



Amazing things happen when you pull individual pieces of information together into larger linked datasets: meaning emerges, as you produce facts from figures

Ben Goldacre

# NEWSLETTER



Photo: Gunnar Gjeldnes

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## SINTEF, St. Olavs hospital/NTNU arrange course for the MEDITATE EU project

*Thomas Langø, Chief scientist SINTEF  
Researcher St. Olavs hospital Trondheim*

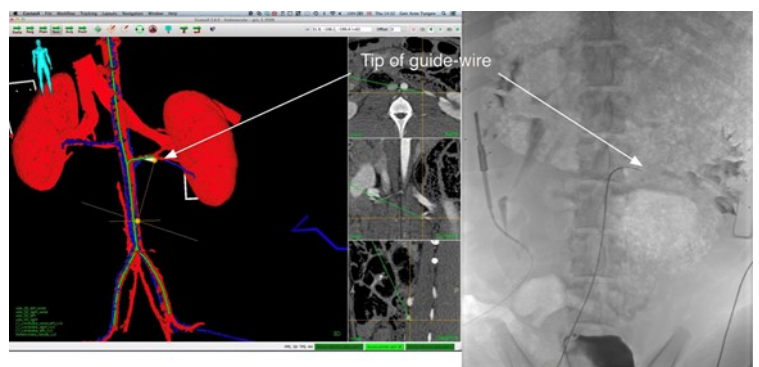
MEDITATE - Medical Digital Twin for Aneurysm Prevention and Treatment - is an EID (European Industrial Doctorate) MSCA (Marie Skłodowska-Curie Actions) EU project. EID projects aim to train highly qualified researchers and stimulate entrepreneurship, creativity and innovation in Europe. This is to be achieved by involving the non-academic sector in doctoral education so that the competence better matches the needs of the public and private sector. Each participating researcher must be enrolled in a doctoral program and spend at least 50% of their time in the non-academic sector (eg industry). Joint supervision of the research fellows with supervisors from both academia and industry is mandatory.

The MEDITATE project's main goal is to deliver a framework of simulation and image analysis technologies, aimed at industrial and clinical utilization to accelerate the process of personalized cardiovascular diagnostics, prediction and treatment. The technologies will be validated through experiments with the goal of improved patient care. The core idea of the MEDITATE project is to develop a digital twin and make it available as a "service" to everyone in academia, hospitals and industry. In particular, the project aims to provide 14 researchers (PhD students) at an early stage with competitive

competence, which makes them attractive to both academia and industry.

An important part of MSCA EU projects is networks and courses for PhD students. In May 2022, SINTEF, in collaboration with St. Olav's hospital / NTNU, arranged a course in software development within image-guided treatment for the students in MEDITATE. Many researchers and clinicians at the newly established research center at St. Olav's hospital, MiDT (National Research Center for Minimally Invasive and Image-guided Diagnosis and Treatment), participated in lectures, hands-on exercises on analog and digital simulators at the NSALK training center in MiDT.

The MEDITATE project will also be presented at the 33rd annual conference of the Society for Medical Innovation and Technology (SMIT) in Oslo at the end of May. Thomas Langø at St. Olav's Hospital and SINTEF will describe ongoing projects related to image-guided procedures, including endovascular therapy and MEDITATE. The PhD student, Monica Emendi, who has had her research stay at SINTEF and completed studies in collaboration with FOR / NorMIT infrastructure, will also present her work at SMIT



Examples from the MEDITATE project at SINTEF / St. Olav's hospital, from left: i) 3D printing of a part of the aorta with and without deformation (different colors) from guidewire; ii) simulation of guidewire from the groin and through the aneurysm to calculate deformation; iii) navigation under EVAR (Endovascular Aneurysm Repair) using the CustusX research platform ([www.custusx.org](http://www.custusx.org))

## New center for research on medical equipment in Trondheim

In May, NorTrials, a new public-private partnership, was launched by the regional health organisations. St. Olav's hospital is given responsibility for testing new medical technology in this collaboration. Thomas Langø, senior researcher at SINTEF and academic leader, and Jan Gunnar Skogås, department director at FOR and head of clinic at Røros hospital, will lead the work.

NorTrials was established to make Norway more attractive for companies developing new drugs and medical equipment, and thus give Norwegian patients increased access to new treatment methods through participation in clinical trials. Dedicated NorTrials centers have been established at Norway's six university hospitals within therapy areas selected in collaboration with the industry. The NorTrials centers will be national contact points for industry-funded clinical trials and ensure broad collaboration between the country's hospitals within the relevant areas.



