

# Nanoscience of Soft Materials

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**Norway**



# INTRODUCTION

• A PEEK AT OUR  
OVERARCHING VISION •

NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

**KNOWLEDGE FOR  
A BETTER WORLD**

TRONDHEIM | GJØVIK | ÅLESUND



NTNU

# Academic history

- 1217 Schola Cathedralis Nidrosiensis
- 1760 Royal Norwegian Society of Sciences and Letters
- 1910 Norwegian Institute of Technology (NTH)
- 1922 Norwegian Teachers' College [in Trondheim] (NLHT)
- 1950 SINTEF (the Foundation for Technical and Industrial Research at NTH)
- 1955 Norwegian Academy of Technological Sciences (NTVA) (Trondheim)
- 1968 University in Trondheim (UNIT)
- 1973 Trøndelag Music Conservatory
- 1974 Department of Medicine (from 1984: The Faculty of Medicine)
- 1979 Trondheim Academy of Fine Art
- 1980 Norwegian College of General Sciences (AVH) (previously NLHT)
- 1994 University Colleges in Sør-Trøndelag, Gjøvik and Ålesund are established
- 1996 Norwegian University of Science and Technology
- 2010 Trondheim celebrates 250 years as an academic city
- 2016 University Colleges in Sør-Trøndelag, Gjøvik and Ålesund merge with NTNU



TRONDHEIM

ÅLESUND

GJØVIK



TRONDHEIM



# LOCATIONS

GJØVIK



ÅLESUND

# GOALS AND SOCIAL MISSION



- NTNU is Norway's largest and leading provider of engineers and graduate engineers.
- NTNU is one of the country's two largest institutions for teacher education.
- NTNU offers professional training that gives students relevant work experience throughout their entire studies in cooperation with the business and professional community.
- NTNU has Norway's largest educational offerings in the arts and aesthetic subjects.



# Overarching goals

- Highly regarded at an international level, with a number of top-level research groups.
- First-class laboratories and infrastructure.
- Attractive to the best students and employees.
- Students and employees who are proud of being associated with NTNU.



