Biomedical Engineering & Medical Devices in EU

Dr Leandro Pecchia

University of Warwick

IFMBE HTA Division Chairman

WARWICK

International Federation for Medical and Biological Engineering

IFMBE

RESEARCH BACKGROUND

Career path:

Since 2013: *Assistant Professor in Biomedical Engineering*, ***University of Warwick***, *UK*
2011-2013: Research Fellow (RF2), ***University of Nottingham***, *UK*
2009-2011: Research Fellow (RF1), ***University Federico II of Naples***, Italy
2005-2009: PhD in Biomedical Engineering, ***University Federico II of Naples***, Italy
May 2005: BSc+MSc in Electronic Eng., ***University Federico II of Naples***, Italy

Research interests:

- Applied ***Biomedical signal processing*** and second level pattern recognition/data-mining
- Early stage ***Health Technology Assessment*** (HTA) and **User Need Elicitation** methods

Main applications:

- *Active/healthy ageing*: chronic cardiovascular diseases and falls in elderly
- Disease Management Programs, patient pervasive monitoring and ***Telemedicine***
- *Behavioural Monitoring*

Applied Biomedical Signal Processing and Intelligent eHealth Lab

- established in 2014, 5 local members, 2 Visiting Researchers, 5 research studs, 6 associate Academics

International Appointments

- Chair of the Health Technology Assessment Division of the International Federation of Medical & Biological Engineering (IFMBE)
- Chair of the Public Affairs WG of the European Alliance of Medical & Biological Engineering and Sc.
- Member of the WHO working group o HTA of Medical Devices
- Secretary of the European Parliament Interest Group on Biomedical Engineering link

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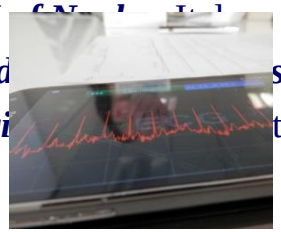

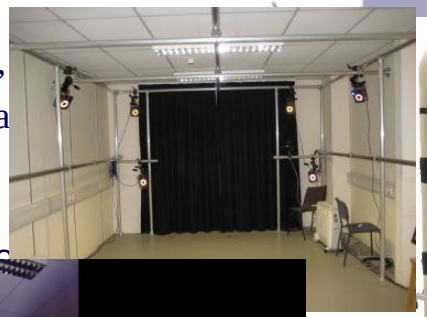

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Main applicati

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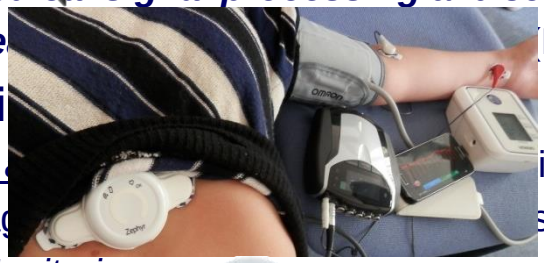

