

Final Symposium

December 9, 2020

(Rhinodiagnost: 2017-2020)

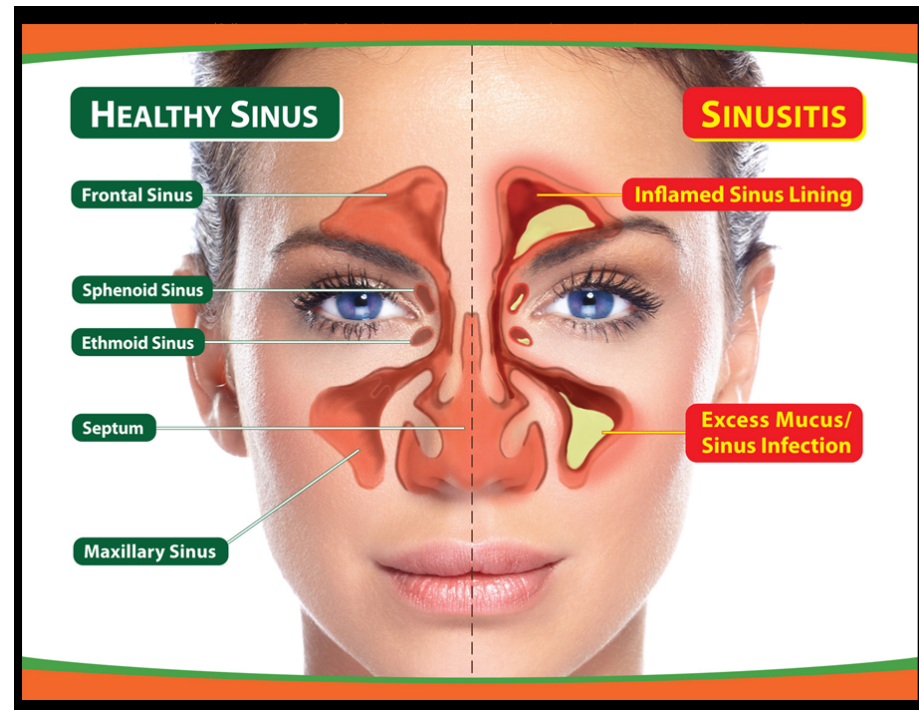


Motivation

- Nasal disorders are among the most common health problems

About **11% of the European population** suffer from an obstruction of nasal breathing or an inflammation of the nasal sinuses. In Germany, Austria and Switzerland, more than **100,000 surgeries** on the nose or the nasal sinuses are carried out annually. For patients affected, the impairment of the quality of life is despite specific treatment plans immense. In the US, some **500,000 surgeries** per year are performed.

How can diagnostic methods be advanced to allow for better surgery planning?



- A meaningful rhinological diagnosis is key to assessing the **effectiveness of patient-specific nasal functions**, taking into account the respective **pathology**.
- Diagnostic quality is currently based on the **quality of the training** of the practicing physician, his or her **experience in the treatment** of specific medical conditions, and the **tools** available.

- **RHINODIAGNOST** implements **coordinated morphological-functional diagnostics** for ear, nose, and throat (ENT) physicians.
- The **RHINODIAGNOST** services take into account the **breathing comfort** of a patient, which is defined by the fluid mechanical properties of the respiration.

Project Team

- AIT Angewandte Informationstechnik
Forschungsgesellschaft mbH, Graz (A),
Project Coordinator



- Sutter Medizintechnik GmbH,
Freiburg (DE)



- Rheinisch-Westfälische Technische Hochschule
(RWTH) Aachen (DE)



- Forschungszentrum Jülich GmbH (DE)

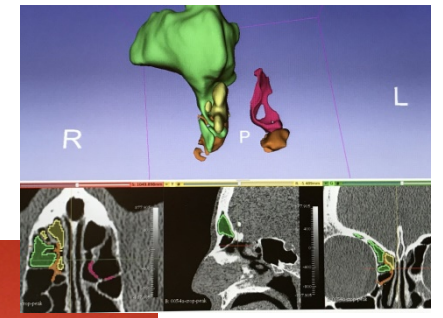


- Med Contact GmbH, Salmendingen (DE)



Project Work Plan

- **AIT - Angewandte Informationstechnik Forschungsgesellschaft** coordinates the whole project and formulates the **service portfolio** of the NOSE Service Center. **3D models** and **computational fluid dynamics** for nose and nasal cavity diagnostics are made available online. In addition, **3D printouts** can be requested.

