Medical and Biological Engineering

From Ideas to Successful Medical Products

Content

o. Univ.-Prof. (em.) Dr. Dr.h.c. Helmut Hutten
Institute of Medical Engineering
University of Technology, Graz (Austria)

TUG

The definition of Medical and Biological Engineering (and Science) as accepted by IFMBE and EAMBES

1. Medical and Biological Engineering integrates physical, mathematical and life sciences with engineering principles for the study of biology, medicine and health systems and for the application of technology to improve health and quality of life.
2. It creates knowledge from the molecular to organ system levels, develops materials, devices, systems, information approaches, technology management, and methods for assessment and evaluation of technology, for the prevention, diagnosis, and treatment of disease, for health care delivery and for patient care and rehabilitation.

Medical and Biological Engineering is based on pure and applied science, engineering and technology.

TUG

Some definitions

Science: Science is the reasoned investigation or study of phenomena and objects. The objective of natural sciences is to understand the world, especially the nature, its controlling mechanisms and interrelationships. The aim is to extend the body of knowledge without asking whether this knowledge can be used to solve practical problems.

Engineering: Engineering is the purpose-oriented application of scientific principles and knowledge.The objective is to change the world and to make useful to man the properties of matter and sources of energy in structures, machines and products. The applied knowledge may be factual („know-that“) as well as procedural and methodological („know-how“).

Technology: A body of technical methods, tools, materials and rules which are employed for achieving practical purposes including the solution of problems related with and caused by life in modern civilization.

