

FLAGSHIP PROGRAMME

The northern fleet of excellent science, successful collaboration and solutions for tomorrow

Since 2018, the Finnish Flagship Programme provides a new, unique way of doing RDI in Finland. The programme grants substantial, long-term funding for large ecosystems, Flagships, each operating in a specific field.

The programme promotes active collaboration between research, business and society. This supports future knowledge and know-how, and helps create solutions to societal challenges, develop business opportunities and contribute to sustainable growth.

THE FINNISH FLAGSHIPS

- effective mix of cutting-edge research
- long-term plan for eight years
- versatile societal impact
- close collaboration with business, industry and society
- high ambition level
- excellent facilities, infrastructures and
- strong commitment from host organisations
- selected by the Research Council of Finland

Finland's strengths

- High-level education and research system
- State-of-the-art research environments and infrastructures
- Strong collaboration and innovation culture
- Continuous investments in R&D
- Gender equality

Research Council of Finland

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THE FINNISH FLAGSHIPS

– BREAKING THE ICE FOR A BETTER FUTURE

INVEST

– Inequalities, Interventions and New Welfare State

The *INVEST* Flagship improves wellbeing and skills among Finnish children, young people and early adults. It will provide a new welfare state model that is more equal, better targeted to problem groups, more anticipatory as well as economically and socially sustainable. *INVEST* will evaluate and develop various universal and targeted interventions to improve the efficiency of the current welfare state institutions at critical points of the early life course.

Director: Professor **Jani Erola**, University of Turku

Host organisations: University of Turku and National Institute for Health and Welfare

Website: invest.utu.fi



Education for the Future (EDUCA) Flagship

The *Education for the Future* (EDUCA) Flagship advances the development of education with research-based knowledge and creates a novel research ecosystem for education. The Flagship's mission is to generate new knowledge and understanding about decreasing learning achievement, increasing dropout rates and the use of digital technology in education.

The research improves our understanding of optimal learning moments and engagement and how education can better support social and personalised learning processes and more effectively use technology enhanced learning environments in education.

Director: Professor **Marja-Kristiina Lerkkanen**, University of Jyväskylä

Host organisations: University of Jyväskylä, University of Helsinki, Aalto University and University of Turku

Website: educaflagship.fi



6G Flagship – 6G-Enabled Wireless Smart Society & Ecosystem

The **6G Flagship** defines a 6G-enabled digital world towards 2030, aligned with the UN SDGs, where the physical and virtual worlds meet and wireless connectivity expands to all areas of life. It develops fundamental 6G technology components, novel wireless solutions and business approaches in wireless connectivity, device and circuit technologies, distributed intelligent computing, and sustainable human-centric services and applications.



By partnering with stakeholders for 5G adoption and 6G co-creation, the Flagship paves the way for new business opportunities and a sustainable data-driven society enabled by near-instant, unlimited connectivity.



Director: Academy Professor **Matti Latva-aho**, University of Oulu
Host organisation: University of Oulu
Website: oulu.fi/6gflagship

FAME – Flagship of Advanced Mathematics for Sensing, Imaging and Modelling

The **FAME** Flagship is a multidisciplinary consortium developing applied mathematics and physics methods for societal needs. The Flagship is based on cutting-edge research on inverse problems and works closely with industrial and societal partners. The industrial partners of the FAME Flagship, working in healthcare, clean technology and sustainable environment, will work with the Flagship's researchers to co-create novel solutions for their technologies.

FAME will support economic progress in Finland through strong interaction with industry, training of experts and boosting innovations and start-ups.

Director: Professor **Tanja Tarvainen**, University of Eastern Finland
Host organisations: University of Eastern Finland, Aalto University, University of Helsinki, Finnish Meteorological Institute, University of Jyväskylä, LUT University, University of Oulu, Tampere University
Website: fameflagship.fi



FCAI – Finnish Center for Artificial Intelligence

The **FCAI** Flagship creates real artificial intelligence for real people in the real world.

It develops new types of AI tools for AI-assisted decision-making, design and modelling, based on top-tier expertise in machine learning and multidisciplinary collaboration with experts from other fields. The activities span a wide spectrum of fields and include versatile training and cooperation with industry.

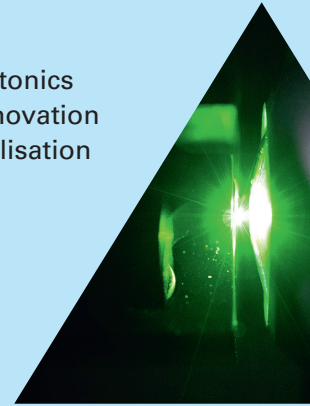
Director: Academy Professor **Samuel Kaski**, Aalto University
Host organisations: Aalto University, University of Helsinki and VTT Technical Research Centre of Finland Ltd
Website: fcai.fi



PREIN – Photonics Research and Innovation

The **PREIN** Flagship brings together actors of the Finnish photonics ecosystem in an integrated network that covers the whole innovation chain from fundamental to applied research up to commercialisation of disruptive light-based technologies. Its research and technology developments have a wide range of applications in telecommunications, biomedicine, healthcare, energy and environmental engineering, manufacturing and consumer products.

