Comparing Recurrent Neural Networks for ECGAnalysis	Vajira Tham- bawita	Michael Riegler, Pål Halvorsen	OsloMet

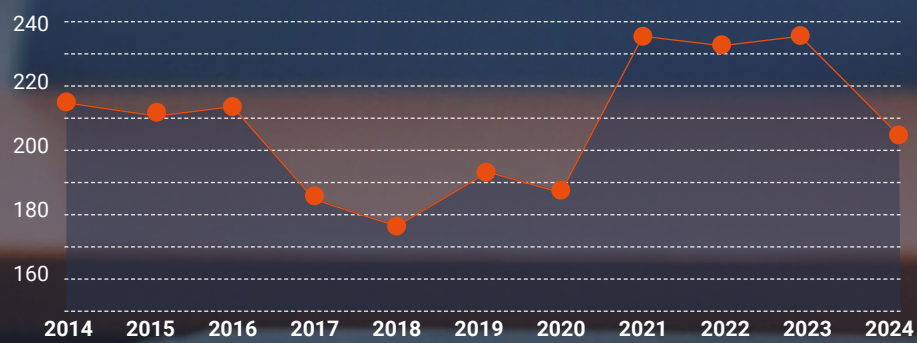
MASTER'S DEGREES

Student	Title of Thesis	Supervisor	Co-Supervisor(s)	University*
Sayed Mohammad Majidi Dorcheh	SmartCrop: AI-Based Cropping of Sports Videos	Cise Midoglu	Pål Halvorsen, Saeed Shafiee Sabet	OsloMet
Sebastian Kvamme	Towards Post-Quantum Safe TLS	Håvard Raddum		UiB
Sebastian Lyng Johansen	Dárkon: Architecting of a Soccer Performance Analytics Software Toolkit	Pål Halvorsen	Dag Johansen	UiT
Shahrzad Nikbakhtian	Probabilistic and Deterministic Wind Speed Forecasting Using Generative Models and Machine Learning	Hugo L. Hammer	Michael Riegler	OsloMet
Siem Peters	Option pricing using Generative Adversarial Networks	Xing Cai	Laura Spierdijk, Joerg Osterrieder	University of Twente
Sigmund Haaland	Investigating The Viability of FPGAs as General Purpose Accelerators	Håkon Kvale Stensland	Robin Stokke, Jim Tørresen	UiO
Simon Lyngar	A Benefit/Cost Analysis Tool for Better Benefits Management	Jo Erskine Hannay	Magne Jørgensen	UiO
Sondre Bader Wang	Real-Time Testing of Automatic White Balance Algorithms using Ray Tracing and FPGA	Håkon Kvale Stensland	Kristoffer Robin Stokke, Jim Tørresen	UiO
Sougata Bhattacharya	Knowledge Graphs for Software Security Assessments and Cyber Threat Intelligence	Leon Moonen	Anders Mølmen Høst, Eirik Valseth	NMBU
Sowgandh Nallanichakravartula	Analyzing the effect of numerical initialization on classification performance and similarity in prediction and explainability behaviour	Hugo Hammer	Hasan Ogul, Michael Riegler	HIOF
Syeda Ambreen Yawar	An evaluation of using transformer networks for ECG Analysis	Pål Halvorsen	Vajira Thambawita, Steven Hicks	OsloMet
Tho Phuong Nguyen	Missing data in gamma distribution	Thu Thi Nguyen		HCMUS
Thomas Bergheim	Automated code generation for simulating cardiac cells with lookup tables	Xing Cai	Kristian Gregorius Hustad	UiO
Thomas Iversen	LangExplain - A framework for using LLMs to explain the output of other LLMs	Steven Hicks	Pål Halvorsen	OsloMet
Tu T. Do	Dimension reduction for monotone missing data	Thu Thi Nguyen	Steven Hicks, Thanh Binh Nguyen	HCMUS
Vidar Lunde Olaisen	Aiming at Heterogeneous Parallel Computing for Bioinformatics: To Overlap or Not to Overlap?	Xing Cai	Johannes Langguth	UiO
Vilde Hansteen Ung	Causal discovery of connectivity using active learning in spike trains with hidden confounding	Mikkel Elle Lepperød	Anders Malthesørenssen	UiO
Vo Long Tuan	Direct Parameter Estimation for Randomly Missing Data under the Impact of Categorical Variables	Thu Thi Nguyen	Nguyen Thi Hoai Thuong	HCMUS
Vu Mai Anh	Conditional Distribution-based Imputation of Missing Values (DIMV)	Thu Thi Nguyen	Thanh Binh Nguyen	HCMUS
Wahidullah Rahmani	Evaluating the Effectiveness of Likert Scales in User Studies - A Machine Learning Approach	Cise Midoglu	Pål Halvorsen, Saeed Shafiee Sabet	UiO
Yiyao Chen	Towards Automating Benchmark Creation: An Experimental Evaluation of Developer-Written, Translated, and Generated Benchmarks	Christoph Laaber		UiO

PUBLICATIONS BY THE NUMBERS

2024

PUBLICATIONS THE LAST 10 YEARS (peer-reviewed)



ARTICLES IN INTERNATIONAL JOURNALS

Finsberg H, Hake J. **gotranx: General ODE translator**. Journal of Open Source Software. 2024 Oct 17;9(102):7063.

Papachrysos N, Smedsrud PH, Anonsen K, Berstad TJ, Espeland H, Petlund A, Hedenström P, Halvorsen P, Varkey J, Hammer H, Riegler M. **A comparative study benchmarking colon polyp detection with CAde software**. Endoscopy. 2024 Apr;56(S 02):OP188.

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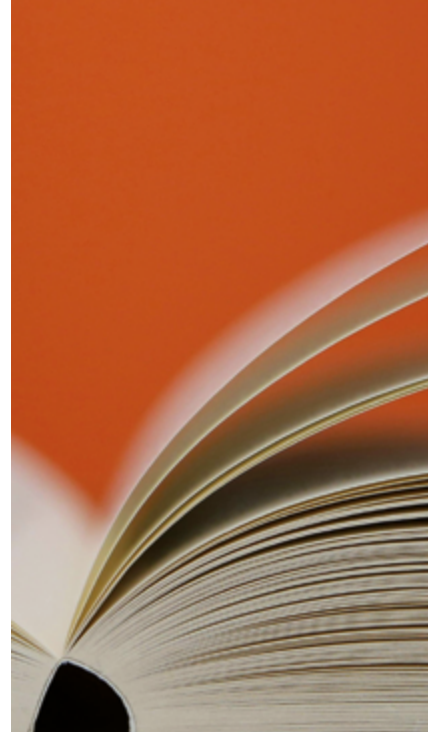
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Evang JM. **Resilient Networks for Critical Services.** Oslo Metropolitan University, Norway.