TUG

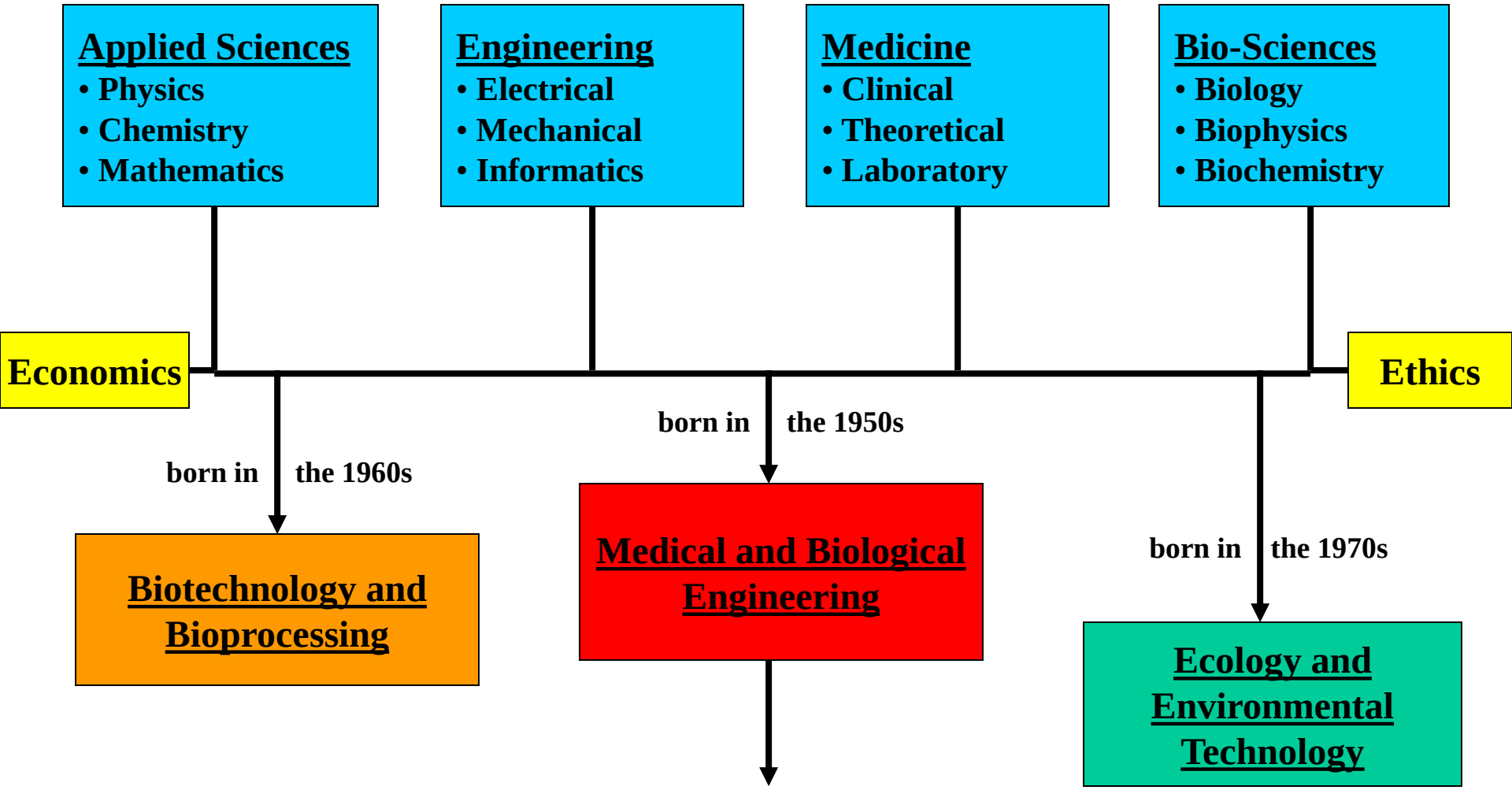
Special Technologies

Life Science Technology: Technology applied to life sciences, e.g. biology, human and veterinary medicine, genomics.

Healthcare Technology: Technology applied to healthcare, e.g. prevention, diagnosis, and treatment of health problems.

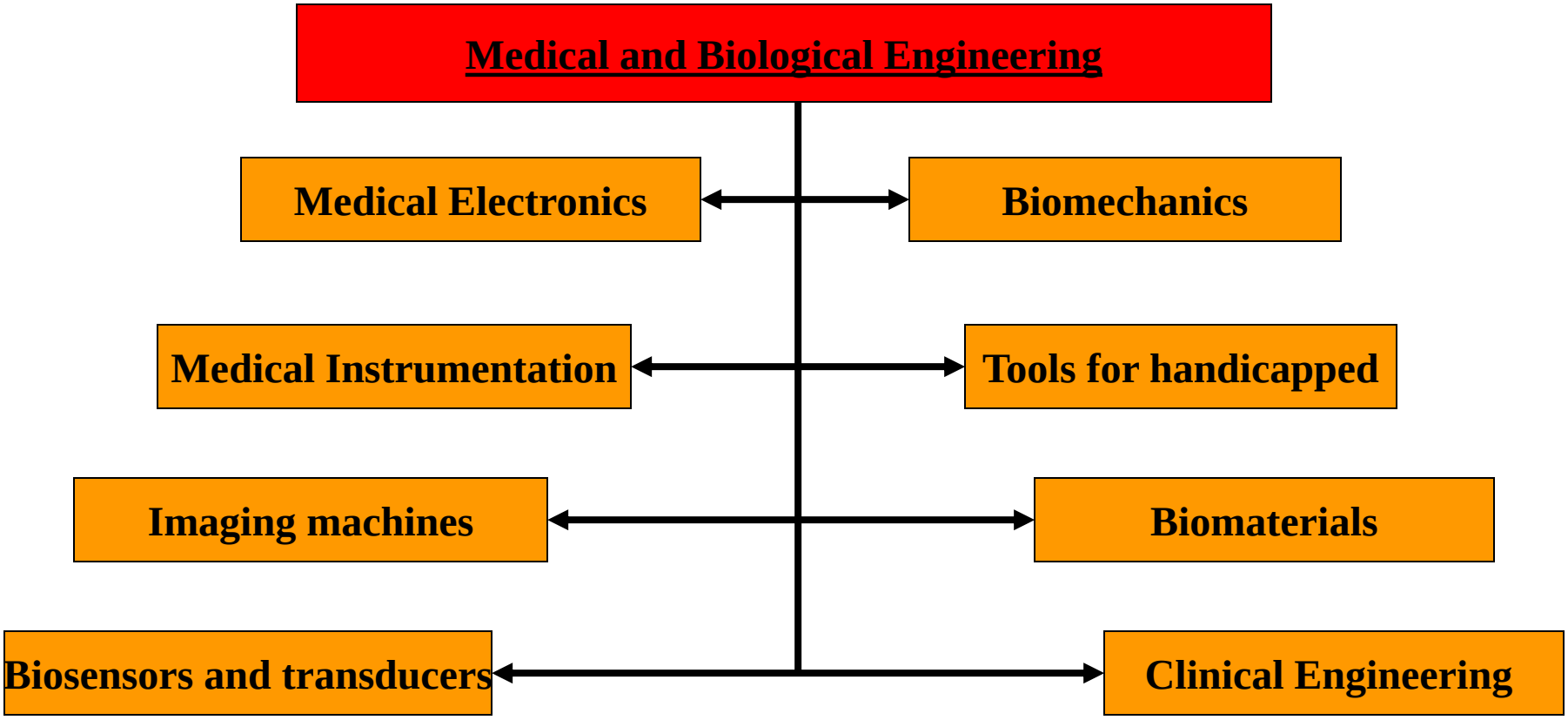
Rehabilitation Technology: Technology applied to rehabilitation, especially to the recovery from disorders that are combined with handicaps and aiming for social re-integration.

