Preface

Medicine is undergoing a historic transition, moving away from a trial-and-error model of care, towards individualized treatment strategies based on patient-specific knowledge management of disease and treatment. Not only the biomedical systems sciences and engineering, mathematics, medical imaging and medical informatics but also the discipline of machine intelligence and in a wider sense computer assisted radiology and surgery (CARS) are enablers of this new paradigm. With an appropriate ICT platform, they provide the methods and tools for knowledge management and specifically for a patient-specific medicine.

Important aspects of these dramatically evolving and ICT based methodologies and tools are possibilities for:

1. Modelling of human organ systems, pathologies and clinical processes from scientifically based evidence, medical guidelines and data mining.
2. Analysis (e.g. inferencing) and adaption (e.g. domain-specific learning) of models from data and information gathered from specific patients through imaging and biosensors in order to generate knowledge models of patient-specific situations to improve accuracy of diagnosis and appropriateness of treatment processes.
3. Higher quality of therapeutic interventions by means of real time integration of information in patient-specific models and therapeutic processes through computer assisted workflow, knowledge and decision management

In particular, since the first seeds for the CARS congress were laid in 1983, it was of prime importance to bring together experts from different medical and scientific disciplines from around the world to encourage this development. The newly founded International Foundation for CARS (IFCARS) registered in Germany in 2008, provides an organizational roof for these activities in computer assisted medicine and specifically for the CARS congress and the journal.

In response to frequent requests to enable CARS professionals (authors, participants, industrial representatives, etc.) a membership possibility for their scientific/medical activities, the IFCARS Board of Trustees and the Academic Advisory Board are engaging to prepare for an International Society of CARS (ISCARS). The establishment of such a society will be carried out in close consultation with the traditional CARS collaborating societies ISCAS, EuroPACS, CAD and CMI.

The general vision of ISCARS will be to promote and realize a higher level of quality for patient care by enhancing the practice of medicine, specifically radiology and surgery, with advanced ICT-based methods and tools. These are exciting challenges ahead on how this can be achieved in the foreseeable future. The CARS congress proceedings and journal in close cooperation with the authors and reviewers are instrumental in this process.

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