

Propose a profiling theme and measures to be continued based on the updated strategy of the University of Oulu and related to current areas of profilation

In the upcoming years, one of the common goals among higher education institutions is to continue refining their profiles and sharpening the strengths in both education and research. The profiling funding from the Research Council of Finland aims to support and expedite the universities' strategic profiling and the enhancement of research quality. The program's objective has been to reinforce research conditions by strengthening selected focus areas, reducing fragmentation within disciplines, and promoting interdisciplinary collaboration.

As part of its own strategic initiatives and the national university profiling program, the University of Oulu has successfully bolstered its profile during the recent strategic period to enhance the quality of research. With the updated strategy in 2023, our aim is to contribute to the international scientific community by generating new scientific knowledge and establishing ourselves as leaders in our profiling fields on a global scale. We are building our research profile based on internationally acclaimed research and its societal impact. Our activities are guided by global challenges, the profiling areas of our research, and the objectives set for the university's developmental pathways towards the 2030s.

We now invite researchers to propose **topics and initiatives aligned with the revised strategy, focusing on global challenges and profiling areas that**

- strengthen and deepen or refocus the current profiling areas (PROFI2-7 and the Flagships) or/and link the current profiling areas to each other.
- respond to the cross-cutting global challenges described in the updated strategy of the university (description on page 2) or implement our [Arctic Strategy](#).

The proposals should address [the global challenges of the UN's 2030 agenda for sustainable development](#).

The profiling themes can be

- existing high-quality research themes
- emerging themes with potential to reach the top level
- new themes with high potential.

The submitted proposals will be utilized in the preparation of the implementation plan for the strategy of the University of Oulu. Submitted proposals can also be utilized if the Research Council of Finland opens the next [call for university profiling support](#) in spring 2024 (Profi 8 call). The Research Council of Finland has not yet made a decision on opening the call.

The updated strategy of the University of Oulu has been approved by the Board on 13.12.2023. **The strategy texts will be proofread and translated before their official release in January 2024.**

We respond to global challenges with multi- and interdisciplinary expertise

As a university, we respond to global challenges, which are based on the UN's Sustainable Development Goals. With multidisciplinary and interdisciplinary cooperation based on our wide range of disciplines, we create a positive impact on the world. Global challenges are cross-cutting themes in all our activities, research, education, and our cooperation relationships.

- **Mitigating climate change and securing biodiversity:** The rise in global temperatures and changing climate, driven by human impact, results in consequences such as rising sea levels, advancing desertification, and increasing occurrences of extreme weather events. Research-based knowledge is essential for mitigating the effects of climate change and promoting sustainable use of natural resources. Significant circular economy practices and climate-neutral changes in the production and use of natural resources and energy, as well as the activities of various sectors of society, are needed. Protecting ecosystems, halting soil degradation, and ensuring biodiversity require actions to safeguard the conditions for life. Our university produces research-based solutions for sustainable development and brings them to the use of decision-making and society.
- **Resilient and secure society:** Natural disasters, global conflicts, and disinformation demand resilience from individuals and societies—the ability to adapt to changes. Through the complexity of global economy and politics, interdependence between different regions of the world intensifies, challenging the development of democracy. In secure and functional societies, efficient and responsible institutions are built at all levels to secure supply resilience, self-sufficiency, and international trust. Our university combines understanding of historical factors, preservation of cultural heritage, human interaction, and knowledge utilization, enhancing community resilience and promoting a genuinely inclusive society. We provide education and research to create resilient and sustainable living environments, communities, and societies, fostering people's resilience and well-being.
- **Human health and well-being:** Societal factors such as aging populations, reduced physical activity, unhealthy lifestyles, and mental health challenges increase the need for social and health services. Infectious diseases and lifestyle-related illnesses are on the rise, and human health is connected to the well-being of nature. Pandemics challenge societies to create new modes of operations, to strengthen foresight skills, and to re-evaluate supply and production chains. In a prosperous society, everyone can find their place regardless of individual circumstances. The creation of digital twins, remote health services, and the development of artificial intelligence increase access to health services for everyone. Our university's research increases understanding of the development and prevention of diseases. The technological solutions we develop support the emergence of new treatment methods and promote individual health, well-being, and sustainable lifestyles.
- **Digitalization, artificial intelligence, and data in service of humanity:** The rapid development of digital technologies causes differentiation and inequality in the development trajectories of individuals, businesses, and societies. The development of digitalization has a cross-cutting and wide-ranging impact on all industries and in society as a whole. The amount of data collected and produced by people and devices continues to grow, bringing with it questions related to data ownership, cybersecurity, and data usage. Artificial intelligence and virtual technologies shape the future of interaction, learning, and work at both individual and societal levels. Our university researches and develops sustainable next-generation communication networks, human-centered digital services, and technology for the needs of humanity and business.