The roots of Medical and Biological Engineering



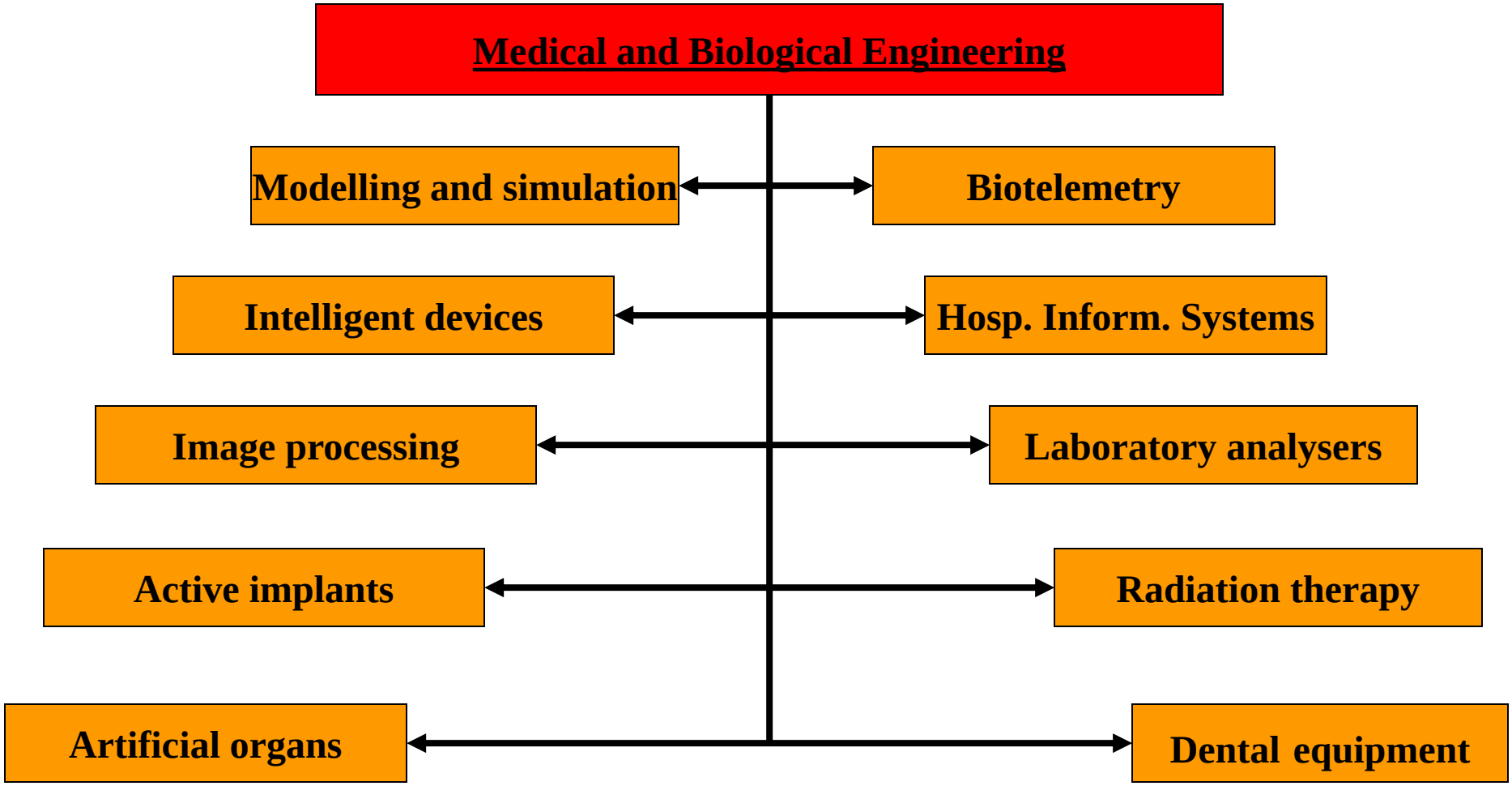
Topics of Medical and Biological Engineering