The NorTrials centers are:

- **Cancer:** Oslo University Hospital HF
- **Autoimmune diseases and inflammation:** Stavanger University Hospital
- **Brain health and neurological diseases:** Haukeland University Hospital
- **Cardiovascular diseases:** Akershus University Hospital
- **Medical equipment:** St. Olavs Hospital
- **Digestive diseases:** University hospital of Northern Norway

More information: <https://spesialisthelsetjenesten.no/nortrials>

### NorTrials partners

LMI

Melanor

HELSE SØR-ØST

HELSE MIDT-NORGE

HELSE VEST

HELSE NORD





Photo:NTNU

## Use of 3D models in the treatment of fractures.

*Lars G. Johnsen, consultant trauma section, orthopaedic dept.*

*St. Olav University hospital, Trondheim*

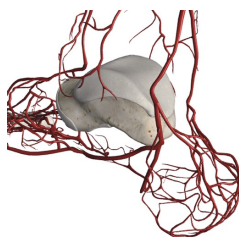
*Associate professor, Institute of Neuromedicine and Movement Science NTNU*

Fractures of the root of the foot are rare but often serious fractures and not uncommon as a result of high-energy injuries in young patients. Untreated, these injuries can result in reduced walking function and, in the worst case, lead to amputation and reduced quality of life. These are often complicated injuries that must be treated in a hospital with expertise in this area. Careful planning before an operation is crucial for the result. We operated on such a patient at St Olav's hospital with fractures in the ankle and in the talus - a central bone in the root of the foot in the sense

ne Gjerde at FOR, a 3D model was then made in plastic based on CT images of both the fractured bone and the healthy bone. The healthy bone was made as a mirrored model so that it became a perfect template for how the



*High energy trauma, open injury*

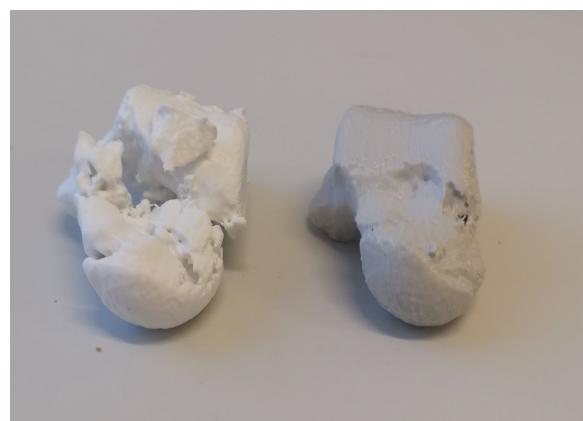


*CT picture of the injury*



*3D model of the injury*

that it has an articular surface against both the ankle, heel and root of the foot. Loss of function in this bone will cause the patient to have problems with most walking functions such as walking up stairs and on uneven terrain. Before we operated on this patient, a CT was also taken of the healthy side. With the help of Jan Mag-



*3D model with uninjured side for comparison (mirrored model)*

broken bone should look (see pictures). We could then sit with both models before the operation and plan exactly how we were going to get the broken pieces in place and what type of implant (plate and screws) we were going to use. We also wrapped both models in sterile plastic and could therefore also take them with us to the operating room during the procedure. A year after the operation, the patient was back in full work and had little

The use of 3D models has been on the market for a few years. At the orthopedic department, St. Olavs hospital, we have used this both in acute fracture surgery, in patients who have late sequelae after fractures and in children who develop a skewed position in the skeleton. This is a very useful tool that provides increased accuracy in planning surgery on the skeleton and can contribute to a better functional result after operations.

The fact that FOR can offer this service contributes to St. Olavs hospital being able to optimize the offer for patients with injuries or other deformities in the musculoskeletal system.



Photos: Lars G Johnsen



The 33<sup>rd</sup> SMIT Conference ([www.SMIT2021.com](http://www.SMIT2021.com)) for The international Society for Medical Innovation and Technology ([www.iSMIT2021.org](http://www.iSMIT2021.org)) was held at Radisson Blu Scandinavia Hotel in Oslo May 30<sup>th</sup> – 31<sup>st</sup> 2022 after been moved twice because of challenges arranging a physical in-person conference due to the Covid-19 pandemic in Europe and the rest of the world. This was important since the cornerstone of the SMIT Conferences is the fruitful personal meetings between professionals from different disciplines within both Medicine and Technology. These meetings benefits greatly by physical in-person conferences, where also the industry exhibition with physical attendance is of outmost importance.

The 33rd SMIT Conference had four honorary talks:

The John Wickham Lecture by Professor emeritus Erik Fosse:

**From Torch Light to Hologram - My Journey to Precision Medicine**

The Gerhard Buess Lecture by Dr. Anthony Chang

**AI in Cardiology and Critical Care – no way back?**

The Earl Owen Lecture by Professor Bjørn Edwin:

**The Journey of Liver Surgery and Future Perspectives**

The John Abele Lecture by Eirik Næss-Ulseth:

**How to Fertilize a research environment to grow innovations into companies**

The SMIT conference in Oslo had **269 participants** and presented a special focus on Artificial Intelligence and Innovation & Entrepreneurship. In total **101 talks from invited speakers and talks selected from 75 Abstracts (17 went in as Posters)** were divided onto the following sessions in three parallel tracks: Hybrid and Future Operating rooms, Artificial



