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## Some Trends in Health Technology

### Abstract

This lecture will first survey some trends in health technology which correspond to strong links with ICT, whether because they benefit from these technologies or because they challenge them. In a second part, a focus will be made on the very fast growing area of image guided surgery and radiotherapy that will be discussed through various viewangles and illustrated taking several clinical frameworks.

### Biographical Sketch

Christian Roux (IEEE Fellow, AIMBE Fellow, IAMBE Fellow) received the Agrégation degree from the Ecole Normale Supérieure, Cachan, France in 1978 and the Ph.D. from the Institut National Polytechnique, Grenoble, France, in 1980. He was with Télécom Bretagne (1982-2013) as an Associate Professor and from 1987 to 2013 as a Professor. He was a Visiting Professor with the Medical Image Processing Group, Department of Radiology, University of Pennsylvania (1992-1993), and a Distinguished International Research Fellow with the department of Electrical Engineering, University of Calgary, Canada (1996, 2003). He was the founding Director of the Laboratoire de Traitement de l'Information Médicale, Inserm U1101.

His research interests concerns advanced medical information processing, and spatial, temporal and functional information analysis and modeling in medical images, with applications in various medical domains including orthopedics, surgery, radiotherapy, gastroenterology ophthalmology, and cardiology. Prof. Roux has published around 200 papers, holds 10 patents and is the co-founder of three spin-off companies in computer-assisted orthopedic surgery. He has been awarded several national and international distinctions, including Inserm Basic Research Award and IEEE EMBS Award.

Prof. Roux was an Associate Editor for the IEEE TRANSACTIONS ON MEDICAL IMAGING and Chairman of its Steering Committee (1993-2003), and member of the Editorial board of the IEEE TRANSACTIONS ON INFORMATION TECHNOLOGY and of the PROCEEDINGS OF THE IEEE. He currently belongs to the Editorial Board on IEEE JOURNAL OF BIOMEDICAL AND HEALTH INFORMATICS. He is the founding co-chairman of the IEEE EMBS International Summer School on Biomedical Imaging held every other year in France, which is now recognized as a worldwide reference. Dr. Roux played a seminal role in the creation of IEEE ISBI International Symposium on Biomedical Imaging in 2002 and in the development of this conference. He served as President of the IEEE Engineering in Medicine and Biology Society (2000-2002).

In 2004 he became Senior Advisor with the French Ministry of Research and, in 2006, Program Officer with the French National Research Agency in the area of Technologies for Health. Between 2009 and 2013, Prof. Roux was Dean for Research with Telecom Bretagne. In 2013, he joined Mines Saint-Etienne to serve as Senior Vice-President for Research and Innovation.