Oslandsbotn A. **Scaling kernel-based learning for big data.** The University of Oslo, Norway.

Bernabé P. **Self-Supervised Machine Learning for Near Real-Time Anomaly Detection in Maritime Surveillance of the Open Sea.** Université of Franche-Comté Basançon, France.

Grishina A. **Software Engineering and its Automation with Large Language Models.** The University of Oslo, Norway.

Sharif A. **Testing the Safety and Robustness of Autonomous Cars in a Multi-Agent Environment.** The University of Oslo, Norway.

PRESENTATIONS

Gotlieb A. **AI-Driven Metamorphic Testing for Autonomous Systems.** MET2024 Opening and Keynote Talk. Metamorphic Testing Workshop 2024 colocated with ISSTA/ECOOP 2024, Vienna, Austria.

Rognes ME. **Brain membranes and vasculature: a computational mathematics tale of dimensional gaps.** Norwegian Mathematics Meeting, Oslo, Norway.

M. E. Rognes ME. **Brains in motion: computational modelling of the brain's waterscape.** 2024 Woudschoten Conference of the Dutch-Flemish Scientific Computing Society, Zeist, The Netherlands.

M. E. Rognes ME. **Cell membranes and perivascular pathways: a finite element tale of dimensional gaps.** 2024 Woudschoten Conference of the Dutch-Flemish Scientific Computing Society, Zeist, The Netherlands.

Ataman EA. **Coupled Matrix and Tensor Factorizations – Improving our Understanding of Complex Systems Through the Analysis of Temporal and Multimodal Data.** SIAM Conference on Applied Linear Algebra, Paris, France.

Ataman EA. **Extracting Insights from Complex Data using (Coupled) Tensor Factorizations.** ECMTB'24: European Conference on Mathematical and Theoretical Biology, Toledo, Spain.

Ataman EA. **Extracting Insights from Complex Data: (Coupled) Tensor Factorizations & Applications.** ECDA'24: European Conference on Data Analysis, Sopot, Poland.



Rognes ME. **In-silico glymphatics: computational modelling of the brain's waterscape.** 2024 Oslo Brain Fluids Symposium, Simula Research Laboratory, Oslo, Norway.

Ali S. **Quantum Computing, Software Engineering, and Artificial Intelligence.** IPSJ/SIGSE Software Engineering Symposium (SES2024), Yokohama, Japan.

Ali S. **Quantum Software Engineering.** 2030 Software Engineering, Porto de Galinhas, Brazil.

Kuchta M. **Robust iterative solvers for brain glymphatics.** University of Pittsburgh, PA, USA.

Ali S. **Search-based Software Engineering and Quantum Computing** International Symposium on Search-Based Software Engineering 2024, Porto de Galinhas, Brazil.

Jørgensen M. **Successful cost-benefit management of agile software development projects.** The 15th International Conference on Software Business (ICSOB 2024), Utrecht, the Netherlands.

Ali S. **The Convergence of Quantum Computing, Software Testing, and Artificial Intelligence.** JYU Quantum Electronics, Superconductivity, and Topology workshop, University of Jyväskylä, Finland.

M. Lepperød M. **Validating Models in NeuroAI.** Self-organized workshop, Oslo, Norway.

Chatzis C, Schenker C, Pfeffer M, Lind P, Ataman EA. **A Time-aware tensor decomposition for concept evolution.** 94th Annual meeting of the International Association of Applied Mathematics and Mechanics (GAMM 2024), Magdeburg, Germany.

Ali S. **Adaptive Security and Digital Twin technologies in strengthening tele-healthcare systems.** International Alliance for Strengthening Cybersecurity and Privacy in Healthcare (CybAlliance).

Ali S. **Advanced Technologies for the Analysis of Cyber Physical Systems,** Gran Sasso Science Institute, Italy.

Ali S. **AI-Based Digital Twins: A Tale of Innovation in Norwegian Public Sectors.** 1st ACM International Conference on AI-powered Software (Alware), Porto de Galinhas, Brazil.

Ali S. **An Introduction to Quantum Software Testing,** Politecnico di Milano, Italy.

Lepperød M. **Biology for AI and AI for biology.**

Rognes ME. **Brains in motion: computational modelling of the brain's waterscape.** European Society for Mathematical and Theoretical Biology Colloquium, Toledo, Spain.

Dreibholz T. **Cloud and Fog: How and Where is My Data Flowing? Obtaining Insights into Data Privacy in Today's Applications.** Copenhagen Business School, Fredricksberg, Denmark.

Rognes ME. **Computational mathematics and brain multiphysics.** Norwegian Center of Molecular Medicine, Oslo, Norway.

Rognes ME. **Computational mathematics for the brain's waterscape.** ERC NEMESIS Synergy Grant Kick-off Workshop, Montpellier, France.

Lysne O. **Critical digital communication infrastructure** NONOG-6, Oslo, Norway.

Ali S. **Digital Twins for IT-OT-based Healthcare Welfare Services.** NESIOT 1st Annual Conference on Secure IT-OT Integration for successful digitalization

Jørgensen M. **En mer fleksibel finansiering og oppstart av smidig IT-utvikling. Hva sier forskningen og lar det seg gjøre i tråd med utredningsinstruksen og statens prosjektmodell?** Seminar for Direktoratet for forvaltning og økonomisstyring (DFØ), Oslo, Norway.

Li L, Yan S, Bakker BM, Hoefsloot H, Horner D, Chawes B, Dragsted LO, Ebrahimi P, Rasmussen MA, Smilde AK, Ataman EA. **From static to dynamic markers: Analysis of time-resolved metabolomics data using (coupled) tensor decompositions.** SIAM Conference on Applied Linear Algebra (LA24), Paris, France.

Ali S. **Future Trends and Technological Innovations of AI System Evaluation.** Future Advanced Testing Technology Workshop, Tokyo, Japan.

Jørgensen M. **Helseplattformen. Hvorfor valgte man feil leverandør og løsning, og hvorfor ble ikke prosjektet stoppet underveis? Hva kan og bør vi lære av dette?** Akademisk Forum ved UiO: Helseplattformen: Strid og milliardoverskridelser - Hva gikk galt?, Oslo, Norway.

Jordal S. **Hva er sidekanaler?** Sikkerhetskonferansen at NSM, Oslo, Norway.

Jørgensen M. **Hvor mye og hva bør gjøres i oppstartsfasen av smidig IT-utvikling?** HIT-seminar, Oslo, Norway.

Jørgensen M. **Hvordan lykkes med IT-utvikling?** Econa-seminar, Oslo, Norway.

