smart analytics – BMWK already supports six projects in the STERN BioRegion

International cooperation network as a catalyst for innovation

(Stuttgart/Berlin) – The annual conference of the Central Innovation Programme for SMEs (Zentrales Innovationsprogramm Mittelstand, ZIM) of the German Federal Ministry for Economic Affairs and Climate Action (BMWK) was held in Berlin on 14 November 2024. The programme included a presentation of the successes of the international "smart analytics" cooperation network, which is coordinated by BioRegio STERN Management GmbH and funded by ZIM. During the funding phase from May 2020 to November 2024, a competence network was set up, consisting of 32 partners – small and medium-sized enterprises (SMEs), universities, hospitals and scientific institutes from Germany and other countries – that are working together to develop innovative analytical methods and applications for healthcare, industry and research. Six research and development projects are already underway. During the recent funding phase, projects from the STERN BioRegion have been initiated within the framework of the smart analytics network, benefiting from total funding of around five million euros.

This year's annual ZIM network conference, which was organised by the BMWK and took place in Berlin on 14 November, was entitled "Pioneer spirit and tradition – ZIM innovation networks as an attractive ecosystem for change through innovation". Dr. Verena Grimm, Project Manager at BioRegio STERN Management GmbH, gave a presentation about the "smart analytics" innovation network at the conference. As founder of the start-up Bluelab Wasseranalysesysteme GmbH and smart analytics network partner, Dr. Eng. Michael Jauss took part in a panel discussion. The focus was on the challenges and opportunities involved in dynamic collaboration and knowledge transfer between established and new SMEs, including start-ups, and research institutes. For Dr. Eng. Jauss, the ZIM programme and its innovation networks lay vital foundations for small, new companies to achieve innovations. "It is really hard for start-ups in Germany to find funding, especially for technological developments that don't relate to hot topics – and particularly when it comes to deep

tech with long development cycles. ZIM innovation networks can help in this regard, offering suitable solutions both in terms of facilitating contact with development partners and as regards financing. It would be great if there were a deep-tech project design phase for start-ups in the programme, with longer project durations and higher budgets and funding quotas," he says.

A case for Europe – with 32 partners

As the coordinator in Germany, BioRegio STERN Management GmbH had been developing the successful smart analytics network since May 2020 – and the funding phase for the network management ends in November 2024. The project now includes 32 partners from several European countries. Not least through cooperation with international coordinator ISOCS (International Society for Olfaction and Chemical Sensing, with offices in Geneva and Los Angeles), it has been possible to create an active international ZIM cooperation network with sixteen companies, eleven national research partners and five international partners from France and Austria. During the recent funding phase, six projects from the STERN BioRegion have so far been initiated within the framework of the smart analytics network, benefiting from total funding of around five million euros – three million of which came from the BMWK.

The fact that there are still promising projects in the pipeline, even after the funding phase for the network management has ended, shows the pathway to the future. "We have a very successful roadmap, and our smart analytics network is a platform for highly innovative companies from very different areas of analytics," explains Dr. Grimm. "Thanks to their positive experience of combining intelligent technologies and analytical methods, the network partners will continue to develop innovative prospects for wide-ranging areas of application."

Six research and development projects from the STERN BioRegion are currently in implementation

NanoR – quality assurance for mRNA vaccines
The "NanoR" project by 4base lab AG from Reutlingen has set out to develop new approaches for the testing and quality control of mRNA-based vaccines, with the aim

of reducing the error rates for synthesised mRNA and improving their quality. The quality of the mRNA is crucial for its stability and is therefore also responsible for how it behaves and initiates a response in patients. The new method can decisively improve quality control in the pharmaceutical industry, as it allows scientists – for the first time – to compare the half-life of RNA vaccines in the human body with quantifiable data from quality control in vaccine production. In the future, this could open up more opportunities with regard to effectiveness and safety in the development of new vaccines.

ASARSI – developing a rapid breath test
Contexo GmbH from Winterbach and Mediagnost Gesellschaft für Forschung und Herstellung von Diagnostika GmbH from Reutlingen are working with University Hospital Tübingen's Institute for Medical Virology and Epidemiology of Viral Diseases to jointly develop a rapid breath test for reliably detecting bacterial and viral pathogens in the respiratory tract, especially in the case of SARS-CoV-2 infections. In a similar way to an alcohol breathalyser test, this rapid test aims to perform an on-the-spot breath analysis and provide an immediate result indicating whether or not the patient is infected. Besides being accurate, reliable and easy to use, this solution is also intended to be highly adaptable when it comes to detecting other bacterial or viral respiratory tract infections.

AutoProNano – automated production of nanoparticles
As part of the AutoProNano German/French collaborative project, Goldfuss engineering GmbH, a systems engineering specialist based in Balingen, is working with its other German partners – nanoPET Pharma GmbH, the Fraunhofer Institute for Silicate Research ISC, and the Institute of Medical Engineering Schweinfurt (IMES) of the University of Applied Sciences Würzburg-Schweinfurt (THWS) – and its French partners – Cordouan Technologies and Poly-Dtech – to develop an adaptable, automated process for the production and analytics of diagnostically relevant nanoparticle systems. In biomedicine, there is a growing demand for functional nanoparticles (NPs) with specific optical or magnetic properties, biofunctional surfaces for the detection of antigens, and/or drug loading. However, if nanoparticles are to be put into regular use as medicinal products, they need to comply with stringent requirements. It is particularly important that nanoparticles can be reliably reproduced

with the exact properties required. The overall aim of the project is to establish a flexible, robot-based process for the automated production and characterisation of diagnostic NPs for in vitro and in vivo diagnostics.

