

EAMBES 2021: State of the Alliance



**European Alliance of Medical and Biological
Engineering and Science (EAMBES)**

<https://eambes.org/>

EAMBES (C) Copyright (January 2022) All Rights Reserved



EAMBES 2021: State of the Alliance

Dear Members of EAMBES, and all European Biomedical Engineers and Scientists,

2021 has been another challenging year due to the persistence of the COVID-19 pandemic. For the first time after decades, Europe found itself in a scenario of limited resources, facing scarcity of essential healthcare technologies, including medical devices, personal protective equipment, and, most important, limited knowledge and experience to face such an overwhelming circumstance. Moreover, we experienced restrictions for our mobility, which were unprecedented for our generation. Yet, many members of our community gave selflessly their time to face these difficult times.

Also in 2021, our biomedical engineering community was proactively involved in the fight of this SARS-COV-2, with the result that now we have substantial knowledge and cost-effective tools to protect European, and hopefully global citizens soon, from the severe impact of the COVID-19. With their research, many of our biomedical engineering scientists (e.g., bioengineers) have been giving substantial contributions for creating these knowledge and tools. For the second year, biomedical engineering practitioners working for the National Health Services (e.g., clinical engineers) have been called to support the reorganization of hospitals and national healthcare systems, for making our healthcare services more resilient and effective, responding to COVID-19 needs for equipment and locations. This made us particularly proud, because this confirmed once again that clinical engineers are essential for making our hospitals and territorial health services more safe, effective, and resilient. Again, most of our conferences and events have been postponed, such as the IUPESM World Congress 2021, which is now scheduled for June 2022. Similarly, EAMBES General Assembly, Council and Officers' meeting have all been organized in teleconference. As many other scientific societies, EAMBES has also experienced major delays in its activities, resulting also in this shorter bulletin.

However, also in those difficult times, EAMBES has been starting new and positive initiatives.

- EAMBES first Horizon European, PandeVITA project (<https://www.pandevita.eu/>) has started in March 2021.
- EAMBES Public Affairs Working Group (PAWG) was revamped, and has established new relations with the European Parliament. Our first meeting with European Parliament Members was scheduled for January 2022, aiming at restoring the European Parliament Interest Group on Biomedical Engineering (EPIG BME) for supporting EU Institutions and policy-makers.
- EAMBES increased its activities for lower-income countries, organizing a summer school on [*Biomedical Engineering for Sustainable Development*](#) to be held in Italy (Brixen, 12-15 of September 2022) and a special issue titled [*Biomedical and Clinical Engineering in Resource-limited Settings*](#) in collaboration with the EiC of the EAMBES journal BSPC and EAMBES Fellow, Prof Panayiotis Kyriacou.
- EAMBES members have been proactively involved in supporting their Governments and the World Health Organization (WHO) for fighting this pandemic as detailed below.

Overall, EAMBES financial income in 2021 was 5 times higher than its average income in the past 10 years. This resulted also in the possibility to create an *EAMBES Secretariat* team, which we hope will be a crucial enabler for supporting an increase of EAMBES activities in 2022, and beyond.

Details on the above activities are reported below.

WHAT IS EAMBES?

European Alliance for Medical and Biological Engineering & Science

A non-profit scientific society to promote Biomedical Engineering (BME) and Medical and Biological Engineering and Sciences (MBES) in Europe.

EAMBES members are Professional and Scientific Societies, Hospitals, Universities or research institutions across Europe. Today EAMBES represents 29 national & transnational societies and 37 academic and research institutions (4 new members in 2021), and through them more than 10000 biomedical engineers, clinical engineers and scientists working in hospitals, manufacturing, research and higher education. EAMBES is also affiliated to the International Federation of Medical and Biological Engineering (IFMBE), which is member of the International Union for Physical and Engineering Sciences in Medicine (IUPESM). European BME societies represent half of IFMBE members, and therefore the half of global BME and MBES community. This is a great honour, but also a great responsibility. In fact, we feel that we can do more to support global health and wellbeing, beyond our scholarly contributions. IFMBE is an NGO in official relations with the UN WHO, while the IUPESM is a member of the International Council of Science (ICS), which is the UN UNESCO umbrella organization fostering sciences. Many EAMBES members have been serving the UN, as independent experts, consultants, or via IFMBE Divisions and working groups¹.

In March 2021, a new EAMBES Council was elected. With

- Prof **Leandro Pecchia** stepping in as EAMBES President (president@eambes.org),
- Prof **Timo Jämsä** moving to the position of Past President (past.president@eambes.org), and
- Dr **Almir Badnjevic** continuing his role as EAMBES Treasurer (treasurer@eambes.org)

we welcome

- Prof **Eleni Kaldoudi**, new EAMBES President Elect (president_elect@eambes.org), and
- Dr **Giuseppe Fico**, new EAMBES Secretary General (secretary_general@eambes.org).