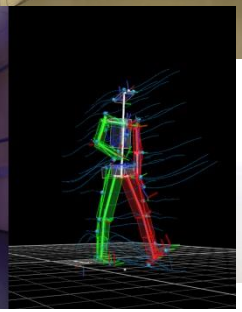

Application of Signal Processing and Intelligent eHealth Lab

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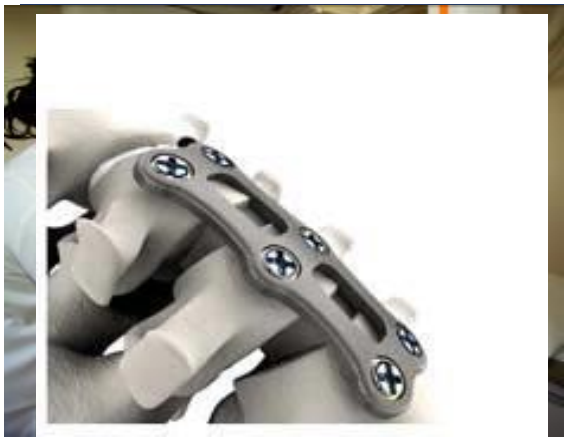
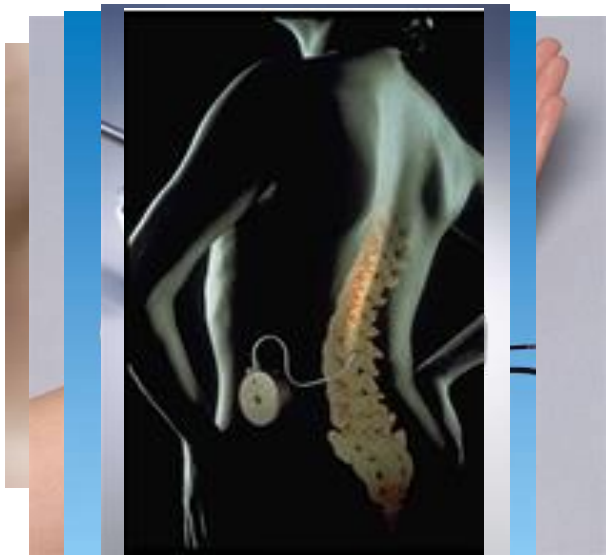
Biomedical Engineering (BME) outcomes





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BME outcomes today

- **500,000 medical technologies available to healthcare professionals**

- **A major employer in Europe:** employs more than 575,000 people in over 22,500 companies and has an annual turnover of €110 billion

- **BME from basic biomedical research, translational research, to clinical practice**
  - Prevention
  - Diagnostics
  - Treatment
  - Rehabilitation
  - Improved clinical outcomes
  - Reduced treatment cost

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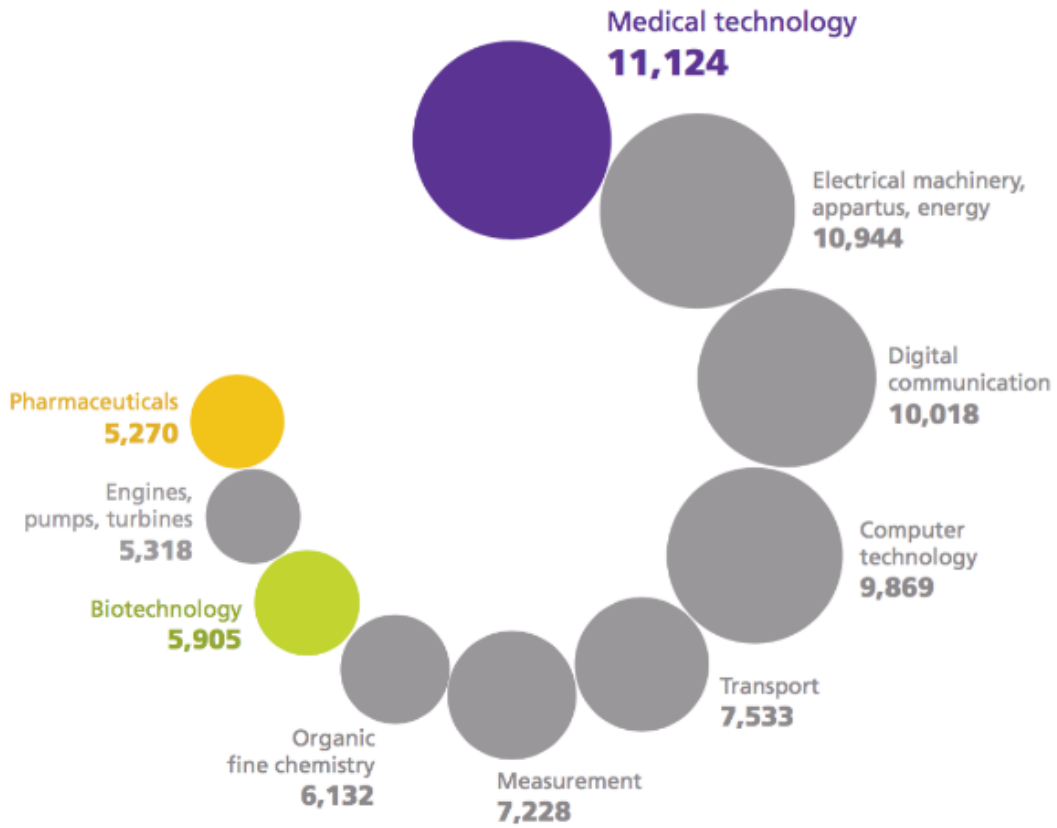
BME outcomes in 10 years

