

RF for Healthcare: diagnose, treat, monitor and support

Technology is rapidly innovating many aspects of the healthcare system. A solid understanding of the propagation of (ultra-) sound, RF and light waves and their interaction with the environment are essential to numerous applications. In this keynote presentation, Prof. Linnartz will highlight several examples. This includes innovations in imaging such as enhancing the resolution, ability to differentiate between tissues and compensation of artifacts. Carefully chosen doses of RF can also treat a variety of diseases or assist the effectiveness of other treatments. Positioning can also assist in reaching specific target locations inside the body during minimally invasive surgery and treatment.

Yet navigation and positioning are also relevant to facilitate and support the hospital work flow, to track people and to automatically log medical actions and interventions. Monitoring of patients not only occurs routinely in the Intensive Care Unit, but this will also be extended to general wards, in ambulatory settings or at home. Setting up and maintaining reliable networks remains a challenge particularly when these systems are scaled far beyond current practice. Body Coupled Communication (BCC) is a promising alternative to RF communication, because in contrast to RF radio, BCC signals are not radiated away from the body, but stay in the immediate vicinity of the human, as capacitive fields. Yet the BCC propagation is less well characterized.