Lysne O. **Nasjonal kontroll med digital infrastruktur** Nasjonal sikkerhetsmyndighet, Oslo, Norway.

Lysne O. **Nasjonal kontroll med digital infrastruktur** Sikkerhetsfestivalen, Lillehammer, Norway.

Kuchta M. **Parameter and domain-robust preconditioners for coupled multiphysics problems.** WCCM, Vancouver, Canada.

Jørgensen M. **Produktiviteten i IT-utvikling: Hva sier forskningen om forskjeller i produktivitet, hva de kommer av og hvordan man finner de mest produktive?** Soco-seminar, Oslo, Norway.

Ali S. **Quantum Optimization and Machine Learning.** Applications in Software Engineering, Kings College, London, UK.

Ali S. **Quantum software testing.** TAROT Summer School 2024, Bergamo, Italy.

Ali S. **Responsible Quantum Software Engineering.** 2nd Symposium on Diversity and Inclusion in Artificial Intelligence.

Dreibholz T, Mazumdar S. **Secure and Privacy-Preserving Smart Living.** KOHS Workshop on Technology for Co-Working on Health and Active Life, Vienna, Austria.

Ali S. **The Superposition of Quantum Computing and Artificial Intelligence.** Nordic Quantum Life Science Round Table, Soria Moria, Oslo, Norway.

Ali S. **The Triad of Quantum Computing, Software Engineering, and Artificial Intelligence.** University of Southern Denmark.

Jørgensen M. **Tidligfasen til smidig IT-utvikling i offentlig sektor. Hvor smidig er den og hvor smidig bør den være?** Resultater fra forskning ved EDOS-senteret, SimulaMet, Promis-seminar, Oslo, Norway.

Jørgensen M. **Upopulær vitenskap: Hva sier forskningen om forskjeller i produktivitet og hva som skal til for å lykkes med IT-utvikling?** Seminar for NoA Ignite, Oslo, Norway.

Jørgensen M. **Utvalgte resultater og anbefalinger fra vår forskning på smidig oppstart og gjennomføring av IT-utvikling i norsk, offentlig sektor.** Seminar for Skate (Styring og koordinering av tjenester i e-forvaltning, et topplederforum i offentlig sektor), Oslo, Norway.

Lepperød M. **Validating Models in NeuroAI.** Hurtigruten cruise ship traveling from Tromsø to Trondheim, Norway.

Ali S. **AI Foundation Models for Cyber-Physical Systems Testing.** Future Advanced Testing Technology Workshop, Tokyo, Japan.

Wang X, Ali S, Arrieta A, Arcaini P, Arratibel M. **Application of Quantum Extreme Learning Machines for QoS Prediction of Elevators' Software in an Industrial Context.** FSE 2024: Companion Proceedings of the 32nd ACM International Conference on the Foundations of Software Engineering.

Sartaj H. **Digital Twin Roadshow for Medical Devices** 1st International Conference on Engineering Digital Twins (EDTconf 2024), Linz, Austria.

Sartaj H. **Digital Twins Environment Simulation for Testing Healthcare IoT Applications.** 48th IEEE International Conference on Computers, Software, and Applications (COMPSAC 2024), Osaka, Japan.

Causemann M, Kuchta M. **Efficient and scalable solvers for a cell-by-cell dual-poroelasticity problem.** FEniCS conference 2024, Oslo, Norway.



Causemann M, Kuchta M. **Efficient and scalable solvers for a cell-by-cell dual-poroelasticity problem.** 9th European Congress on Computational Methods in Applied Sciences and Engineering, Lisbon, Portugal.

Ali S. **Empowering Testing of Oslo City's IoT-based Healthcare Services with Computational Intelligence**
EEE WCCI2024 Workshop on Computational Intelligence Applications, Yokohama, Japan.

Cai X, Trotter JD. **Enabling Cell-Based Simulations of Cardiac Electrophysiology with High-Performance Computing.** SIAM Conference on Parallel Processing for Scientific Computing (PP24), Baltimore, Maryland, USA.

Lu C. **EvoCLINICAL: Evolving Cyber-Cyber Digital Twin with Active Transfer Learning for Automated Cancer Registry System.** Symposium on Search-Based Software Engineering 2024, Porto de Galinhas, Brazil.

Ali S. **Foundation Models for Creating Cyber-Physical Systems Digital Twins.** International Symposium on Leveraging Applications of Formal Methods, Crete, Greece.

Isaku E. **LLMs in the Heart of Differential Testing: A Case Study on a Medical Rule Engine.** Alware 2024: Proceedings of the 1st ACM International Conference on AI-Powered Software, Porto de Galinhas, Brazil.

Hellan O. **Mesh Motion With Scientific Machine Learning**
WCCM 2024, Vancouver, Canada.

Riegler M, Bryhni H. **Militære anvendelser av kunstig intelligens for autonome militære kommunikasjonsnett og datafusjon fra mange sensorer.** FSI, Norway.

Kuchta K. **Modeling molecular transport in the human intracranial space.** FEnICS Conference, Oslo, Norway.

Ali S. **Norwegian Quantum Technology Landscape.** The Quantum Technology Landscape: Catalyzing Regional Collaboration and Innovation, Riga, Latvia.

Ali S. **Quantum Computing and Artificial Intelligence**
NORA Annual Conference 2024, Norway.

Ali S. **Quantum Software Testing 101.** ICSE-Companion '24: Proceedings of the 2024 IEEE/ACM 46th International Conference on Software Engineering: Companion Proceedings

Wu J. **Reality Bites: Assessing the Realism of Driving Scenarios with Large Language Models.** Lisbon, Portugal.

Belmecheri N, Gotlieb A, Lazaar N, Spieker H. **Relevant Object Identification from Qualitative Explainable Graphs in Automated Driving.** NORA Annual Conference, Norway.

Hannay JE. **The Co-Design of Simulation-Based Training for Collaboration between Healthcare Services.** 15th international conference on digital human modeling and applications in health, safety, ergonomics and risk management, Washington DC, USA.

Ali S. **The Entanglement of Quantum Computing, Artificial Intelligence, and Software Engineering.** INRIA Workshop, Paris, France.

POSTERS

Sætra MJ, Mori Y. **An electrodiffusive network model with multicompartmental neurons and synaptic connections**
FENS Forum, 2024.

Erdős B, Widdowson ML, Wesel F, Thorsen J, Stokholm J, Smilde AK, Rasmussen MA, Ataman EA. **Extracting insight from longitudinal gut microbiome data through multiway data analysis.** 2nd Copenhagen Gut Microbiome Symposium, 2024.