Director: Professor **Goëry Genty**, Tampere University
Host organisations: Tampere University, University of Eastern Finland, Aalto University and VTT Technical Research Centre of Finland Ltd
Website: prein.fi



Finnish Quantum Flagship

The **Finnish Quantum** Flagship brings together leading quantum experts in physics, computational science, mathematics, nanoscience and nanotechnology and economics to consolidate and expand Finland's national ecosystem for quantum technology. Through cutting-edge research, the Flagship aims to boost the emergence of new businesses and secure Finland's position as a leading quantum-enabled society.

Quantum technology is anticipated to revolutionise many areas of science, engineering and industry from the clean production of energy to drug design.

Director: Professor **Peter Liljeroth**, Aalto University
Host organisations: Aalto University, University of Helsinki, University of Jyväskylä, Tampere University, University of Oulu, VTT Technical Research Centre of Finland, CSC-IT Centre for Science
Website: instituteq.fi/finnish-quantum-flagship



ACCC – Atmosphere and Climate Competence Center

The **ACCC** Flagship creates opportunities for Finland, the EU and the world to reach the Paris climate targets. It promotes adaptation to climate change and aims to mitigate climate change by increasing forest and soil carbon sequestration and improve global air quality.

By collaborating with the business auditing, energy, transport, technology, food, agriculture and forestry sectors, ACCC creates new practical solutions, such as atmospheric measurement instruments and climate and air quality analysis services.

Director: Academician of Science **Markku Kulmala**, University of Helsinki
Host organisations: University of Helsinki, Finnish Meteorological Institute, University of Eastern Finland, Tampere University
Website: accfflagship.fi



DIWA – Digital Waters Flagship

The Digital Waters Flagship (DIWA) aims to become a top-tier water research cluster and innovation ecosystem that generates high-impact research outputs, input to policy development and innovations facilitating the next industrial water revolution.

The digitalisation of water resources will improve the management and security of water supply, distribution and use, for example in the event of flooding or droughts. The solutions provided by the DIWA Flagship are urgently needed as water is a critical natural resource globally.

Director: Professor **Bjørn Kløve**, University of Oulu
Host organisations: University of Oulu, Finnish Geospatial Research Institute, Finnish Meteorological Institute, Aalto University, Finnish Environment Institute, University of Turku
Website: digitalwaters.fi



FinnCERES – Competence Centre for the Materials Bioeconomy

The **FinnCERES** Flagship is redefining bioeconomy via advanced bio-based materials. It harnesses the natural properties of lignocellulose to create novel material solutions for sustainable growth.

The Flagship's research covers future biorefineries, clean air and water, lignocellulosics beyond plastics, and electronics, optics and energy applications.

The work at FinnCERES uncovers answers to fundamental questions on lignocellulose disassembly and reassembly to address the main challenges of our century related to resource sufficiency and climate change.

Director: Professor **Monika Österberg**, Aalto University
Host organisations: Aalto University and VTT Technical Research Centre of Finland Ltd
Website: finnceres.fi



UNITE

– Forest-Human-Machine Interplay – Building Resilience, Redefining Value Networks and Enabling Meaningful Experiences

The **UNITE** Flagship aims to make Finland the leader in applying forest-based bioeconomy know-how, geospatial technologies and gamification to support human wellbeing globally. UNITE makes use of new sensor and measurement technologies to determine the structure and functionality of the forest ecosystem; produces agile methods for processing forest (big) data; and develops smart decision support and the forecasting of forest development as well as the management of spatial data and uncertainties in forest calculations. The Flagship also uses gamification to enhance human-nature interplay.

Director: Professor **Heli Peltola**, University of Eastern Finland
Host organisations: University of Eastern Finland, Finnish Geospatial Research Institute at the National Land Survey of Finland, Tampere University and Natural Resources Institute Finland
Website: uniteflagship.fi



GeneCellNano – Gene, Cell and Nano Therapy Competence Cluster for the Treatment of Chronic Diseases

The **GeneCellNano** Flagship develops new biological drugs, biomarkers and diagnostics for common chronic diseases. It aims to introduce new effective treatments for severe chronic diseases and create new jobs and business in the biotechnology and pharmaceutical sectors. The Flagship brings together Finland's leading gene, cell and nanotherapy researchers, clinical operators, companies and third-sector actors. This will create a new ecosystem that combines the public and private actors and has excellent opportunities to become an international leader in a rapidly developing sector.

Director: Professor **Seppo Ylä-Herttuala**, University of Eastern Finland
Host organisations: University of Eastern Finland, University of Oulu, University of Helsinki, Aalto University and Finnish Red Cross Blood Service
Website: genecellnano.fi



iCAN

– Digital Precision Cancer Medicine Platform

The **iCAN** Flagship integrates molecular and digital approaches for improved cancer treatment. iCAN builds on precision cancer medicine research combined with the ongoing digital health revolution, leveraging on Finnish strengths including longitudinal and digital healthcare registries. The Flagship provides engagement opportunities for partners in the pharma, digital, and healthtech sectors.

Director: Professor **Satu Mustjoki**, University of Helsinki
Host organisations: University of Helsinki and Helsinki University Hospital
Website: ican.fi



InFLAMES

– Innovation Ecosystem Based on the Immune System

The **InFLAMES** Flagship integrates immunological and other research activities to develop and exploit new diagnostic and therapeutic tools for personalised medicine, producing breakthrough knowledge on immunological principles and diseases. Its expertise in immunology together with exceptional study cohorts and digital health registers makes the Flagship an attractive partner for diagnostic and pharmaceutical companies.

Director: Academician of Science **Sirpa Jalkanen**, University of Turku
Host organisations: University of Turku and Åbo Akademi University
Website: inflames.utu.fi