As first act, the new Officers renewed EAMBES Vision, Mission and activity plan for their mandate (i.e., 2021-2023), which was approved in the first EAMBES Council meeting in March 2021.



¹ For further details on BME and UN collaboration, read:

<https://www.sciencedirect.com/science/article/pii/S135045331930164X>



EAMBES VISION

Medical and biological engineering and science are major enablers of modern medicine, which made its main advancements in the past decades mainly because of the BME outputs.

Our community has direct impact on quality of life, safety and cost-effectiveness of healthcare services, with our effort in research, innovation, assessment, procurement and management of biomedical engineering main products, which are biotechnologies and medical technologies (MedTech) such as medical devices, personal protective equipment and digital health.

EAMBES key enabling values are based on our community know-how, inter- and multi-disciplinarity:

- *Know-how*: our members have deep knowledge of science and engineering, and we know how to apply engineering methods and tools to solve biology and medicine problems, in order to make healthcare services and systems more safe, effective, cost-effective, resilient and universally accessible.
- *Inter-disciplinary*: our community members are trained and work on a daily basis with other STEM (science, technology, engineering and mathematics) scholars and practitioners, as well as biology and medicine scientists and healthcare professionals
- *Multi-disciplinary*: our members, our former students, work proactively in academia, research institutions, hospitals, HTA agencies, NGOs, regulatory bodies, manufacturers and UN agencies. This gives to our community a peculiar perspective of MedTech, biotechnologies and other Healthcare Technologies, spanning from research and innovation, towards their assessment, regulation, purchasing, management and disposal.

EAMBES focus activity areas in 2021-23 will include:



- Supporting EU BMES ecosystem: we will do our best to support proactively BME (e.g., bioengineers, clinical engineers) and BMES community in EU and globally.
- Growing the next generation of EU BME leaders: EAMBES will work proactively to foster a community of early career BMEs and MBES, creating new multi-discipline fora and dedicated mentoring schemes for empowering promising proactive leaders, with particular attention to foster equality and to overcome any current element of discrimination.

- Outreach: we acknowledge that BME and MBES community is not yet proficient in promoting our activities and outstanding impact. We commit EAMBEBS to do more and find new channels, to promote the great work done by our members, both within our community and outside our ecosystem.
- Understanding EAMBES: our world is vertiginously dynamic. While some clusters of our community are still interrogating themselves to define biomedical engineering, and remark differences among bioengineering and clinical engineering, the world evolves at an unprecedented rate and our early career members are called to solve more fluid and complex challenges. For the remaining years of this presidency, EAMBES will do an extra effort to listen to all its components and try to put the bases for the most inclusive and harmonious spirit of collaboration and inclusion, firmly convinced that together we can do more and better, in the best interest of citizens and patients. EAMBES is house for all different souls of our community.

EAMBES Reorganization

In 2021, EAMBES underwent a deep process of reorganization, fostered by the 5-fold increased financial income. This allowed us to create an EAMBES Secretariat, which will support EAMBES activities in 2022 and beyond. We have renewed the collaboration with EAMBES Financial Manager, Mrs Eva Costa (manager@eambes.org), which you all know, as she has been the main contact person for members and fellows in the past 5 years and will probably be the one sending you this letter. We are deeply grateful to Eve for her continuous support and guidance in this area. We welcome Dr Kallirroï Stavrianou as EAMBES Technical Manager (technical_admin@eambes.org). Kallirroï will support members, fellows, councillors and officers in their executive actions, and will be responsible for the website content management. Finally, we have signed a contract with MEDEA ltd (projects@eambes.org). MEDEA is a SME with long experience in European Project management and is guiding EAMBES in managing its first grant, PandeVita (e.g., setting contracts, keeping documents, supporting the budget management, offering project management experience). MEDEA went beyond this initial mandate, and is supporting members, fellows, councillors and officers in scouting future opportunities in the area of Horizon Europe.

EAMBES Fellows

EAMBES Fellows have selected the Class of 2021 of new Fellows: 9 new Fellows received 2/3 of the votes to be eligible for nomination. Now, EAMBES Fellows include 99 prominent individuals who have distinguished themselves by identifiable contributions or accomplishments in Medical and Biological Engineering and Science.