Belmecheri N, Gotlieb A, Lazaar N, Spieker H. **Hybrid Intelligence for Scene Understanding and Action Explanation using Qualitative Explanation Graphs.** HyCHA'24 - Hybrid Artificial Intelligence Workshop: From knowledge and human integration to model explanation (Knowledge, Human and Machine Learning Hybridization), 2024.

Hellan O. **Mesh Motion in Fluid-Structure Interaction with Deep Operator Networks.** PhysML Workshop 2024 Poster Session, 2024.

Causemann M, Masri R, Kuchta M, Rognes ME. **Modelling molecular transport in human pial perivasculature.** Lund Glymphatics Symposium, 2024.

Danieli K, Fyhn M, Lepperød M. **Neuromodulated online cognitive maps for reinforcement learning.** Bernstein, 2024.

Pettersen MB, Schøyen V, Østby M, Lepperød M. **Self-Supervised Grid Cells Without Path Integration.** NORA Annual Conference, 2024.

PUBLIC OUTREACH

Lepperød M. **BI 195 Ken Harris and Andreas Toliás with Gaute Einevoll and Mikkel Lepperød.**

Lepperød M. **BI 196 Cristina Savin and Tim Vogels with Gaute Einevoll and Mikkel Lepperød.**

Lysne O. **Er vi naive eller er vi forberedt på krig?**

Lysne O. **Forsvarets digitale grunnmur**

Lepperød M. **Jøss podcast 1.**

M. Lepperød M. **Jøss podcast 2.**

Lysne O. **Nasjonal kontroll med digital infrastruktur.**

Lysne O. **Norges digitale rustning.**

Lepperød M. **On neuro-AI on the boat part 1.**

Lepperød M. **On neuro-AI on the boat part 2.**

Sætra MJ. **Panel deltager i Abels tårn. Kan man lage en tredje arm ved hjelp av en bionisk protese?**

Lysne O. **Regulatory Complexity and the Compliance-Industrial Complex: Translating Law into Practice.**

Chalstrey E, Grishina A. **Using generative AI to write code: a guide for researchers. Some tips for making the most of generative AI from the Turing's software engineers.**

Lysne O. **Velkommen, kunstig intelligens! Farvel, demokrati?**

MISCELLANEOUS

Riegler M. **AI 2.0 og norsk industri: En revolusjon i vente.**

Evang JM, Bryhni H, Normann M. **AI in telecom research: classifying network outages.**

Lysne M, Riegler M. **EU-lov om kunstig intelligens godkjent - hva burde Norge gjøre nå?**

Hannay JE, Riegler M. **KI-feberen: Når middelet blir målet.**

Riegler M. **KI-toget går. Er offentlig sektor klar for turen?**

Sartaj H. **MeDeT: Medical Devices Digital Twins Generation with Meta-learning.**

Riegler M. **Norge sløser med tid og ressurser i AI-satsingen.**

Riegler M. **Norge trenger en bedre demokratisk prosess for kunstig intelligens**

Riegler M. **OpenAI o1: Et stort fremskritt eller bare et steg videre?**

Schenker C, Wang X, Horner D, Rasmussen MA, Ataman EA. **PARAFAC2-based Coupled Matrix and Tensor Factorizations with Constraints.**

Andersen J, Witczak O, Due E, Hicks S, Thambawita V, Bjørndahl L, Riegler M, Haugen TB. **Sperm motility assessed by deep convolutional neural networks.**

Evang JM. **The Fractured Web: Evaluating Mutual Trust and Sovereignty on the Modern Internet.**

Magin J, Bovy B, Knoch A, Abernathy R, Coca-Castro A, Strobl P, Fouilloux A, Loos D, Chan WT, Delouis J, Odaka T. **xdggs: discrete global grid systems with xarray.**

INCOME STATEMENT

2024

SRL

SIMULA GROUP

2023	2024		Noter	2024	2023
OPERATING REVENUES					
183,156,018	172,799,175	Operating revenues	2	285,03,271	295,665,861
183,156,018	172,799,175	TOTAL OPERATING REVENUES		285,039,271	295,665,861
OPERATING EXPENSES					
36,149,001	28,311,759	Direct project costs		24,658,096	33,878,282
122,919,948	112,160,523	Salary and social costs	3,4	208,243,127	220,281,302
2,023,800	2,034,718	Deprication	5	2,808,589	3,083,694
32,710,285	27,333,714	Other operating expenses	6	55,625,616	61,644,172
193,803,034	169,840,714	TOTAL OPERATING EXPENSES		291,335,428	318,887,450
-10,647,016	2,958,462	OPERATING PROFIT		-6,296,157	-23,221,589
FINANCIAL ITEMS					
1,891,580	2,781,332	Other interest income		3,055,060	2,134,016
3,302,930	3,320,685	Other financial income		11,478,311	9,554,751
0	0	Write-down of shares		3,600,000	2,958,123
13,860	1,757	Other interest expenses		4,491	25,018
166,213	3,224,313	Other financial expenses		4,401,106	3,669,348
5,014,436	2,875,948	NET FINANCIAL ITEMS		6,527,774	5,036,279
-5,632,579	5,834,410	PROFIT BEFORE TAX		231,616	-18,185,309
0	51,780	Tax	7	99,514	0
-5,632,579	5,782,630	NET PROFIT		132,102	-18,185,309
	0	Minority interest		-2,534,493	-2,950,027
-5,632,579	5,782,630	Profit after minority interest		2,666,595	-15,235,282
ALLOCATION OF THE YEAR'S NET PROFIT					
-5,632,579	5,782,630	Transferred to othe equity			
-5,632,579	5,782,630	TOTAL ALLOCATED			

BALANCE SHEET

ASSETS 2024

SRL

SIMULA GROUP

2023	2024		Notes	2024	2023
FIXED ASSETS					
Intangible assets					
961,841	1,081,702	Website	5	1,081,702	961,841
961,841	1,081,702	Total intangible assets		1,081,702	961,841
Tangible fixed assets					
8,872,891	7,222,602	Furniture, fixtures, equipment	5	7,595,888	10,913,653
8,872,891	7,222,602	Total tangible fixed assets		7,595,888	10,913,653
Financial Fixed Assets					
37,332,708	34,841,760	Investments in subsidiaries	8	1,316,075	1,316,075
0	0	Investments in shares	9	47,492,101	49,276,341
2,150	5,775	Other		5,796	2,552
37,334,858	34,847,535	Total financial fixed assets		48,813,973	50,594,968
47,169,590	43,151,839	TOTAL FIXED ASSETS		57,491,563	62,470,462
CURRENT ASSETS					
Receivables					
11,430,194	7,601,222	Account receivables		17,555,516	24,173,069
34,669,799	26,749,523	Other receivables		34,180,751	45,424,272
46,099,993	34,350,745	TOTAL RECEIVABLES		51,736,267	69,597,341
Investments					
17,148,848	19,088,998	Market-based funds	10	44,263,662	44,505,075
0	0	Market-based bonds	10	1,814,526	1,718,929
17,148,848	19,088,998	Total investments		46,078,188	46,224,004
25,834,829	71,047,198	Bank deposits	11	89,072,606	44,871,616
89,083,670	124,486,941	TOTAL CURRENT ASSETS		186,887,060	160,692,961
136,253,260	167,638,780	TOTAL ASSETS		244,378,623	223,163,423