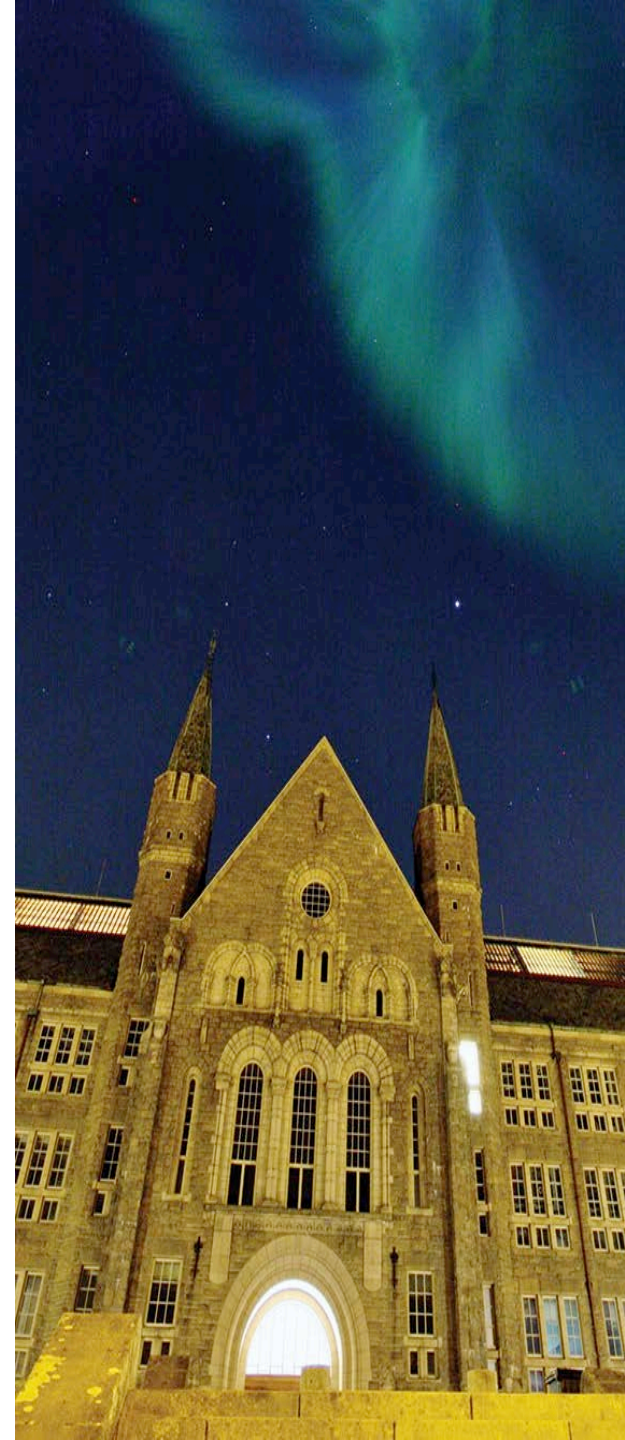


# NTNU BY THE NUMBERS



# Organization, budget and staff

- 14 faculties and 70 departments and divisions
- Operating income: NOK 7.6 billion.
- FTE: 6700, of which 4053 are in teaching, research and outreach positions (39 % female).
- Premises: 734 000 square metres either owned or rented.
- Close cooperation with SINTEF, St.



# Organization

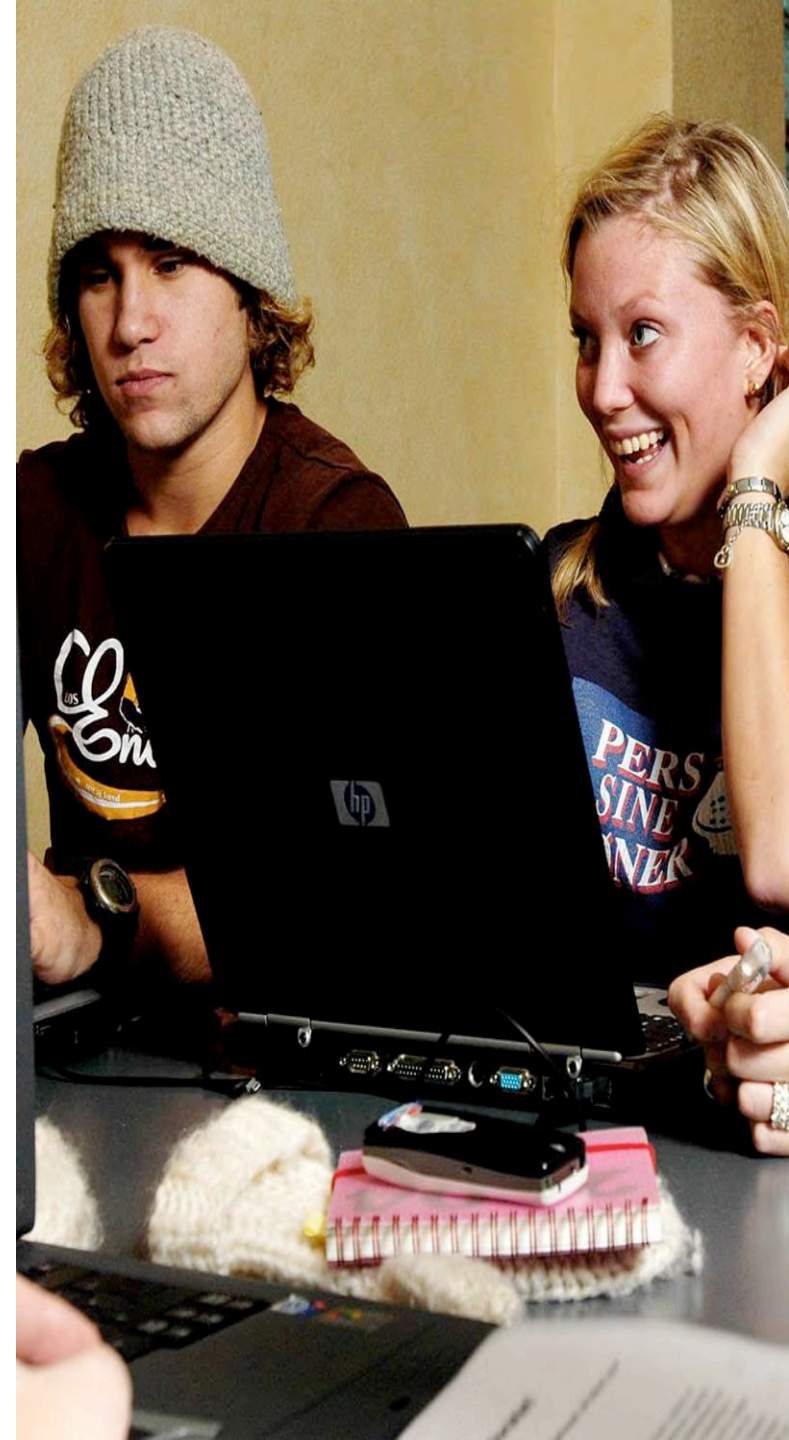
(2014 and 2015)

