

## Dear Z43 Partners, Friends, and Followers

*While spring has been scorching into summer, there has been a lot of exciting activity here at Z43! Happy reading, and, if you have suggestions or ideas to share, please get in touch!*

### MEASUREMENT

## FCC Acceptance of DASY6 Advanced Features

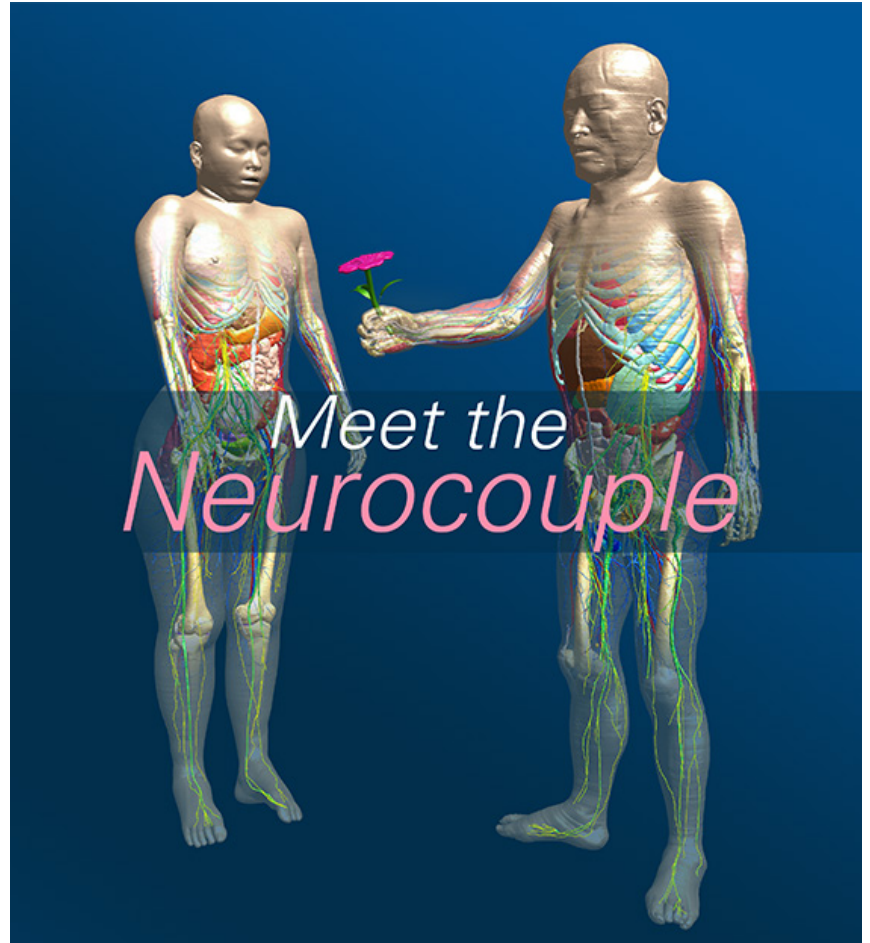
DASY6 has many novel advanced features that increase the speed, accuracy, flexibility, and reliability of testing the compliance of wireless devices. We are very pleased to announce that we have now received official confirmation from the Federal Communications Commission (FCC) on full acceptance of SPEAG's modulation and audio interference analyzer (MAIA) combined with the sensor model calibration (SMC) feature. The latest cDASY6 SAR Module (V6.8.2) release already includes the new format for reporting MAIA results, as agreed with the FCC. The software installer and the manual are available for download at the DASY6 website. Note that we have also received green light for our optimized scanning feature that allows for much faster measurements and that will become fully available in V6.10.