BALANCE SHEET

EQUITY AND LIABILITIES 2024

SRL

SIMULA GROUP

2023	2024		Notes	2024	2023
EQUITIES AND LIABILITIES					
EQUITY					
Paid-in equity					
1,200,000	1,200,000	Share capital	12,13	1,200,000	1,200,000
1,200,000	1,200,000	TOTAL PAID-IN EQUITY		1,200,000	1,200,000
RETAINED EARNINGS					
71,615,945	77,398,574	Other equity	13	105,372,344	102,705,749
0	0	Minority interests	13	11,923,248	14,457,741
71,615,945	77,398,574	Total retained equity		117,295,592	117,163,490
72,815,945	78,598,574	TOTAL EQUITY		118,495,592	118,363,490
LIABILITIES					
Other long term debt					
0	0	Other long term debt	7	72,680	0
0	0	TOTAL LONG TERM DEBT		72,680	0
Other long term debt					
0	0	Other long term debt	15	9,255,064	11,007,023
0	0	TOTAL LONG TERM DEBT		9,255,064	11,007,023
CURRENT LIABILITIES					
7,457,983	4,114,782	Accounts payable		6,455,648	7,600,292
0	0	Tax payable	7	26,754	0
7,758,194	7,407,918	Public duties payable		15,274,930	19,535,448
48,221,138	77,517,505	Other current liabilities	16	94,797,954	66,657,170
63,437,315	89,040,205	Total current liabilities		116,555,287	93,792,910
63,437,315	89,040,205	SUM TOTAL LIABILITIES		125,883,030	104,799,933
136,253,260	167,638,780	TOTAL EQUITY AND LIABILITIES		244,378,623	223,163,423

NOTES TO THE FINANCIAL STATEMENTS

NOTE 1 Accounting principles

The financial statement has been prepared in accordance with the regulations of the Norwegian Accounting Act of 1998 and generally accepted accounting principles.

General rule for valuation and classification of assets and liabilities

Assets intended for permanent ownership or long-term use have been classified as fixed assets. Other assets have been classified as current assets. Receivables to be repaid within one year are classified as current assets. Similar criteria have been applied to the classification of current and long-term liabilities.

Fixed assets are valued at acquisition cost but written down to fair value for any impairments that are not expected to be temporary. Fixed assets with a limited economic life are depreciated over the useful life of the asset. Long-term liabilities are recognised at nominal value in the balance sheet on the date they are incurred. Long-term liabilities are not revalued to fair value as a result of changes in interest rates.

Current assets are valued at the lower of cost and fair value. Current liabilities are recognised at nominal value in the balance sheet on the date they are incurred. Current liabilities are not appreciated to fair value as a result of changes in interest rates.

Certain items are valued according to other principles, as explained below.

Foreign Currency transactions

"Assets and liabilities in foreign currency are converted at the exchange-rates on the balance sheet reporting date."

Tangible fixed assets

Tangible fixed assets are depreciated over the expected economic life of the asset. Depreciation is generally performed in a straight line over the expected useful life of the asset.

As a general rule, the depreciation is distributed linearly over the assumed economic life.

Pensions

Pension obligations are financed through operations. The pension premium is considered a pension cost and is classified together with salary costs. All employees are included in the company's pension scheme.

Receivables

Accounts receivables and other receivables are recognised at nominal value less provisions for anticipated losses from bad debt. Provisions for losses are based on an individual assessment of each receivable. In addition, if necessary, a general provision is made to cover expected losses on other receivables.

Tax

The company is liable for tax on the proportion of turnover that falls under commissioned research.

Principles for revenue recognition

Revenues are recognised when delivery has taken place.

Advances on grants and subsidies are entered as Other short-term liabilities and are entered as income in line with the delivery of the services.

The Group

The consolidated financial statement comprises the parent company Simula Research Laboratory AS (SRL) and the subsidiaries Simula Learning (SL), Simula Innovation (SI), Simula Metropolitan Center for Digital Engineering AS (SimulaMet), Simula Consulting AS and Simula UiB. Simula Research Incorporated is owned with 100% but is not included in the consolidated financial statements. The consolidated financial statements are prepared as if The Group were one economic entity. Transactions and balances between group companies are eliminated.

Change in Classification Principle

The company's direct costs related to projects were previously classified as Other Operating Expenses in the income statement. From 2024, these costs have been reclassified under a separate line item called Direct Project Costs in the income statement.

For comparability between years, the figures for 2023 have been adjusted accordingly.

Cash flow statement

The cash flow statement is prepared using the indirect method.

NOTE 2 Operating revenue

	SRL		SRL Group	
	2024	2023	2024	2023
Research funding	65,717,000	64,775,000	75,380,000	75,208,000
Subsidies from the Research Council of Norway, EU, etc.	99,342,223	110,804,451	161,251,695	176,696,435
Other income	7,739,952	7,576,567	48,407,576	43,761,426
Total	172,799,175	183,156,018	285,039,271	295,665,861

The projects generally have a duration of between one and five years. All income is mainly earned in Norway.

NOTE 3 Payroll costs, number of employees, remunerations, employee loans and auditor's fees

	SRL		SRL Group	
	2024	2023	2024	2023
Salary and social costs				
Salary	84,109,606	91,674,392	160,398,113	169,188,240
Social security	13,203,893	14,553,509	25,370,883	27,284,516
Pension costs	8,430,270	9,081,687	16,417,164	17,083,180
Other benefits	3,798,871	5,129,464	6,056,967	6,725,366
Personnel costs re-invoiced group	2,617,883	2,480,896	-	-
Total	112,160,523	122,919,948	208,243,127	220,281,302
Number of full-time equivalents	101	115	184	205

Remuneration paid to senior company officers	Managing director	Board of directors
Salary	2,203,062	595,700
Pension expenses	211,675	-
Other remuneration	20,704	-
Total remuneration	2,435,441	595,700

No loans or guarantees have been granted to the general manager, chairman of the board or other related parties. No loans or guarantees amount to more than 5% of the company's share capital.