The Fellows Seminar introducing the 2021 class of new fellows and having inauguration presentations of new fellows, was organized on June 7, 2021 as an online event. The Fellows committee for 2021-2022 consists of Françoise Peyrin (Chair), Jari Hyttinen (Past-Chair), Karin Wårdell (Past-Past Chair), Constantinos S. Pattichis (deputy-chair), and Olof Lindahl.

More information on EAMBES Fellows webpages: <http://eambes.org/Fellows>

EAMBES Journal

In continuation with 2020, EAMBES had increased the collaboration with Elsevier Biomedical Signal Processing and Control (BSPC), which is the official journal of EAMBES. Prof Panayiotis (Panicos) Kyriacou, BSPC EiC and EAMBES Fellow, supported 4 early career scholars, Dr Davide Piaggio from the UK, Dr Carmelo De Maria from Italy, Eng. Philippa Ngaju Makobore from Uganda and Prof Sudesh Sivarasu from South Africa, in organizing the first **BSPC special issue on Biomedical and Clinical Engineering in Resource-limited Settings**². Moreover, special issue on **Machine Intelligence in Biomedical Data Modelling, Processing, and Analysis**³ was organized by Prof. Ioanna Chouvarda, Prof. Roberto Hornero, and Prof. Giuseppe Baselli, EAMBES Fellow. We are sure these will be the firsts of a long series of interesting projects that will see EAMBES and BSPC support fast growing new field of BME in EU and globally.

PandeVITA EU H2020 project

EAMBES for the first time has received EU funding as a full partner in the EU H2020 PandeVITA project. PandeVITA was awarded in response to the first H2020 calls for COVID-19 related projects. The project aims to enable knowledge transfer between society and science inside of the quadruple helix on the European level. With help of the PandeVITA, the consortium will create and execute an innovative evaluation concept based on different feedback categories to measure social awareness and acceptability of scientific recommendations and advice. Within this project, EAMBES will be responsible for dissemination and exploitation activities, bridging the user community with relevant policymakers, including the European Parliament and the World Health Organization (WHO). EAMBES contribution to the project will mainly be in the dissemination of the project activities and in selecting the most relevant use cases that may help promoting successful stories of positive collaborations among scientists and other society components in response to the COVID-19 pandemic.

Outstanding exemplar of biomedical engineering impact and civil services

We are proud of listing in this new section some examples of contributions that members of our biomedical engineering community members, bioengineers and clinical engineers, have been giving in 2021, also in response to COVID-19. We know this list is not and exhaustive one, and we are sure we did miss some outstanding contributions. Forgive us for that. However, we hope this can be an incipit for a periodic collection of successful stories, becoming also a new session on our website, that may inspire other members and re-define the idea of BME in Europe and globally.

- Professor Maria Chiara **Carrozza** (Italy, GNB), one of the EAMBES Fellows, in 2021 was appointed as President of the Italian National Research Council (CNR), the Italian main research body, with 88 institutes in all disciplines across the country, 8500 researchers, and a

² <https://www.journals.elsevier.com/biomedical-signal-processing-and-control/call-for-papers/call-for-papers-biomedical-and-clinical-engineering-in-resource-limited-settings>

³ <https://www.journals.elsevier.com/biomedical-signal-processing-and-control/call-for-papers/call-for-papers-machine-intelligence-in-biomedical-data-modelling-processing-and-analysis>

€ 900 million budget. Prof Carrozza is a world leading expert of biorobotics, biomechatronics, neuro-engineering, and rehabilitation, and former Italian Minister of Education, Universities and Research. Maria Chiara is the first woman to hold this prestigious position since the CNR was founded in 1923.

