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**Titel des Beitrags:**
Interactive Computing in Pre-operative Planning of Joint Replacement

**Abstract:**
We introduce an integration framework applicable to different engineering applications which, with only minor code modifications involved, supports distributed simulations as well as visualisation on-the-fly and enables real time interactive computational steering. Furthermore, we present its integration into a previously existing pre-operative planning environment for joint replacement surgery, which makes possible an interactive patient-specific selection of the optimal implant design, size and position. The environment is supposed to enable the real-time surgeon interplay with virtual models of bones and implants in 3D, thus, simultaneous computation and visualisation of the load transfer between the bone and the implant. Moreover, we tackle the problem of long communication delays which occur in the case of rigid coupling of simulation back-end with visualisation front-end and handicap a surgeon in observing which of his modifications leads to which outcome.

**Stichworte:**
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