Auditor

The auditor's fees break down as follows:

Parent Company	2024	2023	Subsidiaries	2024	2023
Statutory auditing services	170,000	148,000	Statutory auditing services	226,700	230,300
Other services (project revision)	22,000	61,700	Other services (project revision)	-	-
Other services	100,700	83,300	Other services	88,800	98,800
Sum of auditor's fees	292,700	293,000	Sum of auditor's fees	315,500	329,100

Value-added tax (VAT) is not included in the auditor's fee.

NOTE 4 Pension

The Group has a duty to maintain an occupational pension scheme in accordance with the Mandatory Occupational Pension Schemes Act.

The company's pension schemes fulfil the requirements of this legislation.

NOTE 5 Fixed assets**SRL**

Fixed assets	Website	Computer equipment	Furnishings, equipment, etc.	Total fixed assets
Acquisition costs as of 01.01	1,463,304	5,864,214	7,257,757	14,585,275
Additions	460,960	43,330	504,290	504,290
Disposals	-	-	-	-
Acquisition costs as of 31.12	1,924,264	5,907,544	7,257,757	15,089,565
Cumulative depreciation as of 31.12	-842,562	-4,147,325	-1,795,374	-6,785,261
Disposals	-	-	-	-
Book value as of 31.12	1,081,702	1,760,219	5,462,383	8,304,304
Year's depreciation	341,099	1,065,573	628,046	2,034,718

SRL Group

Fixed assets	Website	Computer equipment	Furnishings, equipment, etc.	Total fixed assets
Acquisition costs as of 01.01	1,463,304	7,087,495	10,478,585	19,029,384
Additions	460,960	235,670	696,630	504,290
Disposals	-	1,318,000	-	1,318,000
Acquisition costs as of 31.12	1,924,264	6,005,165	10,478,585	18,408,014
Cumulative depreciation as of 31.12	-842,562	-3,999,923	-4,887,939	-9,730,424
Disposals	-	-	-	-
Book value as of 31.12	1,081,702	2,005,242	5,590,646	8,677,590
Year's depreciation	341,099	1,184,949	1,282,541	2,808,589

The economic life of operating assets is calculated as

*Computer equipment	2-5 years
*Furnishings, fixtures and equipment	3-15 years

NOTE 6 Rental and leasing contracts

The company has entered into two leasing agreements concerning photocopiers and coffee machines. This year's cost is NOK 262 756.

The company relocated to Kristian Augusts gate 23 in downtown Oslo in 2021. The lease is for 15 years.

NOTE 7 Tax

Simula Research Laboratory AS is liable to tax for the part of the business that concerns commissioned research. The subsidiaries Simula Learning AS, Simula Innovation AS and Simula Consulting AS are liable for tax. The subsidiaries Simula Metropolitan Center for Digital Engineering AS and Simula UiB AS are liable to tax for income from commissioned research.

Taxation for the year consists of:	SRL		SRL Group	
	2024	2023	2024	2023
Tax payable	51,780	-	26,834	-
Change in deferred tax	-	-	72,680	-
Total tax expense	51,780	-	99,514	-

Tax payable for the year is calculated as follows:

	2024	2023	2024	2023
Profit before tax*	5,834,410	-5,632,579	-1,092,631	-17,642,420
Permanent differences	-5,600,755	5,938,024	-5,881,837	14,578,369
Change in temporary differences	1,708	-631,307	-749,320	-780,441
Deficit to carry forward	-	-	-	-
Deficits and differences that are not included in the basis	-	-	7,845,761	-
Basis for taxable contract research	235,363	-325,862	121,973	-3,844,492
Taxable income	235,363	-325,862	121,973	-3,844,492

Temporary differences:	2024	2023	2024	2023
Other differences	-1,800,000	-1,650,000	-1,369,632	-2,111,326
Fixed assets	-559,018	-707,310	-1,214,770	-1,222,396
Loss carryforward	-	-	-19,819,058	-13,351,247
Write-down of shares	-	-	-	-
Total basis for deferred tax asset	-2,359,018	-2,357,310	-22,403,460	-16,684,969
Deferred tax liability/asset	-518,984	-518,608	-4,928,761	-3,670,693
Unrecognised deferred tax liability	-518,984	-518,608	-4,928,761	-3,670,693
Recognized tax liability	-	-	72,680	-

Tax payable in the balance sheet:	2024	2023	2024	2023
Tax payable on the profit of the year	51,780	-119,435	26,834	363,868
Tax payable on group contributions paid	-51,780	119,435	-	-363,868
Total tax payable in the balance sheet	-	-	26,834	-

In 2024, the company have had income from commissioned research corresponding to 4.5% of turnover.

NOTE 8 Subsidiaries, associates, etc.

	Acquired	Office	Country	Share
Simula Innovation AS	4/5/2004	Oslo	Norway	100%
Simula UIB AS	17/12/2015	Bergen	Norway	51%
Simula Metropolitan CDE AS	21/11/2017	Oslo	Norway	51%
Simula Consulting AS	7/11/2019	Oslo	Norway	100%

	Result	Equity 31.12
Simula Innovation AS	-2,781,983	45,763,794
Simula UIB AS	-943,607	9,125,825
Simula Metropolitan CDE AS	-4,228,828	15,207,332
Simula Consulting AS	927,943	3,325,752

The boards of Simula Consulting AS and Simula Research Laboratory AS approved a merger plan between the companies in the fall of 2024. The merger plan states that Simula Research Laboratory AS will take over all assets, rights, and obligations of Simula Consulting AS in accordance with Section 13-23 of the Companies Act, effective from 1.1.2025. Upon completion of the merger, Simula Consulting AS will be dissolved.

Non-consolidated subsidiaries	Cost	Result	Equity 31.12	Egenkapital 31/12
Simula Research Laboratory Inc., owned 100% by SRL		1,316,075	0	USD 150 000

NOTE 9 Securities and shares in other enterprises, etc.