- Prof Magdalena **Stoeva** (Bulgaria, BG SBPE), current Treasurer of the IUPESM, is the Editor in Chief of Springer Health and Technology (HEAL) journal (the official Journal of IUPESM) has been strongly leading the creation and the growth of the HEAL topical collection on COVID-19. This collection provided a nice overview of BME contributions to the COVID-19 response, with a clear focus on LMICs.
- Dr Kallirroï **Stavrianou** (Greece, ELEVIT and IFMBE CED), current Technical Manager of EAMBES, has been proactively supporting the collaboration among WHO and the IFMBE CED during the COVID-19 pandemic. Since the earlier months of 2020, this included the organization of a series of webinars for sharing knowledge and successful stories among Clinical Engineers from countries affected in different measures from the pandemic (e.g., CPAP-BiPAP, mechanical ventilators, masks and other PPE, oxygen systems, decontamination and disinfection methods and tools). More than 20 webinars were organised involving more than 100 speakers from 50+ countries and reaching few hundreds of attendees worldwide.
- Stefano **Bergamasco** (Italy, AIIC), Former AIIC VP, has been one of the leading medical device Consultants for the WHO, supporting the organization of the regulatory pre-qualification procedure for both COVID-19 response and for MeDevIS (Priority Medical Devices Information System) is an open access WHO electronic database of Medical Devices. Stefano work was essential also for the preparation of the MeDevIS.
- Maurice **Page** (France, AFIB) has been supporting the WHO in many ways, as he does since many years now. Maurice was a proactive member of the working group on medical device nomenclature, reviewing and supporting the translation in French languages of a number of technical guides.
- Professor Dan **Clark** (UK, IPEM), Former IPEM VP International and Head of Clinical Engineering at Nottingham University Hospitals (NUS), has been awarded with an Officer of **the Order of the British Empire** (OBE) by Her Majesty the Queen, in the New Year 2021 Honours List, for services to Clinical Engineering, particularly during COVID-19. Prof Dan Clark led NUH's response to the Covid-19 equipping need locally, but also led nationally, on behalf of IPEM, working with the Cabinet Office, the RAF, NHS E&I and the DHSC to establish a national technical due diligence team evaluating non-standard ventilators and infusion devices brought in rapidly to support the NHS Covid-19 patient surge.
- Professor Mario Forjaz **Secca** (Portugal and Mozambique, IFMBE), former IFMBE Council of Society Chair for Europe, has been serving as WHO Consultant for the creation of the MeDevIS Database architecture, and as working group member for the preparation of Priority medical devices list for the COVID-19 response and associated technical specifications.

Also, the EAMBES President, Professor Leandro **Pecchia** (UK, IPEM; Italy, AIIBM) since December 2020 spent most of his Sabbatical working for the World Health Organization (WHO) headquarter, as Innovation Manager for the [Blueprint and COVID programme](#). This is the WHO program coordinating the effort of hundreds top-leading international scholars in performing cutting-edge research and innovation projects targeting knowledge gaps in the area of healthcare technology. Prof Pecchia focused in particular in R&D projects for medical devices and personal protective equipment (PPE), supporting the WHO Infection and Prevention Control (IPC) and Emergency Units in drafting, reviewing and publishing several technical guidance documents for COVID-19. In December 2021, the Italian Minister of Health appointed Prof Leandro Pecchia as one of the three medical device experts of the Technical and Clinical Committee of the Italian Ministry of Health (MoH).

Those are just few examples of the real impact that EAMBES members have been achieving in the past few years, and during the difficult months of this pandemic. This is also a proxy for the wide recognition that biomedical engineering is reaching in Europe and Internationally, as discipline and as essential profession.

Other EAMBES activities during the last year

Due to the COVID-19 pandemic, most of the EAMBES activities were arranged as virtual. **EAMBES Council** had three online meetings in 2021. The **EAMBES General Assembly** was held as an online meeting on March 15, 2021.

EAMBES General Council has pre-approved the new **Articles of Association** and the **Internal rules**, substituting the current Constitution and Bylaws. The updated documents will be proceeded to the Belgian authorities in near future.

The **Policy Affairs Working Group (PAWG)** was revamped, and has established new relations with the European Parliament. Our first meeting with European Parliament Members was scheduled for January 2022, aiming at restoring the European Parliament Interest Group on Biomedical Engineering (EPIG BME) and organise the next EAMEBS events in the European Parliament in the coming 6 months, focusing on crucial topics such as neglected areas of research (e.g., PPE), AI and the European digital data space.

EAMBES **Task Force on Regulatory Affairs**, chaired by Prof. Thomas Schmitz-Rode and Prof. Almir Badnjevic, is analyzing the MDR implications on medical device R&D and the role of EAMBES in order to optimize our impact on the way of implementation of new MDR and design of the transition phase.

EAMBES established **Task Force for Medical Device Nomenclature**, chaired by Professor Nicolas Pallikarakis. This Task Force was supposed to start its activities with an in-person kick-off meeting in April 2020. Unfortunately, the COVID-19 first wave resulted in cancelling this meeting for safety reasons. The Task force had the first virtual meeting in December 2020 to plan 2021 activities, also in light of the renewed collaborations with the European Parliament and with the WHO.

As demonstrated by the PandeVita project, EAMBES is a proactive member of European projects. We believe it is an unprecedented opportunity to have EAMBES as a European level alliance involved in upcoming European projects.

EAMBES is an active member of **Health First Europe (HFE)**. HFE is a non-profit, non-commercial alliance of patients, healthcare workers, academics, healthcare experts and the medical technology industry. HFE is joining forces to transform health care through innovative solutions. EAMBES has been contributed e.g. in the initiative *Health workforce for the future* and *Digital technologies to innovative healthcare*. <http://healthfirsteurope.eu/>.