The current profiling areas of the University of Oulu are the following (see figure below):

PROFI 2:

- Ubiquitous wireless sensor systems (Leader: Jukka Riekki)
- Near-Earth space environment (Leader: Anita Aikio)

PROFI 3:

- Fibrosis diseasesome - Fibrosis as a shared risk factor in the etiology of complex chronic diseases and unhealthy ageing (Leader: Johannes Kettunen)
- Genome of steel - Physics for strong, tough, and sustainable steel (Leader: Jukka Kömi)

PROFI 4:

- Generation Z and beyond: Co-evolution of human capabilities and intelligent technologies in the 21st century (Leader: Pentti Haddington)
- Arctic interactions: Coupling of nature and human responses to understand and mitigate global change (Leader: Bjørn Kløve)

PROFI 5:

- DigiHealth - Digitalized solutions for future healthcare (Leader: Simo Saarakkala)
- InStreams - Inorganic Side Streams: From Basic Research and Technology Development to Sustainable Value (Leader: Harri Haapasalo)
- HiDyn - The data insight for high-dimensional dynamics (Leader: Mikko Sillanpää)

PROFI 6:

- Anthropocenes - Biodiversity dynamics and community co-existence in the Anthropocene Arctic: Responsibilities and futures (Leader: Marko Mutanen)
- Fibrobesity - Preventing fibrosis related to obesity (Leader: Reetta Hinttala)
- 6GESS - 6G enabled sustainable society (Leader: Johanna Uusimaa. From 1.1.2024 Simo Saarakkala)

PROFI 7:

- H2FUTURE – A hydrogen future as a climate solution (Leader: Marko Huttula)
- HI – Hybrid Intelligence: Human-AI co-evolution and learning in multirealities (Leader: Sanna Järvelä)
- FRONT – Frontiers of Arctic and global resilience (Leader: Jarkko Saarinen)

FLAGSHIPS:

- 6G-Enabled Wireless Smart Society & Ecosystem (Leader: Matti Latva-aho, Contact: Marja Matinmikko-Blue)
- Digital Waters Flagship (Leader and contact: Bjørn Kløve)

- Gene Cell and Nano Therapy Competence Cluster for the Treatment of Chronic Diseases (Vice-leader and contact: Seppo Vainio)
- Flagship of Advanced Mathematics for Sensing, Imaging and Modelling (Contact: Patrik Waldmann)
- Finnish Quantum Flagship (Contact: Matti Silveri)



Leave your proposal and the following information through the linked [Webropol query](#) (<https://link.webropolsurveys.com/S/7364E483B5ABF6F7>)

by 24 January 2024:

- How will the proposed profiling theme strengthen or link with the existing profiling areas? (max. 500 characters)
- How is the proposed profiling theme connected to the cross-cutting global challenges described in the updated strategy of the university or to the Arctic Strategy? (max. 1000 characters)
- A short description of the scientific excellence of the profiling theme and preliminary measures, including the renewal of science and expected scientific breakthroughs, as well as justification for the selection of the theme in question (max. 2000 characters).

- A description of the scientific quality of the profiling area and the opportunity to reduce fragmentation within disciplines while promoting multidisciplinarity and interdisciplinary collaboration (max. 750 characters).
- A description of the cooperation and potential division of work with other universities and organisations and added value of research in the proposed profiling themes at national level (max. 750 characters).
- A description of the international collaboration and networks (max. 750 characters).
- The proposed leader and his or her contact information, as well as 5–10 leading researchers related to the theme (max. 500 characters).
- Has the proposed leader committed him- or herself to preparing an application/proposal in winter-spring 2024 if the Research Council of Finland opens the call for university profiling support? Your name and contact information.

Preparation schedule:

- Deadline for replying to the Webropol query: 24 January 2024.
- The proposals will be grouped, and a few proposals will be selected for future processing by the research council, management group of research and rectors meeting in January-February 2024.
- The proposals will be presented to the university's board.
- If the Research Council of Finland opens the profiling call, selected themes can be utilized in the preparation of the application. Through the preparation of a potential application, Profi 8 themes will be refined and developed to create a successful application.

Additional information:

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