Medical Technologies are 1st for IP



*MedTech Europe, *The European Medical Technology Industry. In Figures. Brussels, 2015.*

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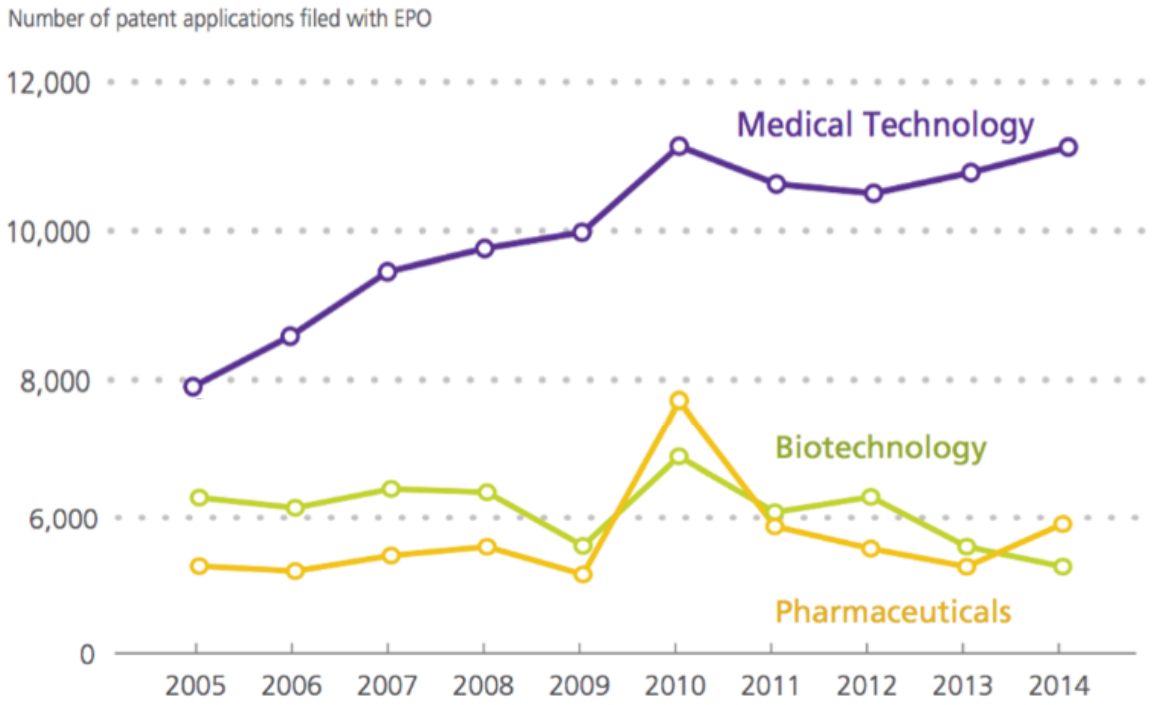
BME outcomes in 10 years