- **101** organizational groups (“boxes”) at levels 1–3
- **6 733** FTE in total
- Operating income of NOK **7.6 billion**
- **734 000 m<sup>2</sup>** of owned and rented buildings
- **4 053** FTE in teaching, research and outreach positions (39 % female)



# Studies

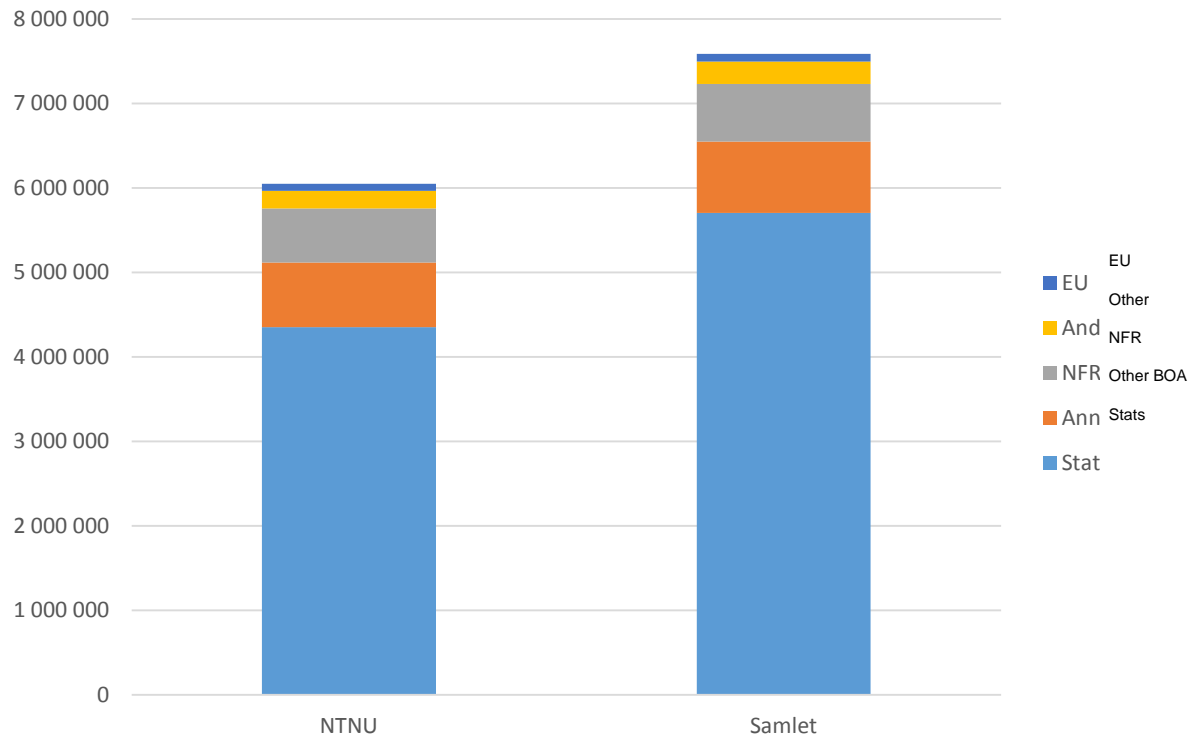
- 33 000 students in Trondheim, 3 500 students in Gjøvik and 2500 students in Ålesund (round numbers).
- 6553 graduated with a completed degree in 2014.
- 6000 participants in continuing education courses with credit in 2014.
- 3000 international students.
- 340 doctoral degrees awarded in 2015.



# Research and industry partnerships

- PhDs: 340 doctoral degrees awarded in 2015.
- Approximately 120 laboratories.
- Norway's largest participant in the EU's Horizon 2020 (H2020).  
Participant in 38 projects, of which 2 are ERC projects and 10 for which the university is coordinator.
- Four strategic research areas from 2014–2023.
- University Library with 17 library branches, 2 million printed books, 950 000 e-books, 16 000 electronic journal subscriptions, 3 000 printed journal subscriptions and 450 databases. More than 3 million downloads.