Other share investments	Quantity	Face value per share	Shareholding	Cost price
Augere Medical AS	37,930	1.000	9.656%	4,858,930
Celerway Communications AS	14,664	1.000	12.803%	3,008,475
Coupler Holding AS	882	1.000	2.940%	1,000,000
Edgefolio UK Limited	5,771	GBP 1.00	5.188%	1,451,243
Entire Body AS	111,111	0.030	9.294%	3,000,025
EYR Medical AS	22,744	0.300	3.033%	3,033,440
Fabriscale Technologies AS	19,983	1.000	26.597%	4,010,410
Folkeinvest AS	18,429	1.400	1.454%	519,791
Forzasys AS	33,000	0.340	30.000%	1,528,065
Future Ready AS	1,875	1.000	3.111%	500,000
Futureworks AS	5,875	1.000	7.433%	1,700,410
Imerso AS	891	10.000	8.171%	1,615,925
Insilicomed Inc, USA	131,945	USD 1.80		1,220,755
Investory Onlineplattform GmbH	3,337	EUR 1.00	4.060%	1,104,440
KVM AS	1,137	3.000	11.370%	3,412
LeadX AS	6,690,476	0.001	12.441%	2,250,000
Leid AS	8,737	1.000	7.356%	1,500,000
N-ABEL AS	15,675	1.000	32.759%	2,090,000
Organos Inc.	510,000		10.000%	22,048
Qbee AS	934	10.000	15.428%	2,998,618
Retailhub AS	2,250	1.100	5.923%	1,499,985
Skypass AS	197,563	0.030	10.534%	1,854,514
Slipper AS	269,505	0.010	5.980%	747,070
Spoortz Holding AS	153,922	0.100	1.021%	1,059,288
Storeshop AS	67,286	1.750	9.064%	1,849,760
Testify AS	900	1.000	30.000%	1,427,117
Tipio AS	90,498	0.100	6.208%	1,000,000
Tundra Drone AS	1,745	1.000	1.093%	249,946
Unloc AS	331,700	0.010	3.020%	2,997,349
Vendu AS	2,010,330	0.010	6.113%	3,200,000
Völur NOR Holdco AS	320,000	0.030	4.857%	1,000,000
Write-down of shares				16,064,066
Total investment in associations				38,236,950

Pre-seed investments on behalf of Innovation Norway AS:

Other share investments	Quantity	Face value per share	Shareholding	Cost price
Adline Professional AS	2 839	1	1.851%	752,534
Arribatec Group ASA	27 780		0.040%	500,000
Entire Body AS	33 334	0.03	2.788%	500,010
EYR Medical AS	6 521	0.3	0.870%	1,499,830
Fabriscale Technologies AS	3 223	1	4.290%	1,999,793
Future Ready AS	638	1	1.059%	250,000
LeadX AS	1 333 333	0.00	3.127%	750,000
Leid AS	1 609	1	1.355%	750,357
Slipper AS	91 245	0.01	2.020%	252,930
Spoortz Holding AS	76 923	0.1	0.510%	999,999
Tipio	10 566	0.1	0.725%	249,992
Tundra Drone	1 745	1	1.093%	249,946
Unloc AS	63 000	0.01	0.574%	499,760
Total pre-seed investments				9,255,151
Total investments in associates				47,492,10

NOTE 10 Financial instruments

The company has invested surplus liquidity in equity and bond funds. The placements are recorded at fair value as of 31.12.

SRL

Type of placement	Accounted value	Share	Cost
Interest fond	13,683,006	72%	11,693,585
Equity fond	5,405,992	28%	3,188,976
Total	19,088,998	100%	14,882,561

SRL Group

Type of placement	Accounted value	Share	Cost
Interest fond	35,344,186	77%	31,309,977
Equity fond	10,672,288	23%	6,943,419
Total	46,016,474	100%	38,253,396

NOTE 11 Bank deposits

	SRL	SRL Group
Restricted tax withholdings total:	3,749,686	7,173,212

NOTE 12 Share capital and shareholders

Share capital	Quantity	Face value	Capitalized
Ordinary shares	800	1,500	1,200,000
Total	800	1	1,200,000

The company's shareholders as of 31.12	Quantity	Share	Eierandel
The Norwegian state represented by the Ministry of Education and Research	800		100%
Total no. of shares	800		100%

NOTE 13 Equity

SRL		Share capital	Other equity	Sum
Equity as of 1.1	1,200,000	71,615,945	72,815,945	72 815 945
Profit/loss for the year		5,782,630	5,782,630	578 630
Equity as of 31.12	1,200,000	77,398,574	78,598,574	78 598 574

SRL has provided a gross group contribution to SI of NOK 235 000.

SRLGroup	Share capital	Other equity	Minority interests	Sum
Equity as of 1.1	1,200,000	102,705,749	14,457,741	118,363,490
Profit/loss for the year	-	2,666,595	-2,534,493	132,102
Equity as of 31.12	1,200,000	105,372,344	11,923,248	118,495,592

NOTE 14 Balances and transactions between group companies and associates

	2024	2023
Receivable from SI	9,216	19,459
Receivable from SimulaMet	651,585	157,003
Receivable from SC	1,569,471	800,929
Receivable from Simula UiB	38,605	0
Payable to SI	86,058	13,804
Payable to Simula UIB	62,500	240,167
Payable to SC	22,500	0
Gjeld til SimulaMet	362,175	1,057,254
Sale of services, etc to SI	418,736	614,176
Sale of services, etc to SL	0	208,333
Sale of services, etc to Simula UIB	2,343,052	2,142,942
Sale of services, etc to SimulaMet	3,215,148	5,194,677
Sale of services, etc to SC	9,087,551	6,783,241
Purchases of services, etc from SI	338,085	161,364
Purchases of services, etc from SL	0	7,824
Purchases of services, etc from SimulaMet	13,238,667	12,413,732
Purchases of services, etc from SC	121,449	766,146

NOTE 15 Receivables and liabilities

	SRL		SRL Group	
Long-term debt due in more than five years	2024	2023	2024	2023
Pre-seed funds from Innovasjon Norge AS	-	-	9,255,064	11,007,110
Total	-	-	9,255,064	11,007,110

NOTE 16 Funding and grant advances

SRL	2024	2023
Advance, not earned by 31.12	66,651,216	34,650,727

SRL Group	2024	2023
Advance, not earned by 31.12	70,332,984	42,300,806

NOTE 17 Financial market risk and currency risk

The Group is to a certain extent exposed to financial market risk by investing in start-up companies, and by the fact that surplus liquidity in certain subsidiaries is placed in equity and fixed income funds.

The currency risk the company is exposed to is mainly due to EU-funded research and collaboration with universities in the United States.

CASH FLOW STATEMENT

2024

SRL

SIMULA GROUP

2023	2024		2024	2023
CASH FLOW FROM OPERATING ACTIVITIES				
-5,632,579	5,782,630	Net profit for the year	132,102	-18,185,309
2,023,800	2,034,718	Depreciation and write-downs	2,808,589	3,083,694
-4,013,294	11,744,676	Change in receivables	17,857,830	-7,049,715
-14,505,959	25,603,837	Change in current liabilities	22,762,376	-19,627,830
-22,128,032	45,165,861	Net cash flow from operating activities	43,560,897	-41,779,160
CASH FLOW FROM INVESTING ACTIVITIES				
5,973,000	2,490,948	Changes in connection with arrival/disposal		-2,346,941
-362,733	-504,290	Net investments in operating assets	389,315	-1,630,958
-	-	Net investments in/sale of shares	1,784,241	7,173,943
5,610,267	1,986,658	Net cash flow from investing activities	2,173,556	3,196,044
CASH FLOW FROM FINANCING ACTIVITIES				
-	-	Repayment of loans	-1,751,959	-994,462
-	-	Change in deferred tax/tax benefit	-	-
-	-	Net cash flow from financing activities	72,680	-
-	-	Net cash flow for the year	-1,679,279	-994,462
-16,517,765	47,152,519	Cash holdings 1.1	44,055,174	-39,577,578
59,501,442	42,983,677	Cash holdings 31.12	91,095,620	130,673,198
42,983,677	90,136,196	Kontanter inkl finansielle omløpsmidler 31/12	135,150,794	91,095,620
THIS CONSISTS OF:				
-6,583,362	45,212,369	Change bank deposits	44,200,990	-28,935,114
-9,934,403	1,940,150	Changing financial current assets	-145,816	-10,642,464
-16,517,765	47,152,519	Sum total	44,055,174	-39,577,578