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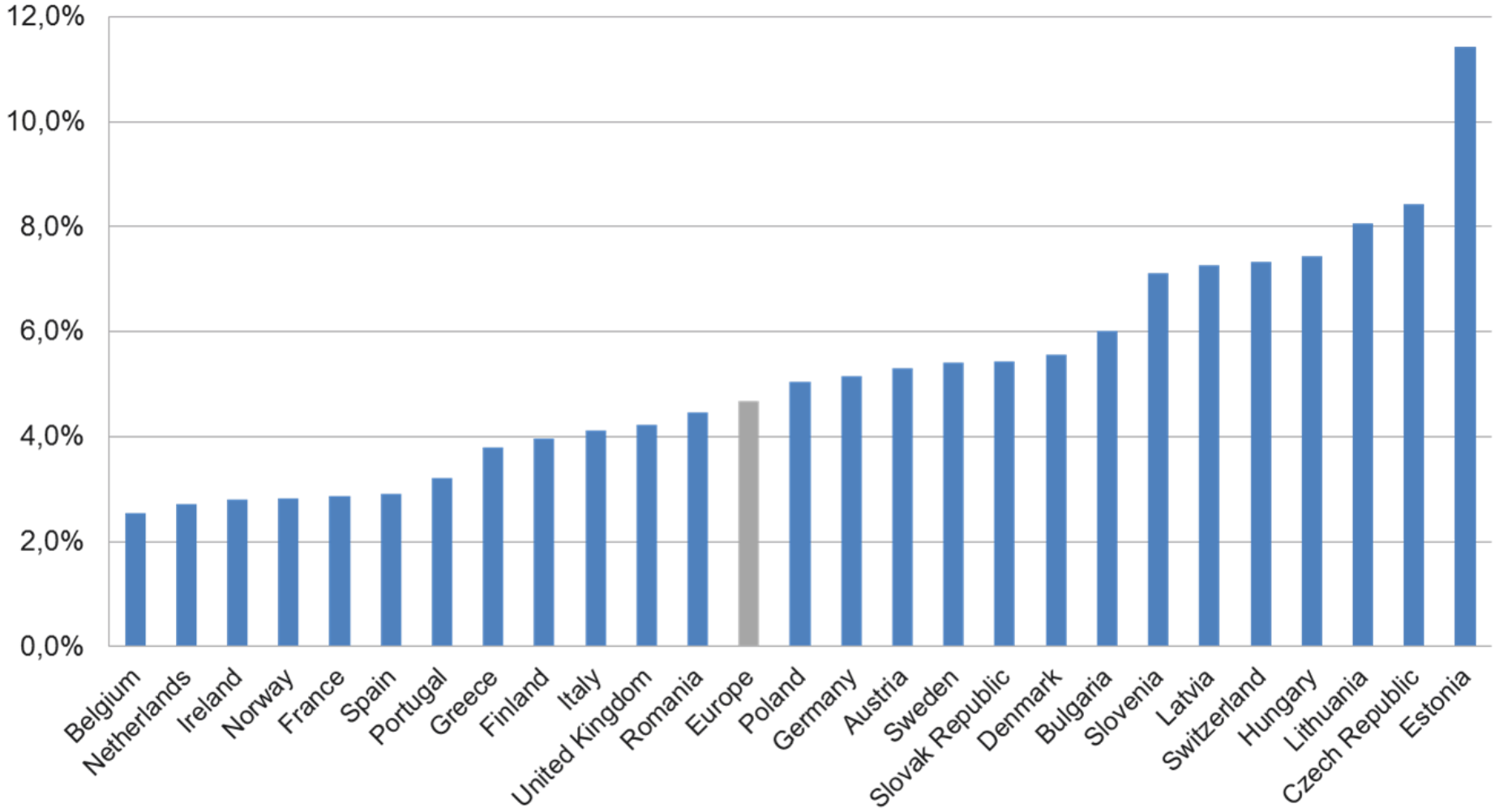
BME Market shares
% of healthcare expenditure