# Finances (2014)

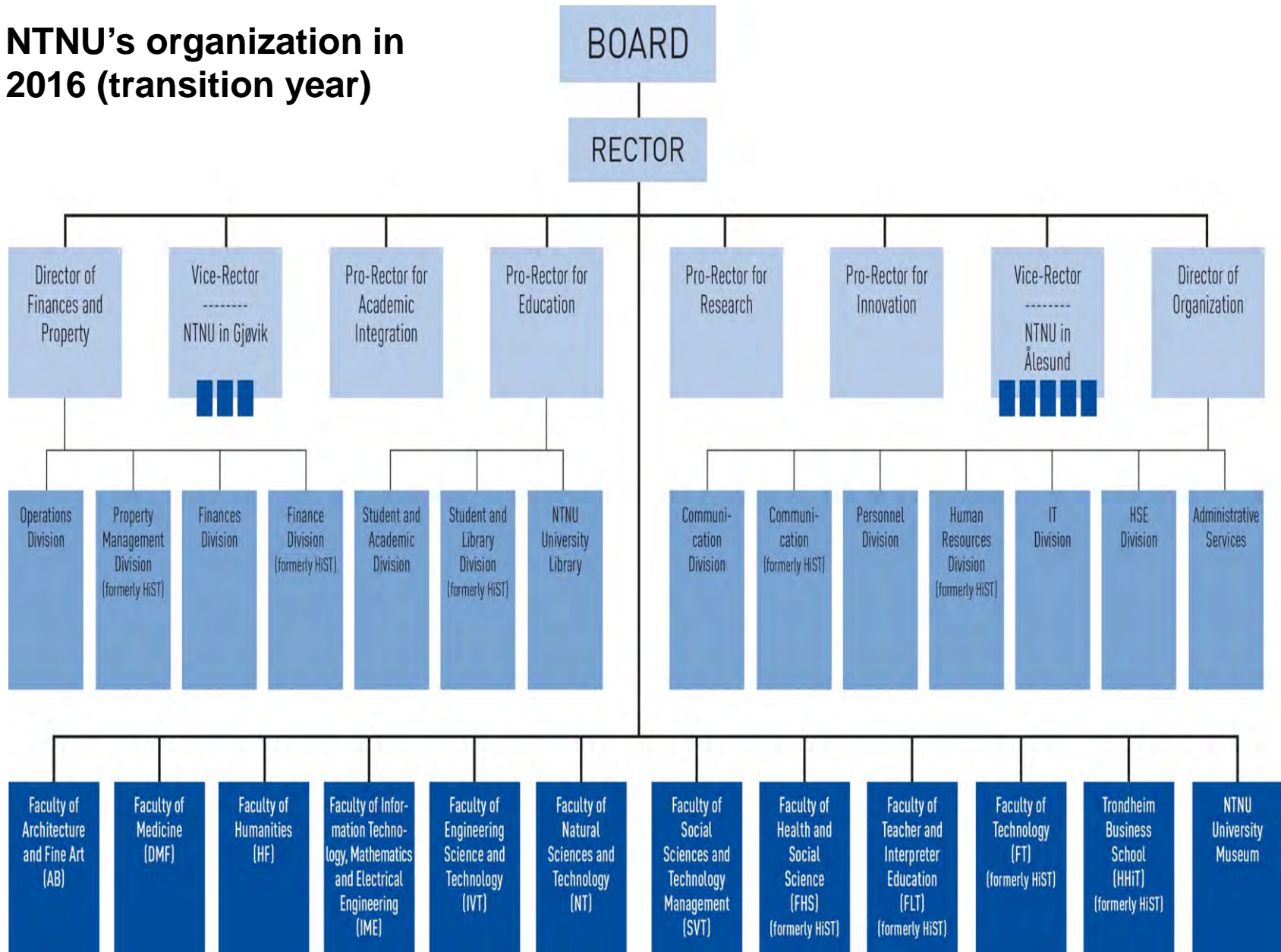


NTNU and the three former university colleges had combined operating revenues in 2014 of NOK **7.6 billion**.

# ORGANIZATION



# NTNU's organization in 2016 (transition year)





# RESEARCH



- Four strategic research areas (TSO)
- Four Norwegian Centres of Excellence (SFF)
- Host institution for seven and partner in eight Centres for Research-based Innovation (SFI)
- Host institution for two and partner in five Research Centres for Environment-Friendly Energy (FME)
- Approximately 120 laboratories
- Other large research programmes



