# **Public summary (2500 characters):**

The current emphasis on open science is caused by the crisis of reproducibility and inability to make full use of existing research. Reproducibility comes with significant technical challenges that affect researchers' day-to-day work, and over the past five years CodeRefinery has addressed them by teaching key tools and practices. CodeRefinery has shown that this training works in international collaboration, and the sustainability phase will ensure a long-lasting effect.

CodeRefinery (coderefinery.org) supports researchers by advancing the FAIRness of software and development practices so that they can collaboratively develop, review, discuss, test, share, and reuse their codes. Between 2016 and 2020, about 1500 researchers from the Nordic countries have been trained. The long-term impact of CodeRefinery workshops, measured through post-workshop surveys (3-6 months later) shows that, for example, about 60% of our learners have improved their usage of version control. Yet, the tools we teach are rarely part of academic curricula and the resulting waste of resources and results to society is massive. The need for training in research software engineering will only increase and become more diverse. Partner organizations have recognized the value of collaboration instead of re-inventing courses and are committing substantial in-kind contributions. Moreover, raising the skills of researchers will catalyze the use of national e-infrastructure resources, both hard (facilities) and soft (other advanced training). For the continued collaboration and development of the community effort to be successful and sustainable, it is important that the collaboration is supported by dedicated coordination during this transition phase.

CodeRefinery (sustainability phase) will ensure the long-term success of the lessons developed during previous project phases by funding a central coordination of in-kind contributions, thus i) coordinating and delivering a sufficient number of accessible high-quality training events contributing to level-up research software development skills at reduced costs for each participating institution, ii) maintaining and developing further an inclusive community for software- and skill development and fostering the co-creation and co-maintenance of FAIR learning materials, videos, and other resources, iii) and increasing the number of instructors trained with pedagogy suitable for teaching technology from novice to intermediate level learners.