



## In-Silico analysis of implant function

Clinical trials, often used for regulatory approval, do not analyse the subject-specific functionality and effectiveness of implants. For a more patient-centric analysis, in-silico analysis can be used together with the inputs of the affected subjects. The creation of Verified and Validated (V&V) virtual processes entails the comprehensive use of medical imaging, biomechanical experiments, Computational Modelling and Simulation (CM&S) and Computer-Aided Engineering (CAE) in orthopaedics. The usage and implementation of such tools is not a common industrial practice. In-silico studies, which conform to standards of current Medical Devices Regulations (EU-MDR, US-FDA), can be

carried out for several test-subjects (>100) at fraction of costs of clinical trials. Moreover, the resulting simulations offer a huge pool of technical Know-How about the interaction between implants and patients' physiology to create innovative products in the future.

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### Service Portfolio

- Structural and biomechanical in-silico testing of implant behaviour and function.
- Biomechanical analysis and optimization of implant positioning in joints.
- High-resolution human CAD-FE-models with individual soft-, hard- and connective tissues.
- 3D FE-simulation of complex joint systems (using muscles, tendons, ligaments, etc.) to simulate realistic, physiological joint movements.
- Development of simulation-based analysis surgical tools for amputation planning, plastic surgery, etc.
- Training experts in simulation technology in biomechanics and structural analysis.
- Development of simulation-based virtual processes for development of personalised products.