# STRATEGIC RESEARCH AREAS 2014–2023



Norwegian University of  
Science and Technology



ENERGY



HEALTH



OCEANS

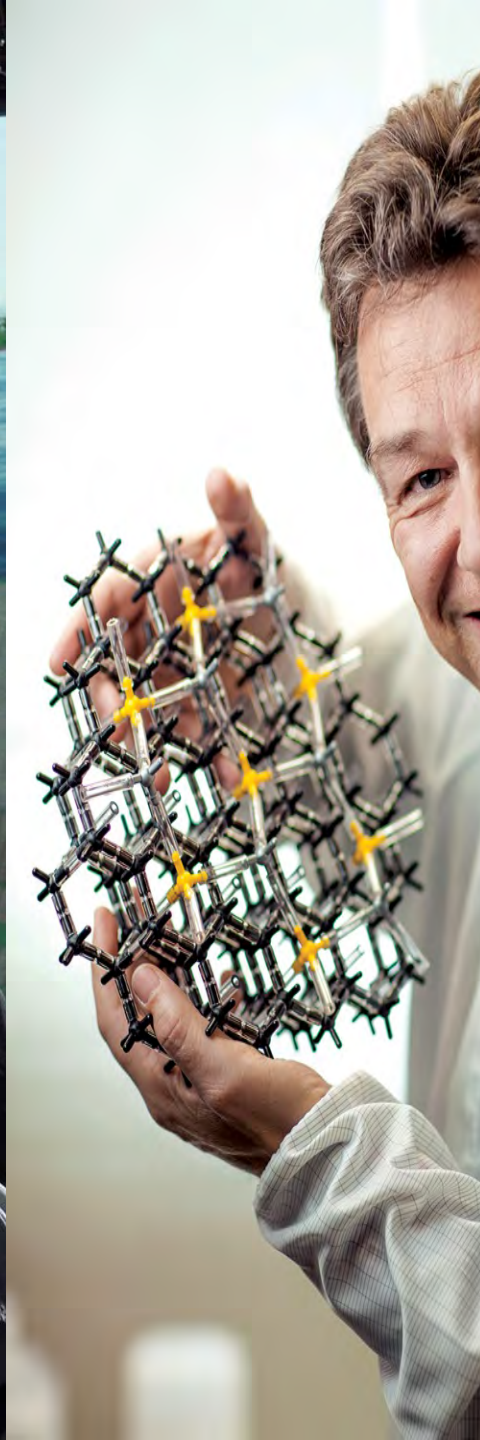


SUSTAINABILITY

# 2014 Nobel Prize

NTNU professors May-Britt Moser and Edvard Moser were awarded the 2014 Nobel Prize in Physiology or Medicine for their discovery of cells that constitute an “inner GPS” in the brain.





# EDUCATION



# An international university

- Main themes: Europe, China, international mobility, international researcher education.
- Approximately 350 international MoUs for cooperative research and teaching efforts.
- 11 % of NTNU's students are international students.
- 41 % of NTNU's graduated PhDs are international students (2012)
- Students and employees from more than 90 countries.



# Education quality

NTNU's Live Studio project at the Faculty of Architecture and Fine Art received an award presented by the Ministry of Education and Research for quality of education in 2015. Together with SINTEF, NTNU students designed and built a bold structure in timber. This is a cantilevered pier projecting 12 metres out over the Nidelva river.





