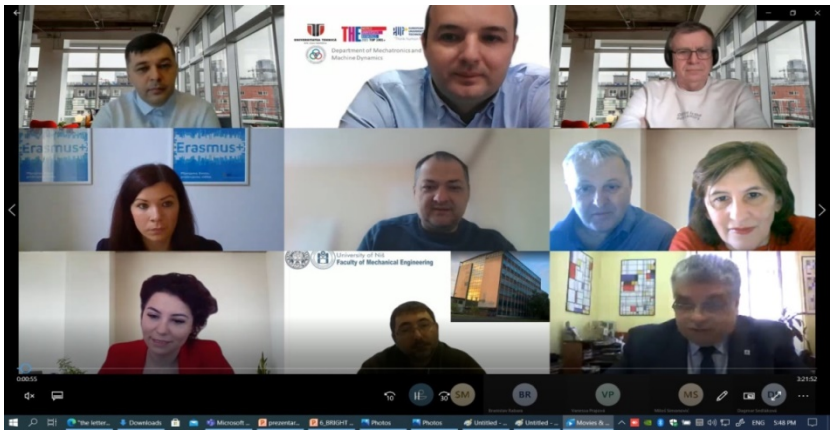
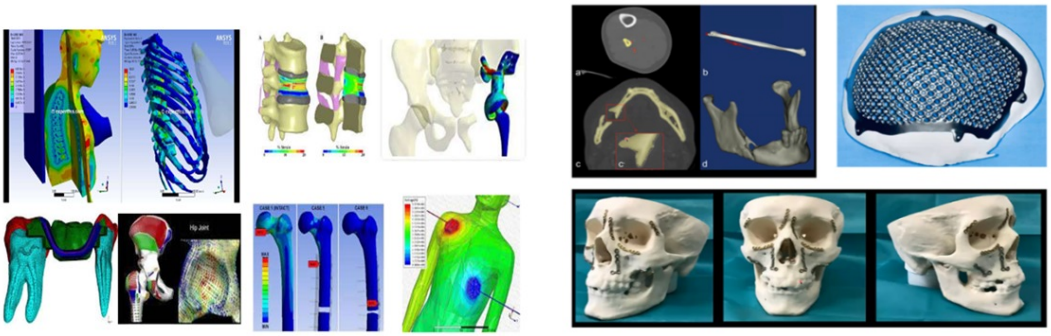
Activity Report – BRIGHT International Summer School (19th – 30th July 2021)

- Short version -

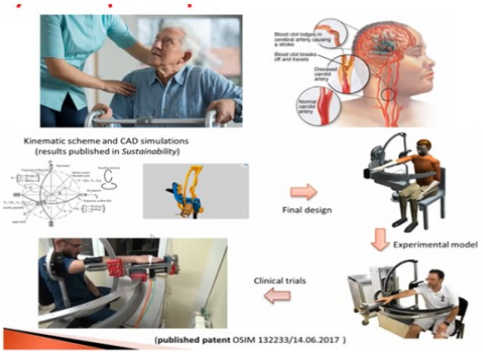
In the frame of the **ERASMUS KA 226 BRIGHT Project**, the Technical University of Cluj-Napoca together with its partners from the BRIGHT project consortium hosted an international summer school in the field of 3D printing for medical applications between 19th and 30th July 2021. A total number of 330 attendees from more than 20 European countries registered for their participation in this event which, even if it was hold online, was able to establish a sufficiently strong connection with long-term positive impact not only between students and teachers but also between the universities and well-known European companies involved in the field of 3D printing, national and European development agencies, as well as public institutions of local importance (Cluj-Napoca City Hall). The message addressed by Mr. Emil Boc (mayor of Cluj-Napoca) to the participants emphasized that young people are characterized by an inexhaustible creativity which enables them to face any challenge of the labour market. This message provided a great motivation to the attendees who decided to share their knowledge and expertise in the frame of the BRIGHT International summer school.

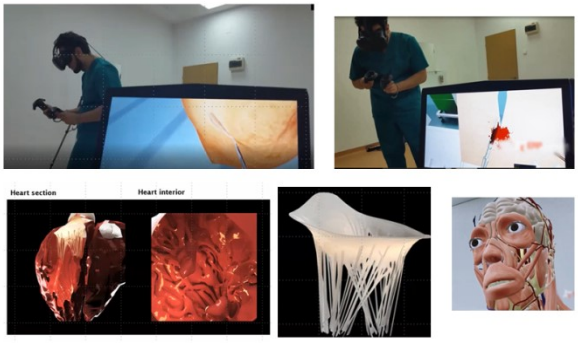


Many teachers from T.U. Cluj-Napoca as well as from other Romanian and foreign partner universities gave lectures to the students enrolled in the summer school. These lectures provided the speakers with the opportunity of sharing their expertise in various medical applications of engineering: computer-aided design of medical devices, validation of the design solutions by finite element analysis, 3D printing of medical devices and their laboratory testing, etc. The students thus became aware of the fact that a large variety of aspects should be considered when devising new products for medical applications.



Some additional topics of importance for the medical applications of 3D printing were also covered by lectures given in the frame of the BRIGHT International summer school: elaboration of intelligent materials and computational tools used to predict the mechanical properties of such materials, use of flexible manufacturing systems and robotic systems for medical applications, etc. New trends in this domain were presented not only by engineers but also by medical doctors: novel 3D printing procedures with medical applications, importance of 3D bioprinting, methods of medical training based on Virtual Reality and Augmented Reality, etc.