1955 – 1975 (1st phase)



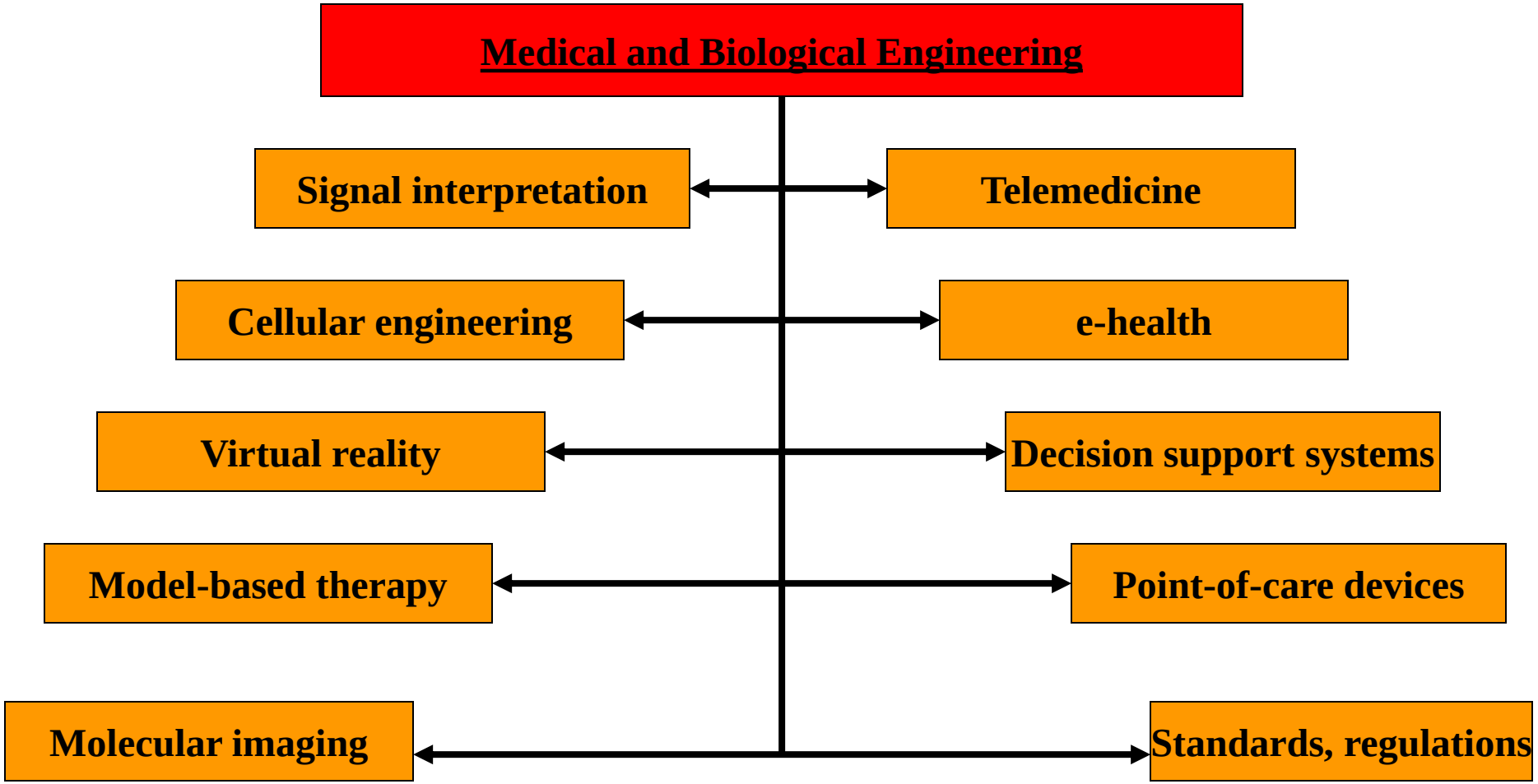
Topics of Medical and Biological Engineering

1975 – 1990 (2nd phase)



Topics of Medical and Biological Engineering

1990 – 2005 (3rd phase)



Topics of Medical and Biological Engineering

2005 - ???? (4th phase)