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BME Market in EU

The European market is equivalent to €100 billion

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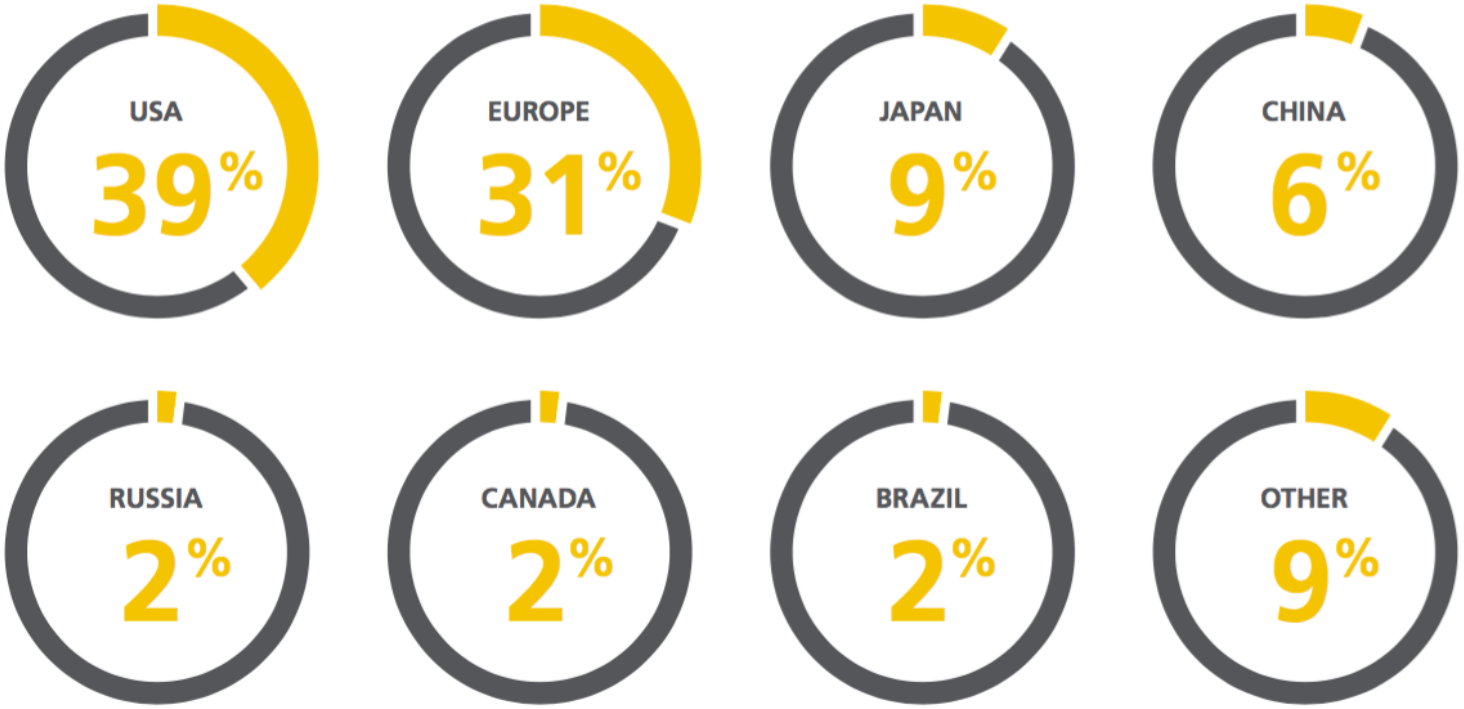
BME Market international



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BME recognition @ WHO

عربي 中文 English

World Health Organization

centre | Publications | Countries | Programmes | Governance | About WHO

Medical devices

Biomedical engineering global resources

Trained and qualified biomedical engineering professionals are required to design, evaluate, regulate, maintain and manage medical devices, and train on their safe use in health systems around the world.

WHO has conducted surveys and studies to have information on the academic programs, professional societies and status of biomedical engineers worldwide, which will further enhance their involvement to increase access to safe, quality medical devices globally in order to provide better health care.

Therefore, in 2015 WHO invited representatives of biomedical engineering institutions or programs, technical schools, professional societies, government institutions, and those responsible for country labour statistics, to complete the a survey on Biomedical Engineering professionals, in order to have information available.

You can view the 2015 data in the following table:

BME in USA

BEST JOBS IN AMERICA *CNNMoney/PayScale.com's list of great careers*

2012 ▾

1. Biomedical Engineer

1 of 100 « BACK NEXT »

Like 6.7K Tweet Share 342 G+1 84 Email Print

Median pay: $79,500
Top pay: $124,000
10-year job growth: 61.7%
Total jobs*: 15,700

COURTESY: GENEVIEVE ROSS

What they do all day? Science fiction is a little less fictional in the day-to-day work of biomedical engineers, who design prosthetic limbs and artificial organs or regenerate tissue. They also create drug formulations, develop pharmaceuticals or collect and analyze biological data, among other work. In this field lies the intersection of biology and engineering skills, which helps crack tough problems in medicine and health.

BME in EU

Opinion of the European Economic and Social Committee on Promoting the European single market combining biomedical engineering with the medical and care services industry

(2015/C 291/07)

Rapporteur:
Edgardo Maria IOZIA

Co-rapporteur:
Dirk JARRÉ

On 10 July 2014, the European Economic and Social Committee, acting under Rule 29(2) of its Rules of Procedure, decided to draw up an own-initiative opinion on

Promoting the European single market combining biomedical engineering with the medical and care services industry.

