

Communication, dissemination, exploitation and implementation of the EMERALD project

Transnational Project Meeting – UPB -day 2 -
1st of September 2022

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Content

- 1. Aspects related to the disseminating possibilities (for the disseminating plan)**
- 2. Aspects related to the involving of potential stakeholders in the field of 3D printing / bio-mechatronics on each region (all partners) – (implementation of the EMERALD project)**
- 3. Identifying of potential calls for applying to future common projects in the frame of EEA grants, ERASMUS, HORIZON programs**

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1. Aspects related to the disseminating possibilities (for the disseminating plan)

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European Network For 3D Printing Of Biomimetic Mechatronic Systems

Working together for a **green**, **competitive** and **inclusive** Europe

Aspects related to the disseminating possibilities (disseminating plan)



Warm welcome at Mayor city institution



Involving of local authorities

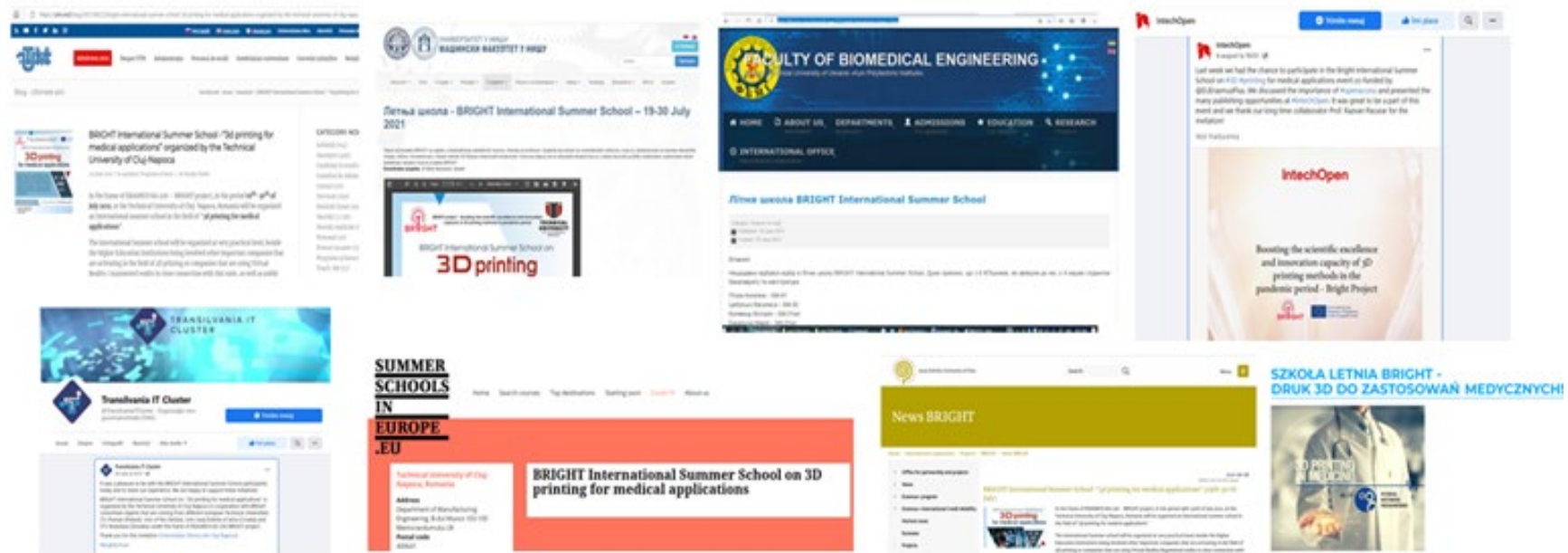
Attracting of most important companies and organizations that are acting in 3D printing / bio-mechatronics sector – EMERALD aim is to build an EUROPEAN Network also

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Publishing of news about EMERALD on universities website / local media / TV

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Aspects related to the disseminating possibilities (disseminating plan)



EMERALD

The Education, Scholarships, Apprenticeships and Youth
Entrepreneurship
EUROPEAN NETWORK FOR 3D PRINTING OF BIOMIMETIC
MECHATRONIC SYSTEMS

MODULE *number*
Name of Module

Project Title	European network for 3D printing of biomimetic mechatronic systems 21-COP-0019
Output	IOI - EMERALD e-book for developing of biomimetic mechatronic systems
Module	Module *number* *Name of Module*
Date of Delivery	July 2022
Authors	
Version	FINAL VARIANT. *date*

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Page 11



Article

Mechanical and Wetting Properties of Ta₂O₅ and ZnO Coatings on Alloy Substrate of Cardiovascular Stents Manufactured by Casting and DMLS

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Publishing of EMERALD books and ISI articles

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Manufacturing 2022
ISI conference



Special Session SS_15
Design and rapid manufacturing of customized medical products

Brief description of the specific scientific scope of the Special Session:
Medicine and biomedical engineering are today among the most vital applications of computer aided design and 3D printing (additive manufacturing). Both doctors and patients, as well as scientists can benefit from recent advancements in this technology and its increasing availability at acceptable cost. Customized medical products, both for doctors and patients, become a standard and their design and production processes must be studied, optimized and improved in order to obtain tangible progress. Therefore, this Special Session is dedicated to research and review papers tackling the problems of computer aided design and rapid manufacturing in medical and biomedical engineering applications, especially for customized implants, orthopedic and prosthetic devices, other artificial organs and new methods of treatment, utilizing devices designed and manufactured individually for a specific patient.