Any questions about MAIA functionality? Please watch this [training video](#) or contact us at [info@speag.swiss](mailto:info@speag.swiss)

### VIRTUAL POPULATION

## Meet the NEUROCOUPLE



The latest "it couple" has arrived! Only six months after the release of Yoon-sun V4.0, IT'IS welcomes the second neuro-functionalized human computational body model to its Virtual Population (ViP) library: the Asian male anatomical phantom Jeduk V4.0! This model is yet another successful result of the Swiss-Korean collaborative project NEUROMAN.

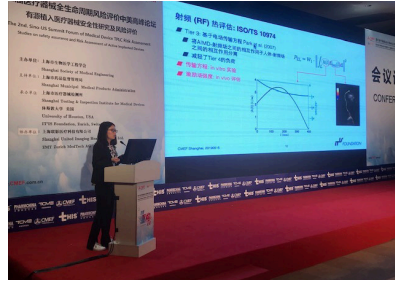
Like Yoon-sun, Jeduk V4.0 consists of more than 1200 tissues and delivers an extremely detailed model of the human anatomy. Muscles, nerves, and blood vessels have been segmented, named, and meshed as separate objects, allowing for more accurate virtual placement of devices even by non-medically trained staff. Most importantly, Jeduk V4.0 includes neuro-functionalized nerve trajec-

tories that are modeled as splines and assigned default nerve physiology parameters from the literature. Note that the spline trajectories and tissue anatomy are compatible with ZMT's Sim4Life NEURO simulation module.

We are currently working on validating the two neuro-functionalized anatomical models in the context of the safety of magnetic resonance imaging (MRI) gradient coils, however, we welcome all efforts from the community to validate our next-generation models in a wide variety of use contexts, so please get in touch in case you would like to contribute. For more information, on Jeduk V4.0 or any of our ViP models, contact us at [virtualpopulation@itis.swiss](mailto:virtualpopulation@itis.swiss)

## WORKSHOP

### Annual Z43-Auden Workshop Series in China and Taiwan: 14<sup>th</sup> Edition a Great Success!



In June 2019, SPEAG, ZMT, and AUDEN Technology Corporation hosted their popular annual hardware and software workshop series in Beijing, Shanghai, Shenzhen, and Taipei. AUDEN did an outstanding job organizing the four events with, overall, almost 300 attendees from leading universities, industry, and government agencies – the highest number of participants so far!

All workshops featured a mix of presentations, live demonstrations, exhibitions, and social gatherings, with particular focus on Z43's latest solutions for exposure evaluation and compliance testing from wireless power transfer (WPT) to 5G mmWave applications. Participants were also able to learn about the roadmap for future technological advances in 2019/20 and beyond and to discuss customer needs and product requirements. Z43 would like to thank all participants for their valuable contributions – we are very much looking forward to welcoming you 2020!

## MEASUREMENT

### Implant Safety Evaluation at IT'IS – Episode I: Generation of the piX model



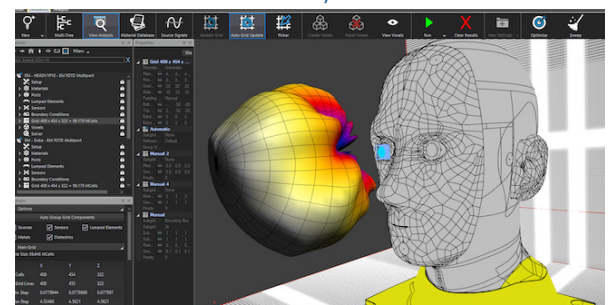
IT'IS is dedicated to the continual improvement of the instrumentations and procedures used to demonstrate the safety of patients with medical implants during MRI diagnostic scans. To better disseminate the new technologies and techniques, IT'IS has launched a new series of implant safety evaluation videos. In **Episode I**, we explain how to create a reliable numerical response model of any active implantable medical device (AIMD) for both heating and voltage by using the new universal standard AIMD (SAIMD-U). The SAIMD-U reference device was developed by Z43 specifically to enable regulators, industry, and test labs to comprehensively verify the evaluation instrumentation (birdcage simulator, phantom, liquid, field and temperature sensors) and procedures applied to evaluate the MRI safety of AIMDs.