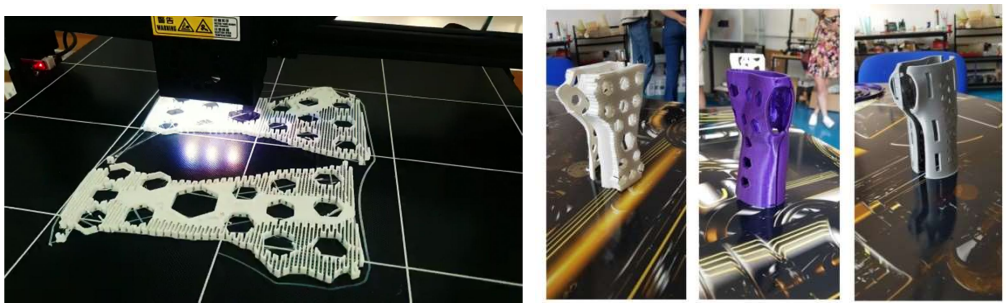


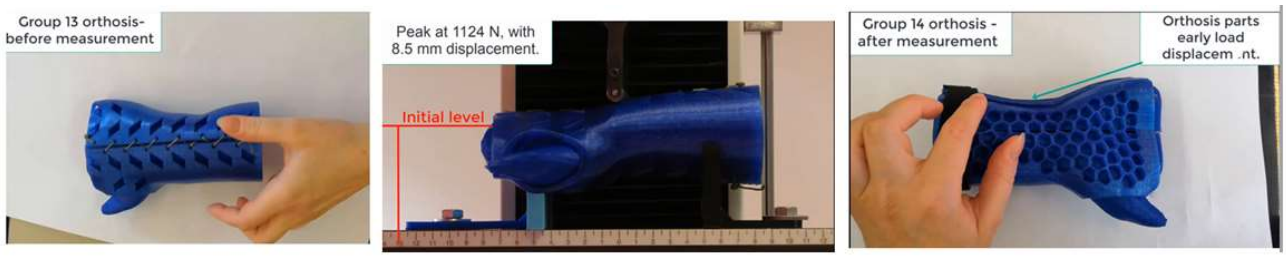
Several companies specialized in 3D printing and/or 3D bioprinting domain presented their new products as well as the latest developments in these fields: Materialise (Belgium), EnvisionTEC (Germany), 3D Systems (Germany), Spee3D (Germany), Stratasys (France), NU Technologies (Romania), Symme3D (Romania), and Omni3D (Poland). Three companies involved in the development of software solutions for medical applications also presented their achievements in the fields of computer-aided design, computer-aided manufacturing, virtual reality and augmented reality: CADWorks (Romania), Solfins 3D (Serbia), and Bizzcom (Slovakia). All these partners expressed their availability to cooperate in the future with students and teachers participating in the BRIGHT summer school (preparation of graduation/MSc/PhD theses, collaboration in Horizon joint-research projects, hosting students/researchers in their production facilities or laboratories, etc.).

The North-West Regional Development Agency (Cluj-Napoca, Romania), Transilvania IT Cluster (Cluj-Napoca, Romania) and the representatives of Cluj-Napoca City Hall were also actively involved in the plenary sessions of the summer school. These partners provided valuable information on the opportunities of accessing funds or creating start-ups in the field of 3D printing and other related domains.

The participants of the BRIGHT International summer school had the occasion to discuss with the representatives of two important publishing houses (MDPI, Switzerland, and IntechOpen, UK) about the possibilities of disseminating their scientific and teaching achievements. IntechOpen also expressed its interest in publishing a monograph/course book on 3D printing under the supervision of Assoc.Prof.Dr.Eng. Răzvan Păcurar (coordinator of the ERASMUS KA226 BRIGHT project) as chief-editor.

Besides the large amount of technical and scientific information provided by lecturers, one should also emphasize the active participation of students and teachers in seminars and laboratory meetings. The students were assigned laboratory works consisting in improving the design of a medical device, validation and optimization of the improved design, 3D printing of the redesigned medical device in the laboratories of the BRIGHT partners, and mechanical testing of the 3D-printed medical device. After completing each task of their laboratory work, the students received feedbacks from experts involved in the BRIGHT consortium.





At the end of the first week of school, onsite visits were organized in the 3D printing laboratories of the Technical University of Cluj-Napoca (Romania). During the visits, the students received valuable feedbacks from the BRIGHT experts involved in the evaluation of the 3D-printed models.



At the end of the second week of school, the students presented their laboratory work in the frame of a plenary session. On this occasion, many participants addressed highly motivating messages to other colleagues potentially interested in attending future editions of the BRIGHT summer school. Besides passing a final evaluation test, the students were also asked to answer a set of survey questions used for assessing the activity of the BRIGHT summer school (including the quality of the teaching material freely available on the MS Teams platform).

Most active students at BRIGHT summer school will be supported by the BRIGHT consortium to apply for ERASMUS scholarships for the BRIGHT International Summer School to be organized next year in Croatia (Brijuni Island) (July 2022) + they will have the chance to apply and work for their diploma projects in the field of 3D printing / VR/ AR / medical applications with the support and under supervision of BRIGHT partners consortium)!!!

The members of the BRIGHT consortium expressed their commitment to support the attendees in the preparation of their graduation theses by mentoring or co-mentoring activities, as well as in applying for enrolment in the next edition of the BRIGHT International summer school (to be held in Croatia during July 2022). All the students who were actively involved in the current edition of the summer school received attendance certificates with the Erasmus+ label at the end.

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Further details on the BRIGHT International Summer School – 2021 Edition and the activities of the BRIGHT consortium scheduled for the time interval 2021-2023 are provided on the Internet page of the ERASMUS KA 226 BRIGHT project:
https://bright-project.eu/