

REPORT – ME 1

Multiplier Event on Research Base Learning Method for Teaching in Bio-Mechatronics, hosted by University Politehnica of Bucharest, in Bucharest, Romania on 2nd September 2022

The First Multiplier Event (ME1) of the project “EMERALD - European network for 3D printing of biomimetic mechatronic systems”, strategic partnership 21-COP-0019, took place on 2nd September 2022 and were participated 16 from different institutes (not involved in project and out of UPB) and 17 participants from UPB and from the project participants. The event was hosted **by the University Politehnica of Bucharest, Romania.**

The event was attended by representatives of the 5 partners: Technical University of Cluj-Napoca (TUCN) – Romania, University of Agder (UiA) – Norway, Bizzcom s.r.o. – Slovakia, Poznan University of Technology (PUT) – Poland, University Politehnica of Bucharest (UPB) – Romania.



The Multiplier Event on Research Base Learning Method for Teaching in Bio-Mechatronics started at 9.00, having the participants registration, the event opening with Mr. Prof.Dr.Eng. Nicolae Ionescu (U.P.B.) and Mr. Prof.Dr.Eng. Tom Savu (U.P.B.). Ms. Assoc.Prof.Dr.Eng. Diana Băilă realized the EMERALD project presentation and the coordinator of EMERALD project Mr. Assoc.Prof.Dr.Eng. Răzvan Păcurar presented main aims, actions and activities of the project.

Subsequently, a series of presentations were made for the dissemination of the results obtained by the EMERALD project consortium regarding a series of courses on the design, development, manufacturing, and testing of bio-mechatronic systems for people with special needs (with amputated arms) that were carried out by the EMERALD project consortium within O1. Thus, Ms. Assoc.Prof.Dr.Eng. Diana Băilă made a presentation of the modules on Smart Materials and Sensors and Electronics that were developed within O1 by UPB. Mr. Assoc.Prof.Dr.Eng. Răzvan Păcurar (the coordinator of the EMERALD project) presented the course modules related to Finite Element Analysis (CAE), 3D Printing, and Programming of mechatronic systems, the latter course module being developed by the partner BIZZCOM. The series of presentations continued with the course module in the field of Bio-mechatronics which was developed by Mr. Prof.Dr.Eng. Filippo Sanfilippo from the University of Agder, Norway.



At the end of the presentations related to the course modules developed within O1, Mr. Prof.Dr.Eng. Filip Gorski from Poznan University of Technology made a series of presentations on the course modules of Computer-Aided Design (CAD) and Virtual Reality / Augmented Reality (VR / AR) that were developed by this institution. Mr. Prof.Dr.Eng. Filip Gorski also presented a series of case studies conducted at the university in Poland for various cases of patients with amputated arms during the presentation.

At 11:00, a coffee break was organized, and immediately after the break, the companies from the field of additive manufacturing, LEYCOM and ADMASYS, which were invited to participate in this event, also made a presentation and a demonstration regarding 3D printing with 4 manufacturing systems (using metallic filaments, photopolymerizable resins, and plastic filaments) and various complex parts made from new materials. These companies presented applications regarding the possibilities of making prostheses through additive manufacturing technologies, such as SLM, SLS, SLA, Fresh 3D Printing.

Subsequently, Mr. Prof.Dr.Eng. Cătălin Zaharia made a presentation on Smart Materials, mainly aspects related to polymeric materials. All the professors who participated in the Multiplication Event referred to new teaching methods that included a series of practical achievements, allowing participants to more easily understand the presented aspects.



At the end of the event, round table discussions were held about potential future collaborations in the field of bio-mechatronics and 3D printing. The discussion session was coordinated by Ms. Assoc.Prof.Dr.Eng. Diana Băilă (UPB), and in the end, a series of final conclusions and perspectives for future collaboration were drawn within the EMERALD project.

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