## SIMULATION

### Major Release Sim4Life V5.0 & SEMCAD X Matterhorn V18.0

Get ready for *Sim4Life* V5.0 and *SEMCAD X* V18.0, now with even greater simulation power! At the core of these releases is the integrated novel unstructured low-frequency electromagnetic finite element method solver suite combined with mesher engines that enable the meshing of highly complex objects. These solvers are high-performance computing enabled, leading to a tremendous increase in both speed and accuracy compared to previous releases. Large refactoring efforts of the user interface code have also been made, for drastically improved responsiveness in handling hundreds of thousands of entities. This is especially beneficial for the growing R&D demand in the field of neurostimulation and WPT systems.

Read more about the power and elegance of [Sim4Life V5.0](#) and [SEMCAD X Matterhorn V18.0](#) and watch the movie on [youtube](#)



## Z43 SOCIAL

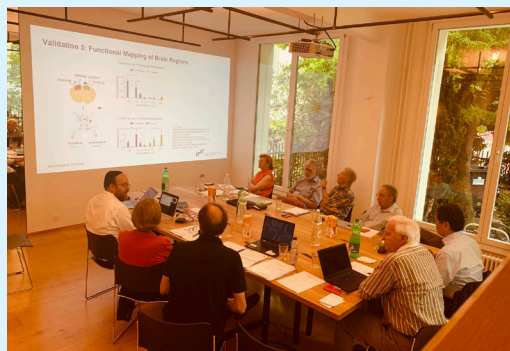
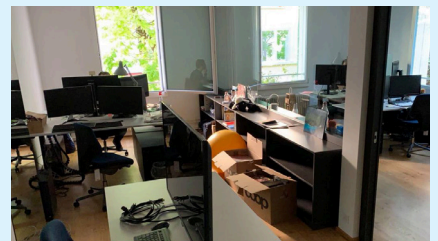
### Another PhD for IT'IS



She did it! Z43 congratulates Dr. Aiping Yao for successfully defending her PhD thesis entitled “Novel Methods and Instrumentation for Scientifically Sound Assessment of MR Safety of Medical Implants”. The research reported in her thesis was focused on improving and simplifying MRI safety assessment of medical implants through novel methods and models with well-controlled uncertainties under various clinical scenarios. Her findings also provide essential information for bridging some of the identified knowledge gaps in the current safety guidelines for exposure of implants to radiofrequency fields in MRI.

### Move to New Building

Hot summer news: Z43’s expansion into the beautiful new quarters at Ankerstrasse / Kräuelgasse is happening! The new workplaces, the former headquarters of Fabric Frontline, were inaugurated on July 1<sup>st</sup> with an Info Day presentation followed by an apéro.



## RESEARCH

### PUBLICATIONS

*Understanding Ultrasound Neuro-modulation Using a Computationally Efficient and Interpretable Model of Intramembrane Cavitation*

**Théo Lemaire et al., 2019, Journal of Neural Engineering; doi: 10.1088/1741-2552/ab1685 (online 05 April 2019)**

*Novel ETV6-RUNX1 Mouse Model to Study the Role of ELF-MF in Childhood B-Acute Lymphoblastic Leukemia: A Pilot Study*

**Elena Campos-Sanchez et al. 2019, Bioelectromagnetics, 40 (5) 343–353; doi.: 10.1002/bem.22193 (online 03 June 2019)**

*Response to “Comments on Neufeld and Kuster, ‘Systematic Derivation of Safety Limits for Time-varying 5G Radiofrequency Exposure Based on Analytical Models and Thermal Dose’ by Kenneth R. Foster”*

**Esra Neufeld, 2019, Health Physics, 117(1):70–71; doi: 10.1097/HP.0000000000001091 (online 01 July 2019)**