The Consultative Commission on Industrial Change (CCMI), which was responsible for preparing the Committee's work on the subject, adopted its opinion on 24 March 2015.

At its 507th plenary session, held on 22 and 23 April 2015 (meeting of 23 April), the European Economic and Social Committee adopted the following opinion by 135 votes to 1 with 2 abstentions.

1. Conclusions and recommendations

1.1. Biomedical Engineering is not simply a subset of modern medicine. Modern medicine predominantly secures important advances through the use of the products of biomedical engineering ([1]).

1.2. The biomedical engineering industry will become increasingly important due to technological development and the potential of new techniques to enhance care and rehabilitation, representing a major step forward in terms of healthcare and of quality of life. Of course this is not the only industry that is relevant here, but it is one that is becoming more and more important.

EAMBES Council 2016-7

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Past President, membership WP lead Birgit Glasmacher, Germany

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BME in EU


European Alliance for
EAMBES
Medical and Biological Engineering & Science
Modern Medicine – Product of Biomedical Engineers
EPIG
Professor Jari Hyttinen
President of EAMBES

BME in EU

European Alliance for EAMBES Medical and Biological Engineering & Science

International Federation for Medical and Biological Engineering IFMBE

EPIG ON BIOMEDICAL ENGINEERING

BME
is the main enablers of modern medicine
impacting on quality of life, safety, European economy

MISSION

VISION				
ENABLING VALUES	KNOW-HOW	MULTI-disciplinary (R&D, hospital, agencies)	INTER- disciplinary (eng., medicine, biology, HTA)	
FOCUS AREAS	Professional recognition (e.g. who manage MD in Hospitals??)	Independent research area (e.g. "…*6 or 9?*")	Representation in panels/EC (e.g. ERC, FET, MCSK, EIP, EIT, JRC, Horizon…)	Contribution to directives (e.g. medical device… …need any help?)
EPIG (possible) action points	1) Ask Commission and Council to insert BME in the Professional Qualifications Directive: *…or patient safety in hospital would remain uncertain and procurement not cost-effective!*			
	2) Act on Commission to be sure BME are involved in Medical Devices Coordination Groups: *OK, directive is almost done (?), but there will be technical annexes to write…*			
	3) Act on Commission to recognize BME as an independent research area in Horizon 2020: *..or we will be lagging behind USA and Japan!*			

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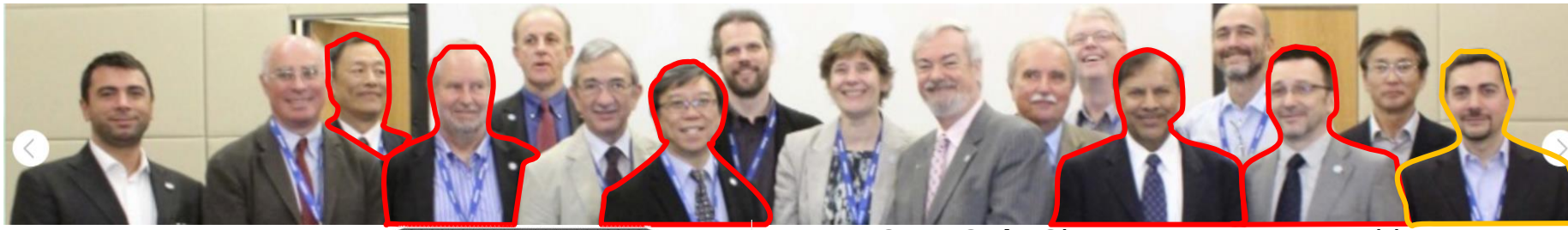
IFMBE

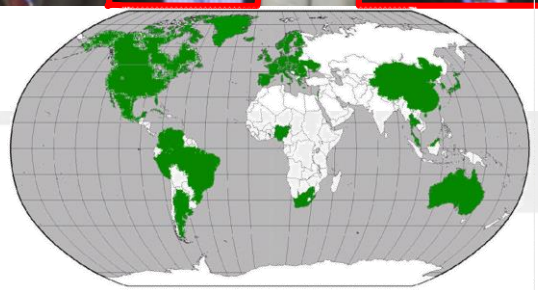
IFMBE: scientific society but very close to real problems