- List of topics of interest:**
1. CAD design of anatomical models.
 2. Processing of medical imaging data for development of customized, anatomically adjusted products.
 3. 3D scanning and reverse engineering techniques in medicine and biomedical engineering.
 4. Mass customization in medicine, design automation.
 5. Selection and improvement of materials for 3D printed medical products.
 6. Optimization of 3D printing processes of customized medical products.
 7. XR techniques (Virtual and Augmented Reality) in design of medical products.
 8. Numerical simulation of 3D-printed structures used in medicine.
 9. Destructive and non-destructive testing of 3D printed individualized medical products.

Members of the Special Session Organizing Committee:
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Springer Publishing House



Participating and publishing articles at important scientific conferences and other important events

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**BSc /MSc/PhD thesis directions organized in mentorate / co-mentorate
variant established (still opened to be completed)**



1. Automation of the design of the openwork for the WHO orthosis in the selected CAD system.
2. Virtual prosthesis configurator of the Robohand type.
3. Prototyping of a child upper-limb prosthesis for cycling.
4. Prototyping of a device for measuring the strength of the adductors of the hand stump.
5. Optimization of the FFF process from the point of view of the production of orthoses.
6. Designing and realizing of bone structures (lattice structures) by 3D printing (shin, knee, hip, etc.)
7. Designing and manufacturing of customized medical implants by 3D printing methods (metallic implants / structures made of Titanium alloys, Co-Cr, etc.) – hip implants, dental implants, etc.
8. Manufacturing of skull implants / vertebral implants made of PEEK material by 3D printing
9. Manufacturing of medical stents /bye-pass systems made of biocompatible materials by SLA
10. Manufacturing of medical orthoses – hand orthoses, foot orthoses, pelvic orthoses) by 3D printing

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TUCN – strategic partner within the European University of Technology EuT+ (<https://www.univ-tech.eu/>) and ERASMUS + programs

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EUROPEAN UNION

Erasmus+

Enriching lives, opening minds.

2021-2027

Erasmus+ Programme

Bilateral Inter-Institutional Agreement

Key Action 1

Learning Mobility for Higher Education Students and Staff

among EU Member States and third countries associated to the Programme

1

FROM [Erasmus code of the sending institution]	TO [Erasmus code of the receiving institution]	Subject area code (optional) * [ISCED]	Subject area name (optional)*	Field of education – Clarification (optional)	Study cycle [short cycle, 1 st , 2 nd or 3 rd] (optional)*	Number of student mobility periods			
						Student Mobility for Studies [total number of students]	Student mobility for Studies [total number of months]	Student Mobility for Traineeships (optional) * [total number of students]	Student Mobility for Traineeships (optional) * [total number of months]
RO CLUJNAP 05	N KRISTIA 01	071	Engineering	Engineering and engineering Trades	1 st, 2nd , 3 rd and long cycle	5	3		
N KRISTIA 01	RO CLUJNAP 05	071	Engineering	Engineering and engineering Trades	1 st, 2nd , 3 rd and long cycle	5	3		

Signing of new ERASMUS + bilateral agreements

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2. Aspects related to the involving of potential stakeholders in the field of 3D printing / bio-mechatronics on each region (all partners) – (implementation of the EMERALD project)

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Involving of potential stakeholders in the field of 3D printing / bio-mechatronics domain on each region

- Different **regional clusters and National agencies** (comprising SMEs in the field of Advanced Manufacturing technologies) from the countries involved in the **EMERALD project** (Transylvania cluster, Poznan Science and technology park) have already expressed their interest about the project's topic and are looking forward to support and be actively involved in boosting the scientific level of teaching and developing of practical applications in cooperation with universities in using 3D printing methods in the context of the pandemic.
- Also there are few **institutions from the Medical sector (Public Health organization system of the University of Medicine and Pharmacy in Cluj-Napoca) and from the Local community (Cluj city hall)** which expressed their support in providing promotion and support of the **EMERALD project** aims and objectives, in order to boost the scientific involvement on the level of local community in teaching, but also in developing innovative applications realized by students under supervision of **EMERALD consortium** professors in the context of using 3D printing technologies for very practical applications on a larger scale in pandemic period (e.g. for material / products testing / for rapid development of products that can contribute to saving lives of patients in the context of the pandemic .

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- **Keeping the resources on the e-platform** available also at the ending of the **EMERALD project** (functionality of the e-laboratory platform as well as the other important resources is highly important, so professors from other institutes, students, scientists, SMEs or anyone who want to access the platform will be able to do it after they are registering on the platform— this aspect will be maintained in **“open access”** mode on during the on-going period of **EMERALD project** as well as the statement that all materials provided by the **EMERALD project** are intended to be used for teaching purposes only / for supporting medical institutions in the context of the pandemic in developing, producing and testing new products/new materials by using 3D printing methods).
- **people that will access the platform and register** (coming from Higher Education institutions/professors or students/doctors/SMEs) will be invited to be involved in strategic partnerships in getting involved in the developing, producing and testing of new products / new materials that will be launched by the medical institutions, by being encouraged to use the e-platform facilities for this purpose and to work **on academic papers (with open access / ISI)** together related to this topic and preparing new EU projects that aims to boost the scientific excellence through innovation.
- Medical institutions (universities, health organizations, hospitals), City hall institutions, clusters and SMEs provided letter of supports for the **EMERALD project** for boosting the scientific excellence and innovation in teaching in this very hard period and can be involved in strategic partnerships (**new research and education project proposals**) in the field of 3D printing of medical parts also at the end.

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Aspects regarding the implementation of the EMERALD curriculum in the Higher Education institutions (EMERALD consortium) and developing of a common MSc program in the future (all partners)

Identifying other possibilities of continuing the developed activities of the EMERALD project - discussions

Applying for future common projects in the frame of ERASMUS, HORIZON programs, other research projects, etc. (all partners)

Open calls? Do you know any where we can apply as consortium partners?

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