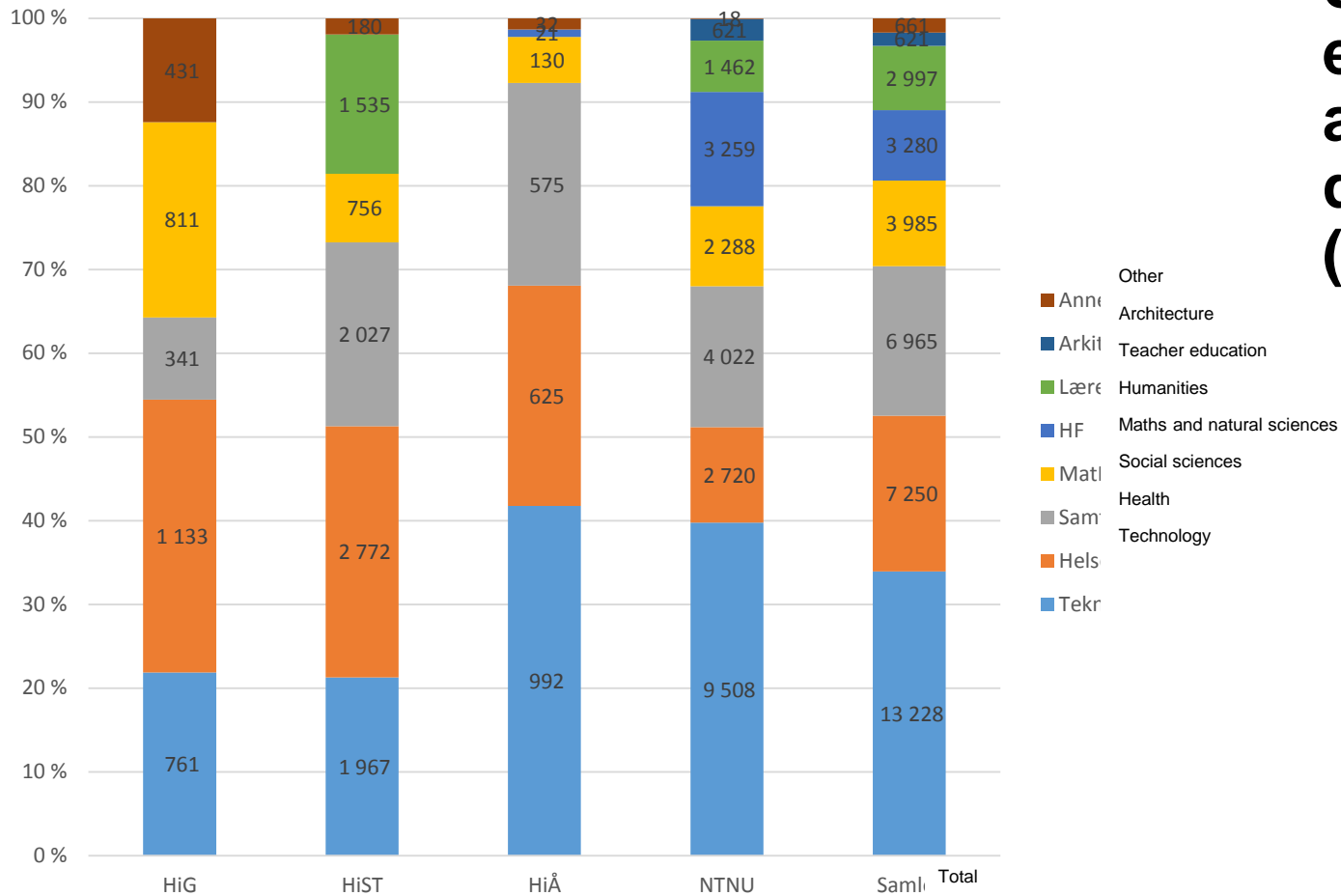
# Music

The Trondheim Soloists are among the world's foremost chamber ensembles. Several of the musicians are students or alumni from NTNU.

The Trondheim Soloists tour the world, have six Grammy nominations, and trust NTNU to educate the soloists of tomorrow.



# Student enrolment according to discipline (2015)



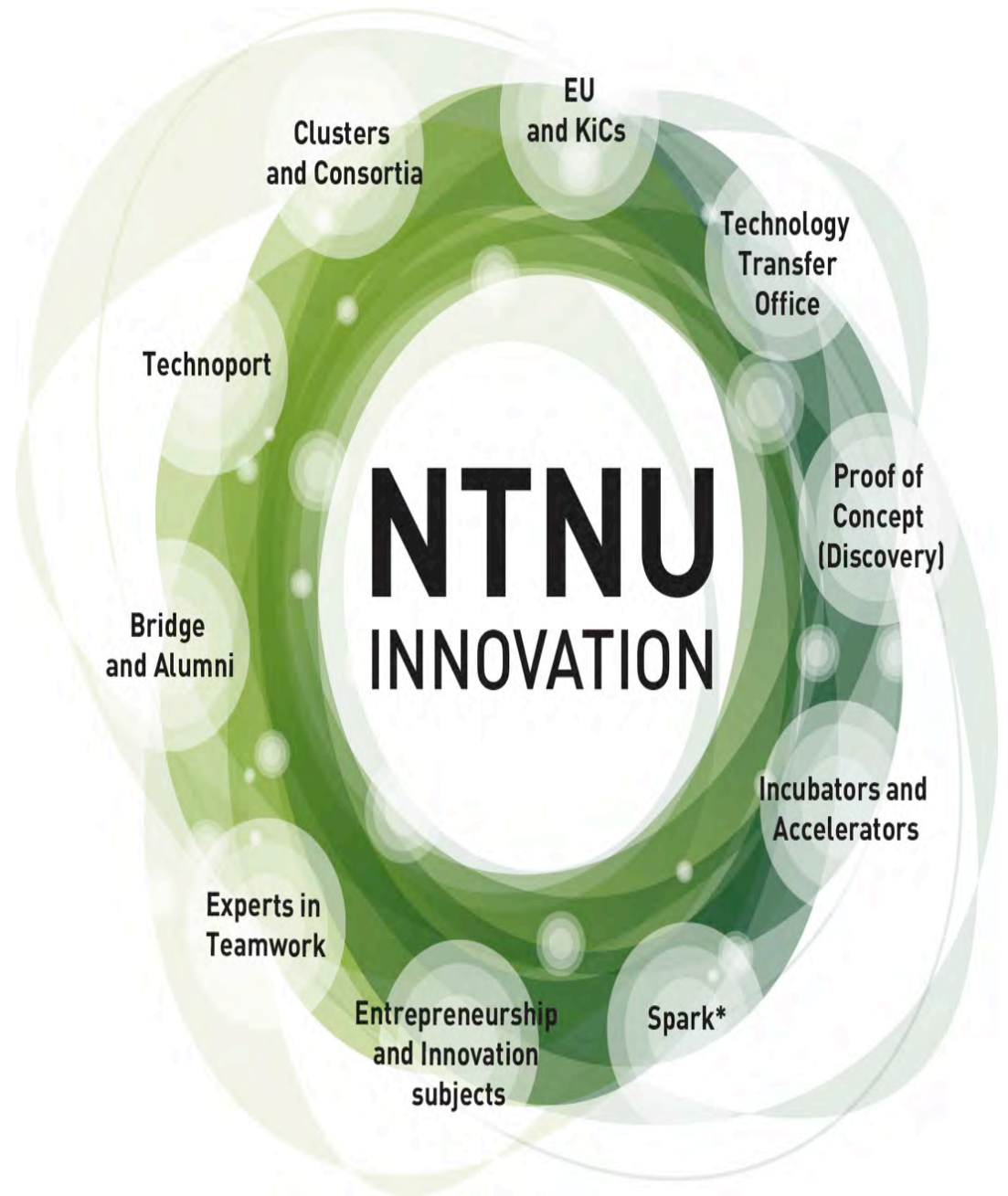
NTNU and the three former university colleges have **734 000 m<sup>2</sup>** of their own and rented premises.