Til generalforsamlingen i Simula Research Laboratory AS

Uavhengig revisors beretning

Konklusjon

Vi har revidert årsregnskapet for Simula Research Laboratory AS som består av:

- selskapsregnskapet, som består av balanse per 31. desember 2024, resultatregnskap og kontantstrømoppstilling for regnskapsåret avsluttet per denne datoen og noter til årsregnskapet, herunder et sammendrag av viktige regnskapsprinsipper, og
- konsernregnskapet, som består av balanse per 31. desember 2024, resultatregnskap og kontantstrømoppstilling for regnskapsåret avsluttet per denne datoen og noter til årsregnskapet, herunder et sammendrag av viktige regnskapsprinsipper.

Etter vår mening

- oppfyller årsregnskapet gjeldende lovkrav,
- gir selskapsregnskapet et rettviseende bilde av selskapets finansielle stilling per 31. desember 2024 og av dets resultater for regnskapsåret avsluttet per denne datoen i samsvar med regnskapslovens regler og god regnskapsskikk i Norge, og
- gir konsernregnskapet et rettviseende bilde av konsernets finansielle stilling per 31. desember 2024 og av dets resultater for regnskapsåret avsluttet per denne datoen i samsvar med regnskapslovens regler og god regnskapsskikk i Norge.

Grunnlag for konklusjonen

Vi har gjennomført revisjonen i samsvar med International Standards on Auditing (ISA-ene). Våre oppgaver og plikter i henhold til disse standardene er beskrevet nedenfor under *Revisors oppgaver og plikter ved revisjonen av årsregnskapet*. Vi er uavhengige av selskapet og konsernet i samsvar med kravene i relevante lover og forskrifter i Norge og International Code of Ethics for Professional Accountants (inkludert internasjonale uavhengighetsstandarder) utstedt av International Ethics Standards Board for Accountants (IESBA-reglene), og vi har overholdt våre øvrige etiske forpliktelser i samsvar med disse kravene. Innhentet revisjonsbevis er etter vår vurdering tilstrekkelig og hensiktsmessig som grunnlag for vår konklusjon.

Øvrig informasjon

Styret og daglig leder (ledelsen) er ansvarlige for informasjonen i årsberetningen. Vår konklusjon om årsregnskapet ovenfor dekker ikke informasjonen i årsberetningen.

I forbindelse med revisjonen av årsregnskapet er det vår oppgave å lese årsberetningen. Formålet er å vurdere hvorvidt det foreligger vesentlig inkonsistens mellom årsberetningen og årsregnskapet og den kunnskap vi har opparbeidet oss under revisjonen av årsregnskapet, eller hvorvidt informasjon i årsberetningen ellers fremstår som vesentlig feil. Vi har plikt til å rapportere dersom årsberetningen fremstår som vesentlig feil. Vi har ingenting å rapportere i så henseende.

Basert på kunnskapen vi har opparbeidet oss i revisjonen, mener vi at årsberetningen

- er konsistent med årsregnskapet og
- inneholder de opplysninger som skal gis i henhold til gjeldende lovkrav.

Ledelsens ansvar for årsregnskapet

Ledelsen er ansvarlig for å utarbeide årsregnskapet og for at det gir et rettviseende bilde i samsvar med regnskapslovens regler og god regnskapsskikk i Norge. Ledelsen er også ansvarlig for slik intern kontroll som den finner nødvendig for å kunne utarbeide et årsregnskap som ikke inneholder vesentlig feilinformasjon, verken som følge av misligheter eller utilsiktede feil.

Ved utarbeidelsen av årsregnskapet må ledelsen ta standpunkt til selskapets og konsernets evne til fortsatt drift og opplyse om forhold av betydning for fortsatt drift. Forutsetningen om fortsatt drift skal legges til grunn for årsregnskapet så lenge det ikke er sannsynlig at virksomheten vil bli avviklet.

Revisors oppgaver og plikter ved revisjonen av årsregnskapet

Vårt mål er å oppnå betryggende sikkerhet for at årsregnskapet som helhet ikke inneholder vesentlig feilinformasjon, verken som følge av misligheter eller utilsiktede feil, og å avgi en revisjonsberetning som inneholder vår konklusjon. Betryggende sikkerhet er en høy grad av sikkerhet, men ingen garanti for at en revisjon utført i samsvar med ISA-ene, alltid vil avdekke vesentlig feilinformasjon.

Feilinformasjon kan oppstå som følge av misligheter eller utilsiktede feil. Feilinformasjon er å anse som vesentlig dersom den enkeltvis eller samlet med rimelighet kan forventes å påvirke de økonomiske beslutninger som brukerne foretar på grunnlag av årsregnskapet.

For videre beskrivelse av revisors oppgaver og plikter vises det til:
<https://revisorforeningen.no/revisjonsberetninger>

Oslo, 5. mars 2025

Insignis AS



Kristoffer Langva
statsautorisert revisor

SIMULA

BOARD AND MANAGEMENT

BOARD OF DIRECTORS

- Ingvild Myhre, chair of the Board
- Hilde Brunvand Nordvik, Board member
- Ingolf Søreide, Board member
- Mats Lundqvist, Board member
- Lasse Olsen, Board member
- Paul Chaffey, Board member
- Pinar Heggernes, Board member
- Ada Johanne Ellingsrud, employee representative
- Are Magnus Bruaset, employee representative
- Jan Helgesen, deputy

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- Lillian Røstad, Managing director
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- Ottar Hovind, director of Simula Innovation
- Carlos Cid, director of Simula UiB
- Olav Lysne, director of SimulaMet
- Marianne Sundet, deputy director of SimulaMet
- Holger Hussmann, director of Simula Consulting
- Monica Eriksen, CFO
- Maria Benterud, head of administration (SRL)
- Rachel Thomas, director of Simula Academy
- Are Magnus Bruaset, research director



SIMULA

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