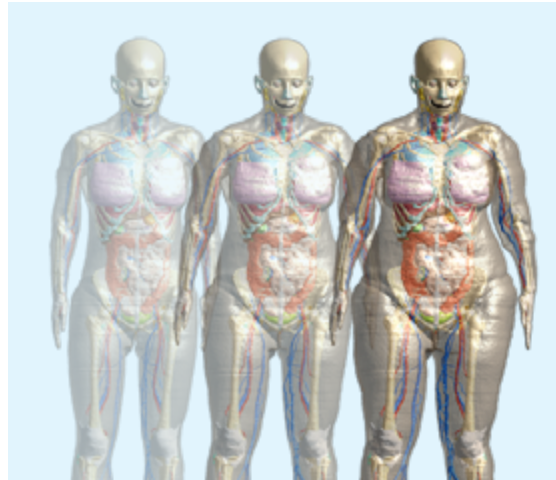


## Dear Z43 Partners, Friends, and Followers

*The first newsquarter of the year is here! We are continuing full-speed in 2018 to address new challenges and opportunities, inventing novel tools and features for measurement of the electromagnetic near-field from very low frequencies to over 100 GHz and broadening population coverage with our computational phantoms. Enjoy the update!*

### VIRTUAL POPULATION

## Major ViP Extension: Morphing Broadens BMI Population Coverage



The IT'IS Foundation has achieved a major breakthrough with the release of a series of validated morphed models that extend the well-known Virtual Population (ViP) library and provide a long awaited solution for better population coverage in terms of body mass index (BMI). In the new "mViP" models, the subcutaneous adipose tissue (SAT) is morphed to simulate how individuals gain or lose weight. The SAT volume expansion, analogous to thermal expansion, deforms surrounding tissue elastically while being constrained by rigid bones. Three different morphed versions of Ella (22, 26, 30 kg/m<sup>2</sup>) and Fats (29, 33, 40 kg/m<sup>2</sup>) have been released so far. Also newly available is the Ella Breast Coil, a modified version of Ella created for, e.g., breast coil design or safety assessments. Additional morphed models covering higher BMI values or taking other tissues (e.g., muscle tissue) into consideration will become available soon. For enquiries regarding customized models for specific applications, please contact us at [customized@itis.ethz.ch](mailto:customized@itis.ethz.ch).

The IT'IS Foundation has achieved a major breakthrough with the release of a series of validated morphed models that extend the well-known Virtual Population (ViP) library and provide a long awaited solution for better population coverage in terms of body mass index (BMI). In the new "mViP" models, the subcutaneous adipose tissue (SAT) is morphed to simulate how individuals gain or lose weight. The SAT volume expansion, analogous to thermal expansion, deforms surrounding tissue elastically while being constrained by rigid bones. Three different morphed versions of Ella (22, 26, 30 kg/m<sup>2</sup>) and Fats (29, 33, 40 kg/m<sup>2</sup>) have been released so far. Also newly available is the Ella Breast Coil, a modified version of Ella created for, e.g., breast coil design or safety assessments. Additional morphed models covering higher BMI values or taking other tissues (e.g., muscle tissue) into consideration will become available soon. For enquiries regarding customized models for specific applications, please contact us at [customized@itis.ethz.ch](mailto:customized@itis.ethz.ch).

### MEASUREMENT

## New Product Release: cSAR3D-A Fully Automated SAR Testing



SPEAG's commitment to automation and high-quality sensor array technology has led to the introduction of cSAR3D-A, the first fully automated specific absorption rate (SAR) test system that complies with standards requirements for fast SAR testing. cSAR3D-A combines the world's fastest SAR measurement system, cSAR3D, with the robot integration

that SPEAG is known for. The powerful system is ideal for rapid testing of wireless devices. Applications range from repeatable testing of many samples to fast SAR testing in accordance with international standards. Looking for one-click fully automated cSAR3D testing of thousands of devices? Contact us at [info@speag.com](mailto:info@speag.com)!

### RESEARCH

## Peer-Review of Draft NTP Technical Reports and NIEHS-II



NIEHS National Toxicology Program (NTP) began to address the feasibility of such a large-scale study. Almost 20 years later, the NTP study, for which IT'IS was responsible for the exposure setups and dosimetry, is now almost completed. On March 26–28, two detailed draft technical reports were peer-reviewed by a panel of 13 independent invited experts., Government agencies, NGO's, industry, the media, and private citizens also actively participated. Surprisingly, the panel elected to upgrade the evidence for carcinogenicity of seven tumor types and locations in rats, including heart schwannoma and brain glioma. For the NTP findings to be translated into meaningful risk assessment of risk, effective high-quality follow-up studies—including the new NIEHS-II project in which IT'IS participates in – are needed.

In 1999, the FDA formally nominated the radio-frequency emissions of wireless communication devices for toxicology and carcinogenicity testing, and, in 2000, the

MEASUREMENT

## cDASY6.6 Another Great Milestone Achieved

One of the prime benefits of SPEAG's latest cDASY6.6 release is the full integration of specific phantoms, including the base-station phantoms of the IEC 62232, making the system ready to test any IoT device! The implementation is fast and accurate



and performs even in spatially confined volumes (e.g., in the case of the wrist phantom or in the nose and eye region of the facedown phantom). Furthermore, evaluations are made much more efficient by the reconstruction technologies specifically developed for cSAR3D that allow determination of total absorbed power. Any new phantom and any custom-made phantom can easily be integrated into cDASY6.6. Most importantly, cDASY6.6 is fully compatible with the latest drafts of standards IEC 62209-U and IEC62209-3.

RESEARCH

### PUBLICATIONS

*Behavioural phenotypes in mice after prenatal and early postnatal exposure to intermediate frequency magnetic fields*

**K. Kumari et al., 2018 Environmental Research, 162: 27-34 (online 22 December 2017)**

*Effect of cell phone radiofrequency radiation on body temperature in rodents: Pilot studies of the National Toxicology Program's reverberation chamber exposure system*

**M. E. Wyde et al., 2018 Bioelectromagnetics (online 14 March 2018)**

SIM4LIFE

## Release of Sim4Life V4.0 and SEMCADX V17.0

The highlight of these releases is Optimizer V1, which includes a new generation of multi-parameter, multi-goal optimization frameworks. Optimizer 1 is open and flexible, providing an entire tool box to support the automation of many tasks, including device optimization, virtual prototyping of treatments, and safety evaluations – enabling the user to connect any combination of objectives and constraints (predefined or expression-based) for a given set of design variables with assistance from the intuitive interface.



SOCIAL EVENT

## Game On! Z43's Annual Party 2018, "The Next Level" Edition

The annual Zurich 43 party, this year with the gamer theme "The Next Level", was held in Zurich-Oerlikon mid-January. The enormous main hall of the venue was fitted out as a games arcade/darts pub/pool hall/dance floor mash up. Partiers, many decked out according to the "Gamer Extravaganza" dress code, entered via the foosball and air hockey zones in the front section of the hall, through the center section with darts and virtual reality stations, onward between pinball machines and pool tables to the dance floor and stage at the back. A mix of bar stools, couches with low tables, and bistro seating offered plenty of options for socializing while enjoying the scrumptious food and wine. The dance floor was open the whole evening with music by Christian Niederer's PLAN followed by Fresh & Cool, and the party continued into the wee hours with more games and even more dancing.