Medical 3D RADAR scanner – contactless measurement of respiration and heartbeat

Tübingen-based Synovo GmbH is working in collaboration with the French company ADBInno SARL and the Institute of High-Frequency Technology at Hamburg University of Technology (TU Hamburg) to develop the contactless 3D RADAR scanner for diagnostics in human and veterinary medicine. The 3D RADAR scanner means that, for the first time, physical examinations of respiration and heartbeat can be carried out without direct contact. The 3D RADAR scanner facilitates a diagnostic procedure that involves examining patients without touching them. The innovation involves the contactless recording of minimal vibrations of the surface of the body that are caused by respiration and heartbeat, along with other physiological parameters. The scanner records these from a distance ranging from decimetres to metres, so there is absolutely no risk in terms of hygiene. The diagnostic analysis is performed with the aid of a computer and separately from the examination. It is also supported by artificial intelligence (AI).

Green Controlling – sustainable product development supported by a digital twin

Design agency defortec GmbH from Dettenhausen, near Tübingen, is working in partnership with macs Software GmbH from Zimmern ob Rottweil to develop software that helps companies make environmental performance an objective parameter in the lifecycle of a product. The "Green Controlling" development project involves using a digital twin to digitally map the value chain of an actual product development project through the entire production process. The aim is to calculate the environmental performance of products and illustrate their sustainability throughout the entire lifecycle from design to the end-of-life phase. The software aims to make it easier for industrial companies and SMEs from the healthcare sector to comply with the new EU directive on sustainability reporting.

KikaRo – developing an AI-based camera control system for robots used to load highly reflective parts into CNC machines

Stuttgart-based SHERPA Robotics GmbH is planning to develop a fully automated, AI-based camera system for loading CNC machines in the metal and plastics processing industry. SMEs are particularly likely to benefit from this development, since these companies primarily deal with batch sizes of between 1 and 100, with frequent workpiece changes. This new AI-based automated system reduces the changeover time and, therefore, the working time involved, avoids operator errors made when the robot cell is being programmed, and eliminates the costs associated with conventional rotary tables and lifting devices. This new AI-based solution also resolves a particular technical challenge that has so far proved problematic for camera systems – the handling of highly reflective component surfaces.

Project partners

German SMEs:
- AHF analysentechnik AG, Tübingen
- 4base lab AG, Reutlingen
- Synovo GmbH, Tübingen
- JLM Innovation GmbH, Tübingen
- KWO Kunststoffteile GmbH, Offenau
- CLADE GmbH, Esslingen am Neckar
- yuri GmbH, Meckenbeuren
- Multi Channel Systems MCS GmbH, Reutlingen
- Mediagnost GmbH, Reutlingen
- Contexo GmbH, Winterbach
- FREESIXTYFIVE GmbH, Bad Kreuznach
- defortec GmbH, Dettenhausen
- macs Software GmbH, Zimmern ob Rottweil
- Goldfuss engineering GmbH, Balingen
- Bluelab Wasseranalyse Systeme GmbH
- Sherpa Robotics GmbH

German research partners:
- NMI Natural and Medical Sciences Institute at the University of Tübingen, Reutlingen
- University Hospital Tübingen
- Hahn-Schickard-Gesellschaft für angewandte Forschung e.V., Villingen-Schwenningen
- University Hospital Würzburg

- Furtwangen University
- Institut für Energie und Umwelttechnik e.V. (IUTA), Duisburg
- Fraunhofer Institute for Silicate Research ISC, Würzburg
- Reutlingen University
- University of Applied Sciences Würzburg-Schweinfurt (FHWS)

International partners:
- IONICON Analytik GmbH, Austria
- Qualizyme Diagnostics GmbH & Co KG, Austria
- ADBINNO SARL, France
- Cordouan Technologies SAS, France
- Poly-Dtech, France

Coordinators:
- ISOCS, France
- BioRegio STERN Management GmbH, Germany

Gefördert durch:

Bundesministerium
für Wirtschaft
und Klimaschutz

ZIM
Zentrales
Innovationsprogramm
Mittelstand

aufgrund eines Beschlusses
des Deutschen Bundestages

About BioRegio STERN Management GmbH:
BioRegio STERN Management GmbH promotes economic development in the life sciences industry, helping to strengthen the region as a business location by supporting innovations and start-up companies in the public interest. It is the main point of contact for company founders and entrepreneurs in the Stuttgart and Neckar-Alb regions, including the cities of Tübingen and Reutlingen.
The STERN BioRegion is one of the largest and most successful bioregions in Germany. Its unique selling points include a mix of biotech and medtech companies that is outstanding in Germany and regional clusters in the fields of automation technology and mechanical and plant engineering.

Press contact:
BioRegio STERN Management GmbH
Dr. Klaus Eichenberg
Friedrichstrasse 10

70174 Stuttgart
Germany
+49 711-870354-0
eichenberg@bioregio-stern.de

https://www.linkedin.com/

Editorial department:
Zeeb Kommunikation GmbH
Anja Pätzold
Alexanderstrasse 81
70182 Stuttgart
Germany
+49 711-6070719
info@zeeb.info