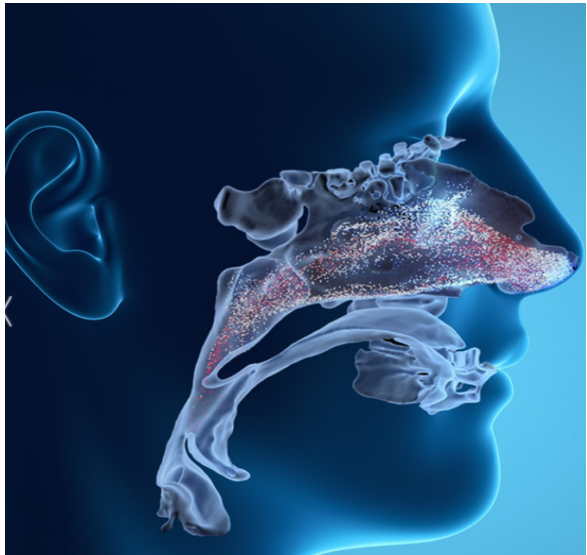
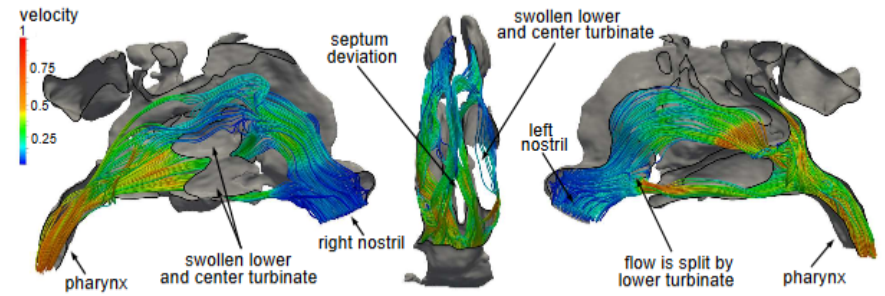


- **Sutter / Rhinolab** provides results of **rhinomanometric measurements** that are compared to numerical results for validation purposes. The **4-Phase Rhinomanometer** marketed by **Sutter / Rhinolab** is continually adapted to the diagnostic requirements in cooperation with **Med Contact**. It is integrated into the RHINODIAGNOST network.



