

New medical navigation system receives international innovation award

The team behind a new medical navigation system which makes it easier to take biopsy samples from the lungs recently received an international innovation award during Innovation Expo 2018 in Rotterdam.

The project which received the award, known as “Mariana”, is developing better tracking, navigation and catheterization technology for doctors, based on three-dimensional ultrasound images. This will enable more accurate and efficient control of the bronchoscope, the long, thin tool used by pulmonary specialists to collect samples of small, suspicious objects discovered in X-ray images. This can potentially treble the success rate of lung cancer diagnosis.

Lung cancer heads the “death list”

Lung cancer is the most frequent cause of cancer-related deaths in the world. Because patients often show few symptoms in the early stages, delay in examination and treatment is one of the major contributions to the high mortality rate. Using the Mariana technology, the success rate of biopsies in the outer air passages of the lungs is improved markedly.

The technology has been developed by, among others, research scientists and technologists at SINTEF, doctors at St. Olav’s Hospital, and the Trondheim company Ceetron AS.

Mariana is a collaborative project involving participants from industry, research and academia in three European countries. Each country has its own field of responsibility: the Netherlands is responsible for the actual biopsy instrument,

Ireland for the tracking system, while in Norway we are developing the software.

The innovation award was provided by the European organisation EUREKA and the Eurostars programme, with the aim of supporting small and medium-sized European companies developing innovative systems.

Collaborative project

“We have collaborated to develop a system which improves navigation and our ability to reach the most deep-seated parts of the lungs. We are doing this by combining state-of-the-art tracking technology, cloud-based 3D image management technology and the design of controllable instruments,” says Thomas Langø, a senior research scientist at SINTEF.

Key facts about the medical technology research center in Trondheim:

- Technologists at SINTEF and NTNU have collaborated with doctors at St. Olav’s Hospital for a number of years.
- This collaboration has resulted in several medical innovations in the field of image-guided diagnosis and treatment.
- These systems provide doctors with three-dimensional images of internal anatomy which they use as a navigational aid when inserting instruments into a patient during surgery or examination.
- In general, this is done using ultrasound in combination with computerized tomography (CT) images, but magnetic resonance imaging (MRI) is also an important source of data for three-dimensional mapping.
- The development of the new bronchoscopy instrument is the latest result of a long series of pioneering

projects in the field of image-guided navigation in which the research centre in Trondheim has been involved.

Key facts about Ceetron AS:

- Founded in Trondheim in 1996 as a spin-off company from the supercomputing center at SINTEF.
- The company is developing technology for the three-dimensional visualization of computation results and has to date principally served the automotive, aerospace and petroleum industries. The company owns unique technology for 3D visualization in web-based and cloud-based software systems.

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