54 national, 7 transnational BME societies 120k members



James C. H. Goh, Singapore, IFMBE President
Shankar M. Krishnan, USA, IFMBE President Elect
Kang Ping Lin, Taiwan, Secretary General
Marc Nyssen, Belgium, Treasurer
Ratko Magjarevic, Croatia, Immediate Past President

Divisions



Clinical Engineering Division (CED)

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Ernesto IADANZA (Italy, 2012-2018)

Members
Tom JUDD, Secretary (USA, 2015-2021)
Mladen POLUTA, Treasurer (South Africa, 2015-2021)
Saide CALIL, Elected Member (Brasil, 2012-2018)
Tony EASTY, Elected Member (Canada, 2012-2018)
Paolo LAGO, Elected Member (Italy, 2015-2021)
Ewa ZALEWSKA, Elected Member (Poland, 2012-2018)
Yadin DAVID, Coopted Member (USA, 2015-2018)
James WEAR, Coopted Member (USA, 2015-2018)

Health Technology Assessment Division (HTAD)

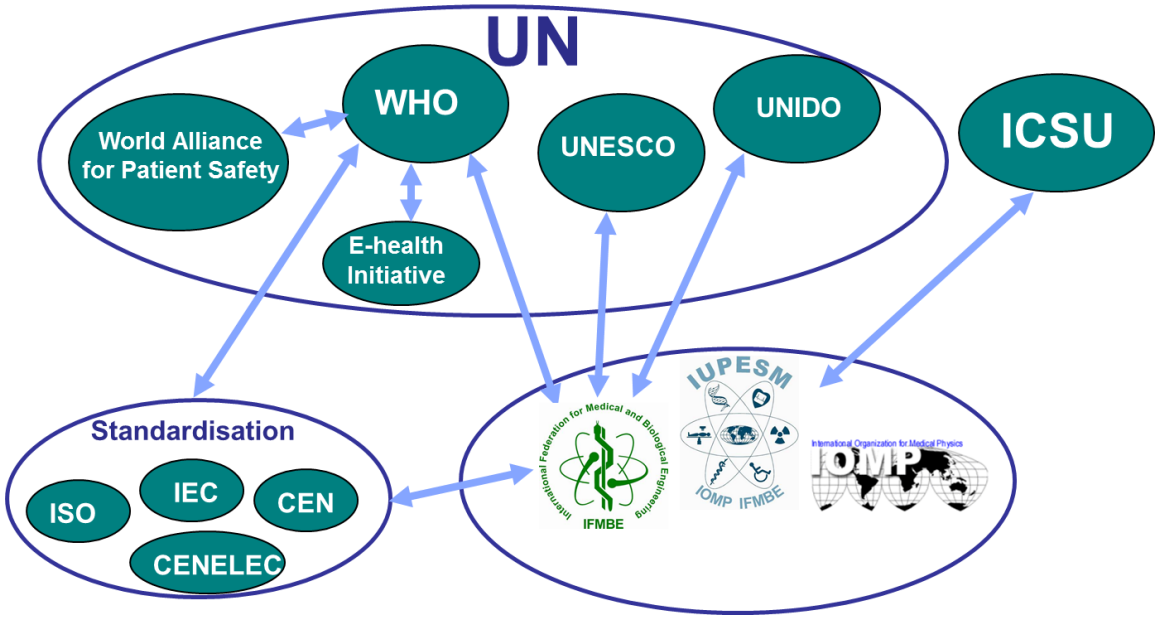
Board Members

Chair
Leandro PECCHIA, UK

Members
Patricia TRBOVICH, Secretary, Canada
Marjan HUMMEL, Treasurer, The Netherlands
Nicolas PALLIKARAKIS, Past Chairman, Greece
Mladen POLUTA, South Africa
Mario MEDVEDEC, Croatia
Lennart PHILIPSON, Sweden

International Federation for Medical and Biological Engineering (IFMBE)

- The IFMBE was established in 1959 when a group of medical engineers, physicists and physicians met in the UNESCO Building, Paris, France to create an organization entitled IFMBE
- IFMBE is recognised as NGO cooperating with UN (WHO, UNESCO, UNICEF) and is part of an eco-system working to improve health world-wide:



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