STACC OÜ

1. Scientific Impact of Research

1.1. Positive aspects
Established in 2009, STACC focuses on applied research in data science and AI. During the evaluation period, STACC researchers defended 3 PhD theses on diverse topics, including personalized medicine and secure computing, and published 31 scientific articles. The papers are a combination of journal and conference papers. They cover topics including genetics (5), public health (7), voting systems (10), and conservation science. There are some papers that have been cited many times (at present, one paper has been cited almost 500 times, according to Google Scholar), and many papers have been published in high-impact journals, with the highest impact factor being 25.3. All in all, the papers are of good quality and cover a wide spectrum of interdisciplinary themes. STACC partnered on two Horizon projects, including one in the Science Pillar, and collaborated with Cybernetica on secure computing technologies. The publication record for such a small company is very good, considering that the main effort of the company should be focused on their commercial success.
1.2. Areas for improvement
STACC has not generated any patents as STACC IP protection strategy does not prioritize patenting. STACC does not have a strategy to overcome the challenge that restrictions from data owners limit scientific publishing opportunities. STACC, at the moment does not invest enough in broader dissemination of research results.
1.3. Recommendations
We recommend that STACC narrow down research areas with high impact and commercial potential, such as energy management, healthcare efficiency, or defense-related projects. Moreover, STACC should invest in modern AI research and broader dissemination of research

results. STACC should secure long-term funding to build a dedicated research team, enabling work on high-risk, high-reward projects and hiring PhD students and postdocs. Last, STACC should increase participation in international research projects, such as Horizon, to expand partnerships and cooperation.

Assessment of the scientific impact of research

Exceeds threshold.

2. Sustainability of Research

2.1. Positive aspects

STACC is in a transition process that will impact the financial sustainability. The reasons of the transition period were clearly outlined in the self-evaluation report and during the site-visit. What is more important - the panel was provided a clear strategy to overcome the consequences of the reduced funding. The company has redrawn its strategy by closing down two research directions and concentrating of the two strongest and most promising ones - data analytics for software and system optimization, and E-health and personalized medicine.

STACC participates in two Horizon 2020 projects and employs an international R&D project manager for EU project coordination. The hired R&D project manager was previously employed as the head of the technology transfer unit of the University of Tartu, and her track record gives assurance to the panel about the success of the chosen path.

STACC collaborates with the University of Tartu and serves as an R&D provider in AI for Estonian organizations. STACC has a sufficient balance between research output with publications, PhD and master's thesis supervision, and contributions to both business and academic activities. STACC utilizes robust infrastructure, including high-performance computing resources from the University of Tartu and national systems. STACC has developed very good methods to manage the data, see gained status as a Certified Health Data Processing Company, one of only two in Estonia. Holding of the OMOP certificate gives

assurance that the company could be successful in the field of health informatics, a growing field of research and one of the focus areas of the Estonian RDI strategy.

STACC actively promotes inclusive management, flexible work arrangements, continuous learning, and diversity, with an increase in female employees from 15% in 2018 to 30% in 2023.

2.2. Areas for improvement

STACC has experienced a decrease in employee numbers from 43 in 2018 to 20 in 2023. At the same time, R&D revenues declined from €2.1M in 2021 to €0.488M in 2023. STACC has a high proportion of junior staff (70%) and short employee tenure due to the nature of the IT sector.

2.3. Recommendations

Attention has to be given to the fact that STACC is in a transition process that will impact the financial sustainability. More efforts should be devoted to modern AI and to strengthen partnerships with other research organizations to expand services and market reach. There should be increased focus on enhancing a licensable technology stack to complement consultancy services, balancing client needs with open science and organizational growth.

Concerning team development, STACC should address the high turnover and junior-heavy workforce by creating more opportunities for employee retention and professional growth.

Future of STACC is more dependent on their success on business and capacity to attract investments and not that much of their research quality. This will also dictate their future sustainability. Panel considers that their quality and quantity of research gives a good possibility to be successful also in service provider.

Assessment of the sustainability of research

Exceeds threshold.

3. Societal Impact of Research

3.1. Positive aspects
STACC conducts industrial research in AI, data science and software engineering, developing cutting-edge products and services. STACC helps companies commercialize research and enhance competitiveness, acting as a technology testbed and e-government partner. STACC prepares a skilled workforce through internships and partnerships with the University of Tartu. STACC hosts AI training for public and private sectors, organizes data science seminars, and mentors AI/Robotics initiatives. STACC counsels' government bodies on data economy and energy market evolution, contributing to national R&D discussions. STACC developed mobile positioning data solutions recognized by the UN for official statistics.
3.2. Areas for improvement
STACC may lack identity after the restructuring of the research areas. STACC is not active in popularizing data science and AI beyond seminars to more interactive, ongoing collaborations with society.
3.3. Recommendations
STACC can strengthen its societal impact by becoming an opinion leader in key AI application areas such as renewable energy management, eHealth, and digital privacy. To achieve this, STACC should focus its research to invest more into modern AI and prioritize research in these high-impact fields to address societal challenges. STACC should expand its outreach to increase dissemination of research by publishing in mainstream media, to reach a broader audience.
Assessment of the societal impact of research
Exceeds threshold.

4. Assessment proposal

4.1. Proposal summary
In accordance with Section 8.4 of the Regular Evaluation Guidance 2024, the research and development activities of STACC OÜ in the field of Natural Sciences are proposed to be evaluated **positively**, as all assessment criteria meet or exceed the established thresholds.

5. Additional Feedback

5.1. Feedback on the institution's additional questions that are described at the final page of the report
Question 1: STACC primarily serves business clients, and the publication of research is not their primary focus. In fact, it may even pose a risk of divulging proprietary business secrets, or it may not be perceived as adding substantial value to their daily operations. Given this context, what key performance indicators (KPIs) might be relevant for such a research-oriented organization compared to academia? **Answer:** Scientific output in terms of publications is necessary to be recognized as a research organization. In addition, in STACC's case, KPIs that focus on applied research outputs can be: - patents of proprietary innovations developed for and with clients - successful industry collaborations with business partners that lead to research results **Question 2:** In a highly dynamic business environment, maintaining a long-term focus on a specific research topic or application area proves challenging. This difficulty leads to fragmentation and a constant shift in focus, which are detrimental to conducting top-tier research. How do other organizations facing similar challenges address this issue? Moreover, what strategies can we implement to enhance our ability to maintain a long-term research focus in such a dynamic environment?

Answer: This can be tackled by adopting flexible but structured research frameworks, balancing short-term client projects with long-term research goals. Strategies for STACC could include:

- Mission Alignment: Revisit STACC's core mission in data science and machine learning to ensure it still aligns with business goals. Adjust as needed to maintain relevance.

- Focus on Core Strengths: Identify successful areas that have remained stable despite external changes and build upon them.

- Strategic Partnerships: Engage external scientific advisors to provide guidance and perspective on maintaining research continuity. This could involve light advisory processes, such as biannual online meetings with experts.

- Dedicated Long-term Research: Allocate resources specifically for long-term, high-impact research projects, even if they run parallel to more dynamic business-focused work.

- Resilience Planning: Develop a strategic plan that can adapt to market fluctuations while ensuring that the organization's research goals remain on track.