Photo: Ole Jacob Elle

Welcome reception at Oslo City Hall

Intelligence, Medical Data Infrastructure and Security in an Era of AI, Innovation in Healthcare, Minimally Invasive Therapy and Intervention, Value-based Healthcare, Robotic in HealthCare, Surgical Navigation, Telementoring, Cardiac Catheter based Interventions and Surgery, Minimally and Non-invasive Therapy, Simulation and Visualization, Affordable medical Technology for use in Low-income countries, New Trends in Health Care Delivery, Health Technology for Third world countries, Emerging Technologies and Devices, Advanced Image Computing, and special session on “Autonomy for Surgical Robots (SARAS project)”. **Two special sessions were planned and chaired from Trondheim “Future Operating Room (NorMIT project)”.**



Photo: Silje Tessem Moan

Egidius Pelanis in his oral presentation

In addition we had two Industrial lunch Symposiums one each for the two main sponsors of the SMIT2021 Conference, SIEMENS Healthineers and Medtronic, One Hands-On workshop on Hugo Medical Robot of Medtronic, and a Mixed Reality Experience as a hands-on workshop where different industrial actors in the field were present.

The exhibition hall was in front of the entrances for the three rooms for the oral talks where the **13 sponsors** Siemens, Medtronic, Olympus, Intuitive, Brainlab,



Photo: Silje Tessem Moan

*Informal talks and discussions*

B Braun, Abbot , Edwards, Storz, Telenor, Inventas, HoloCare and DNV GL had their stands. The exhibition worked, in addition to presenting the products of the companies present, as meeting places with cross-disciplinary discussions took place.



Photo: Ole Jacob Elle

*Conference dinner at Louise*

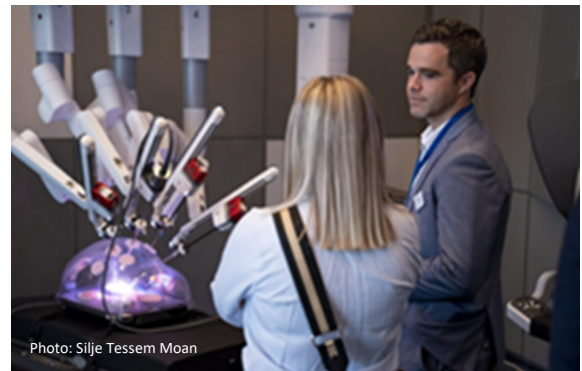


Photo: Silje Tessem Moan

*Industrial presentations at the exhibition area*

On behalf of the 33<sup>rd</sup> SMIT Conference, the core organizing committee Egidijus Pelanis, Bjørn Edwin and Ole Jakob Elle together with the rest of the Faculty of the SMIT2021/22 conference



Go to [normit.no](http://normit.no) for more information!

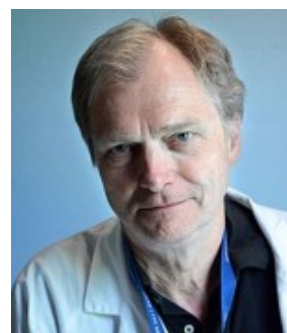
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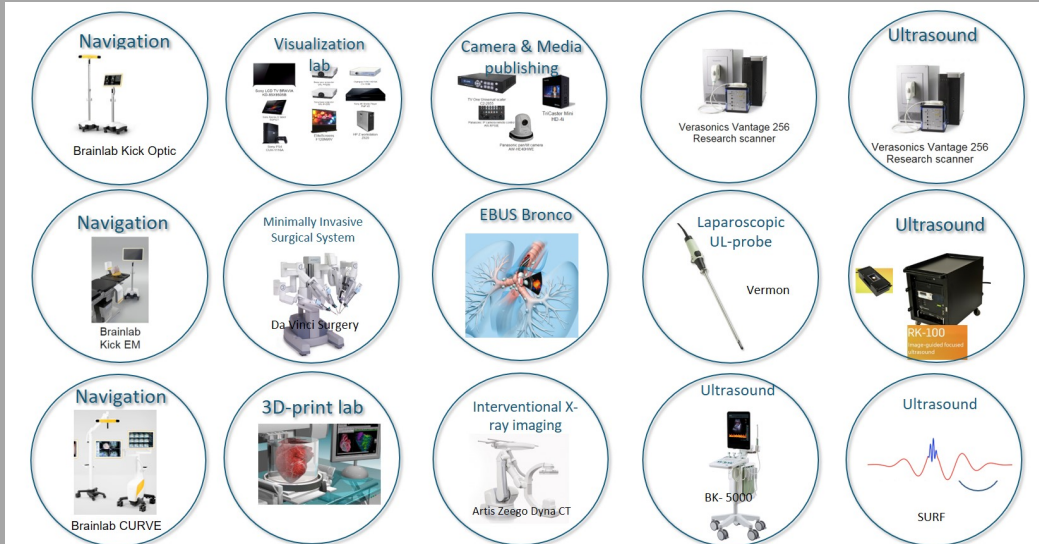


Erik Fosse  
Head of The Intervention Centre  
Oslo University Hospital



# NorMIT infrastructure

## Trondheim



## Oslo