# INNOVATION



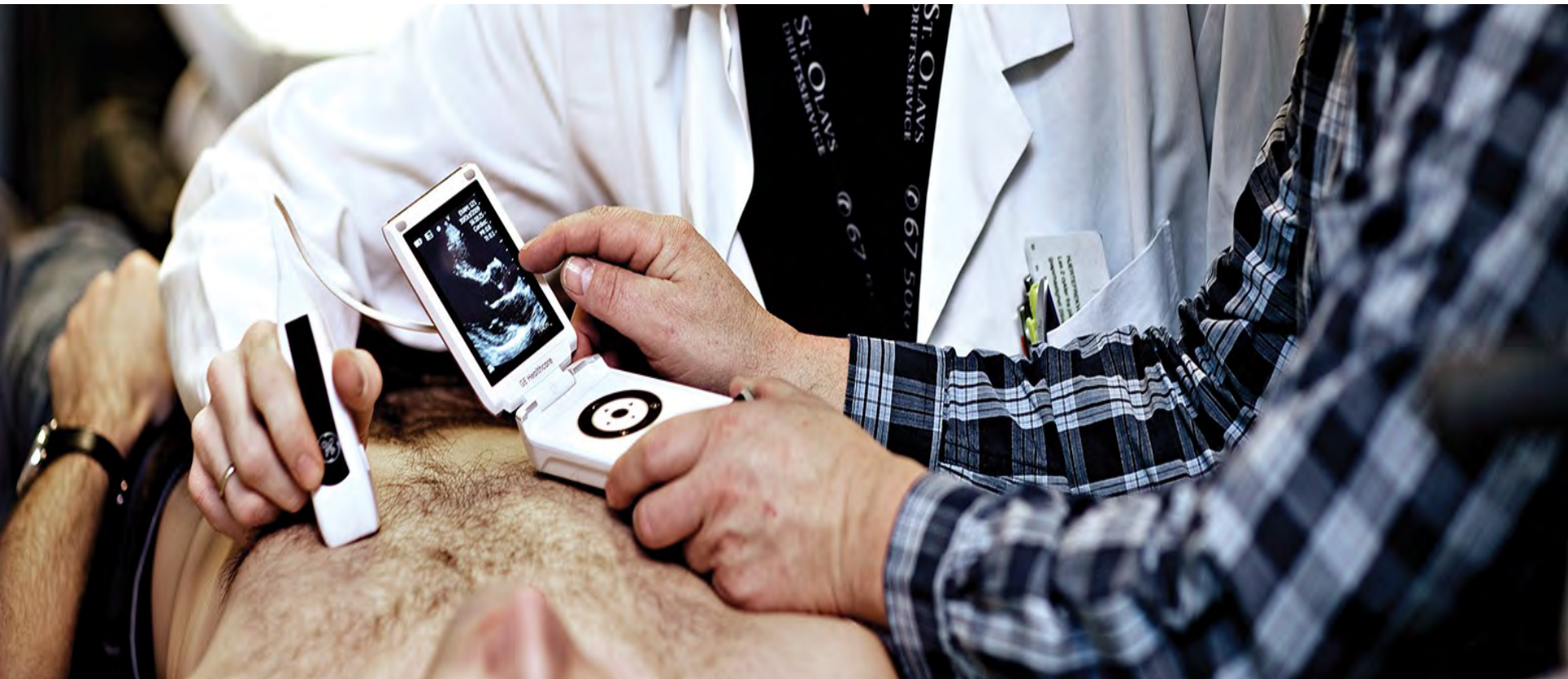
NTNU has taken responsibility for innovation for more than 100 years. Innovation includes entrepreneurship and commercialization. Our innovation processes grow from education, research and artistic activities. Working together with other players, NTNU paves the way for more start-ups and development in existing firms.