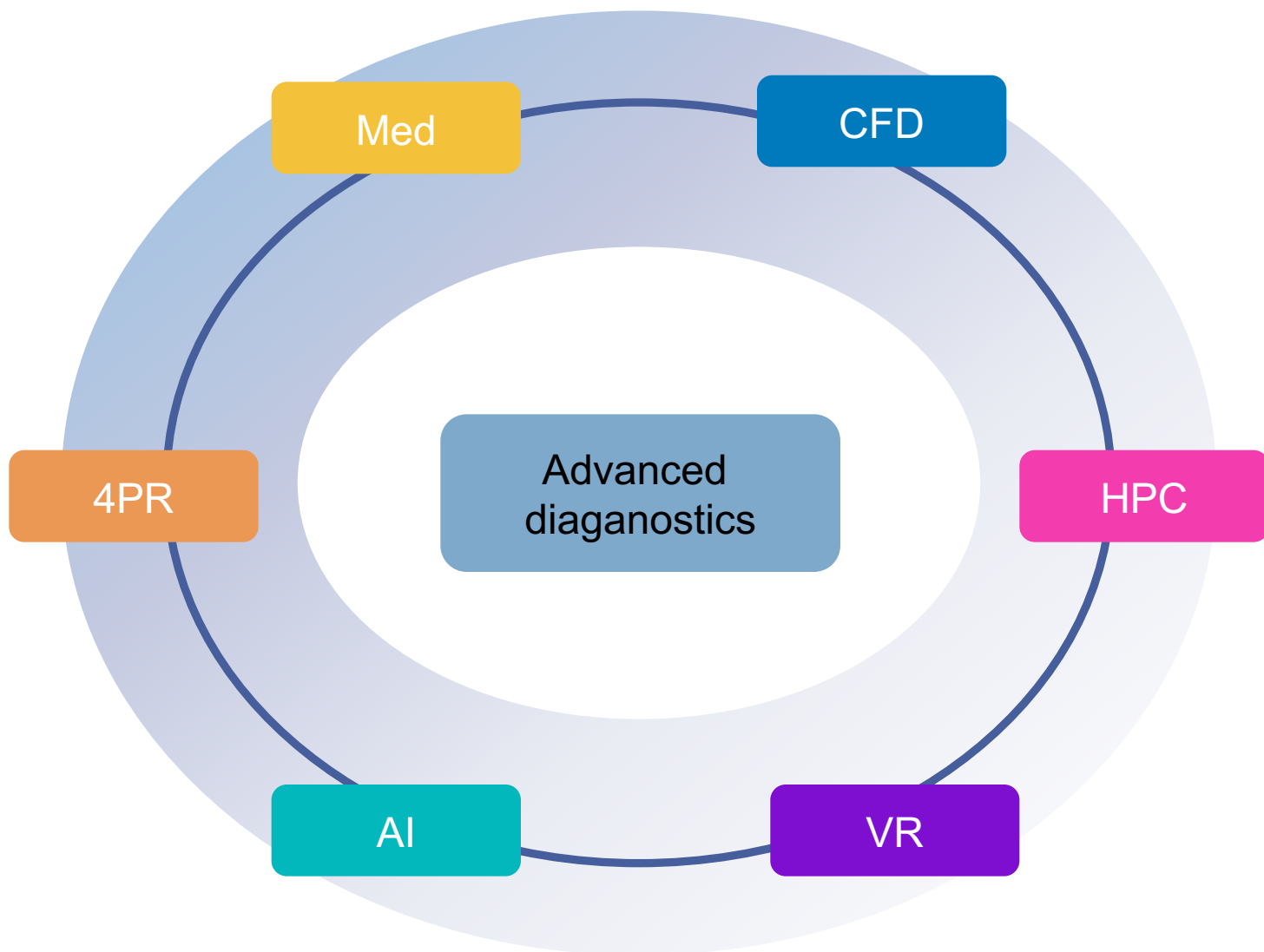
Project Work Plan

- At **RWTH Aachen University**, experts in the field of fluid mechanics develop **novel methods to simulate and analyze respiratory flow**. They work together with scientists from the **Jülich Supercomputing Centre** to **optimize simulations** and to **visualize results**.



- **High-resolution simulations** are carried out at the **Jülich Supercomputing Centre (FZ Jülich)**. They allow accurate insights into the flow phenomena of the nose. High-performance computing is made available through **interactive supercomputing** techniques.

Interdisciplinary Project



AGENDA

Wednesday, December 9

3:00 PM	○	Event Start
3:00 PM - 3:10 PM	○	Welcome
3:10 PM - 3:30 PM	○	Virtual Surgeries of Nasal Cavities on High Performance Computing Systems CFD
3:35 PM - 3:55 PM	○	Enabeling web-based interactive HPC for Rhinology CFD HPC
4:00 PM - 4:20 PM	○	Collaborative Virtual Reality for Rhinology HPC VR
4:25 PM - 4:40 PM	○	Coffee Break

- 4:40 PM - 5:00 PM ○ The segmentation of CT scans using artificial intelligence
AI
- 5:05 PM - 5:25 PM ○ CFD-Simulation - a Rhinodiagnost Service
CFD Med
- 5:30 PM - 5:45 PM ○ Systematic analysis of physical rhinological function tests
Med
- 5:50 PM - 6:00 PM ○ Coffee Break
- 6:00 PM - 6:10 PM ○ Development and first tests of a new 4-phase-rhinomanometer
4PR Med
- 6:15 PM - 6:30 PM ○ Elastography and elastometry of the lateral nasal wall
Med
- 6:35 PM - 6:50 PM ○ Subjective sensation of nasal resistance
Med
- 6:55 PM - 7:00 PM ○ Wrap-up
- 7:00 PM ○ Event End

Virtual Meeting Etiquette

- Please leave the sound muted and the video switched off when other presentations are given.
- If you have questions during a presentation, use the chat or wait for the discussion after the presentation.
- 5 minutes after each presentation are reserved for questions & discussions!
- Please state your name and institution when speaking for the first time.
- We will record the meeting for internal purposes. In case that recordings of individual presentations will later be made available on our website, we will contact you in advance.

THANK YOU!

- RHINODIAGNOST fosters a network of CFD and ENT specialists worldwide and supports international cooperation by providing a **Memorandum of Understanding** for research partners.
<https://rhinodiagnost.eu/projekt-info/memorandum-of-understanding/>
- RHINODIAGNOST also supports participation of Individual Partners, allowing to test the offered tools on an individual basis.