Prof. Jämsä, President of EAMBES, is also Chair of the **IFMBE Council of Societies** Europe-Africa Regional Group. EAMBES and IFMBE have actively worked jointly in promoting BME in Europe and worldwide as well as scheduling of future regional conferences. IFMBE Council of Societies has collected best practices in Biomedical Engineering, in the fields of *Ethics, Gender, Young Investigators, and Low and Middle Income Settings*.

The **EMBEC trademark** and rights are owned by EAMBES. Please consider the opportunity to apply for organizing the upcoming EMBEC Conferences and other regional conferences.

[EAMBES website](#)

The EAMBES new web site www.eambes.org was launched in 2020. It will allow to offer better services to our community, including profiling various relevant events endorsed by EAMBES. We have appointed a new technical manager, Dr Kallirroi Stravrianou, which will continually updated all the website session (e.g., news, policy documents, event announcements etc.). Also, the website creates a forum where all members can inform BME educational programs across Europe. If you have any relevant programmes (Undergraduate or Postgraduate) that you wish them to feature in our web site, please let us know.

[European BME conferences](#)

Due to COVID19, the IUPESM World Congress of biomedical engineering and medical physics was moved from the 2021 to the 2022 and will be held now as hybrid event in Singapore (*11-17 June 2022, [link](#)*). Accordingly, also the following IUPESM world congress has been delayed of one year and will be held in Adelaide in 2025. In order to avoid overlapping with the world congresses, all the regional conferences of the IFMBE and IOMP have been deferred of one year, following the spirit of collaboration that characterize our global community of BME and medical physicists. In alignment with our partner global organizations, also the European conferences will be deferred of one year: the XVI Mediterranean Conference on Medical and Biological Engineering and Computing (MEDICON) will be organised in Bosnia and Herzegovina in 2023 (not in 2022 as originally scheduled); the Nordic-Baltic Conference on Biomedical Engineering and Medical Physics (NCB) will be held in Latvia in 2023; the European Medical and Biological Engineering Conference (EMBEC) will be held in 2024, we hope in Slovenia, where it was supposed to run in 2020, before being cancelled due to COVID-19.

[EAMBES General Assembly 2022](#)

The General Assembly of EAMBES will be held on March 14, 2022, as hybrid meeting. A separate invitation will be sent to the delegates. The location for those willing to attend in person will be decided in the coming weeks.

[Social media](#)

Please follow EAMBES in twitter at [@EAMBES org](#)



[Concluding words](#)

Any Crisis magnifies qualities of each and every individual and organization. An alive community of proactive scholars, practitioner and good citizens finds new ways to serve their local community, as well as European and international institutions, leveraging on their talents and inspiring their collaborators and peers to do more and better. This is probably just a way to find our equilibrium in those difficult times.

In the end, also in this second year of pandemic, EAMBES had another very active year, achieving new important milestones and continuing the growth initiated with the former 4 Presidents. The creation of an articulated Secretariat, which will support EAMBES in many ways, the awarding of the first EU grant, which increased significantly EAMBES financial incomes, the revamping of the PAWG that is working with the European Parliament to re-establish the BME interest group, would have not been possible without a community of great individuals and friends, which gave their time tirelessly and generously.

The way we have been working in 2021 was significantly affected by limitation in travels, but this has not bended the spirit with which we have carried on EAMBES activities. This was another year of growth, probably because this is a historic moment in which we all feel a growing need to be proactive members of a strong community. This was not easy, because also our personal and professional lives underwent significant challenges, therefore let's thank once again each and every of you for the contributions you gave, no matter in which form. Sometime, just an email or message of feedback gave use renewed energies.

In 2022, we will continue to foster and lead EAMBES growth, in the hope this can inspire more colleagues to dedicate part of their time to our international community, in the best interest of EU patients and citizens.

One of our goals, probably the primary one, will be to growth the next generation of EU leaders in our field. We hope more early career scholars, and especially those that are still underrepresented in our community, can find EAMBES 2021 activities inspiring and renew their interest for our community.

If I should find one issue, in our 2021 activities, is probably the fact that we failed to communicate those activities to within and out of our community. We



have been so busy in *'doing'* things, that we had little time to *'report'* those to you. We are sorry for that, and we are sure that the new EAMBES Secretariat will help us in doing better.

We will warmly welcome all feedback and suggestions in order to improve our work further.

We are looking forward to your continued support to strengthen the Biomedical Engineering Community in Europe.

Finally, we would like to wish you all a peaceful and productive New Year 2022.



Leandro Pecchia, President



Timo Jämsä, Past President