Students are our most important renewable resource. That's why student innovation is a high priority at NTNU.



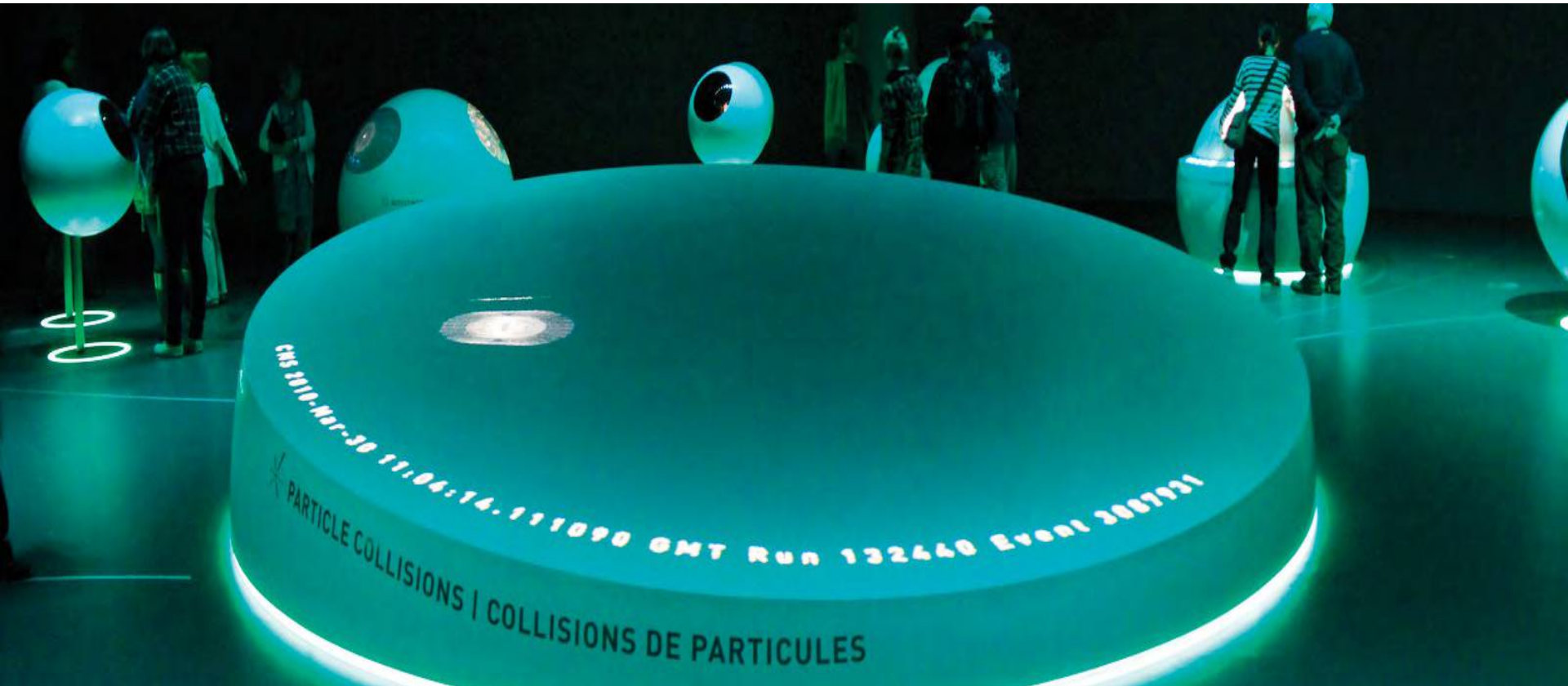
# Ultrasound

Together with GE Vingmed, NTNU developed Vscan, a pocket-sized ultrasound device. The medical imaging tool was one of TIME magazine's picks for the best inventions of the year. The device helps doctors make the correct diagnosis faster – and thus saves lives.



# Nuclear physics

From 2014, NTNU has been a Business Incubation Centre for CERN technologies. This enables technology transfer from CERN, the European Organization for Nuclear Research, to NTNU for commercial development.



## Information security

NISlab, the information security group at NTNU in Gjøvik, conducts research on methods for authentication and verification of users. Raghavendra Ramachandra is working on ways to improve face recognition to prevent forgery.



## Maritime innovation

NTNU in Ålesund works in close partnership with the maritime sector in areas including product development and innovation. The maritime cluster in Norway's Møre region is in the global forefront in maritime technology and operations.





Foto: Carl-Erik Eriksson







