

PRESS RELEASE

3D TECHNOLOGY, SOLIDWORLD GROUP REPRODUCES A HUMAN BRAIN WITH A TUMOR IN 3D

The subsidiary Bio3DModel 3D printed an exact copy of the organ in photopolymer resins from the patient's MRI. The model was used to prepare for a complex brain tumor mass removal operation at an Italian healthcare facility.

SolidWorld Chairperson Roberto Rizzo: "Our technology and know-how is placed at the service of research and medical-surgical teams."

Treviso, July 5, 2023 - An ultra-high-precision system that allows 3D printing to recreate **an ultra-faithful copy of a brain with cancer metastases** from the patient's X-rays. It may sound like science fiction, but it is the real evolution in the biomedical field of the expertise of **SolidWorld Group**, a leader in three-dimensional digital technologies, industrial and biomedical 3D printing, and advanced printing services in the aerospace and automotive sectors. The Group's team of biomedical engineers succeeded in the feat of **printing a copy of a brain with metastasis from the patient's X-rays** in order to study the complexity of the tumor structures. This has been of great benefit to surgeons in the preoperative phase, reducing the surgery time, thus limiting costs, and improving the patient's recovery. This ultimately increases the possibility of the success of the oncology treatment process.

The model was made by subsidiary **Bio3DModel S.r.l.**, a company specializing in 3D printing for the healthcare sector, within the Barberino Tavarnelle (Florence) technology hub. This is a pilot project carried out at an Italian hospital facility, which may be repeated at the request of other medical institutions.

A major innovation that follows a **worldwide trend**. Over the next few years, the development of the global biomedical 3D printing market will have a compound annual growth rate (CAGR) of 18.12%, with acceleration estimated to be worth more than \$3.4 billion over the period 2022-2027¹.

SolidWorld Group Chairperson Roberto Rizzo comments: *"This is an extraordinary technology in which 3D technology is able to give real and concrete support to surgical and oncology medicine. The benefits from having an exact replica of a diseased organ are considerable. It in particular provides surgeons with a more effective tool to prepare for surgery, decreasing the margins of error. The biomedical 3D printing sector for Solidworld Group therefore represents a key development axis, which together with the industrial sector, allows us to boost the introduction of advanced technologies in different sectors, with the aim of improving performance and processes, improving results and reducing the time and costs of implementation."*

The 3D model: the details

The **three-dimensional digital model of the right hemisphere of the brain of a patient with cancer** was obtained after an initial stage of processing the available medical images. The **"segmentation"**: from the medical images provided by the patient, in this case an MRI scan of the brain, **a three-dimensional**

¹ Source: report "Global 3D Printing Market in Healthcare Industry 2023-2027" edited by Reportlinker.com

digital model of the brain itself was made. This first phase of the study was made possible by special digital segmentation software and the know-how of SolidWorld's biomedical engineers.

Once the digital model was made, **3D printing of the replica of the diseased organ** was then carried out. Through the **Stratasys model J750 DAP 3D** printer, an exact copy of the diseased organ was made. It is made from **photopolymer resins**. Very ductile materials and quite similar in texture to the organic matter of which the organ is composed. The different resins are also made in **three different colors** in order to clearly highlight the different differentiated anatomical elements: the solid neoformation (the tumor) in magenta color, the subcortical edema (abnormal fluid accumulation related to the presence of the tumor) in blue color, with the remaining volume of the brain being transparent.

SolidWorld Group S.p.A. is the parent of a group of 11 companies founded in the early 2000s by engineer Roberto Rizzo. Listed on the Euronext Growth Milan segment, the Group is a leading developer and integrator of the latest and most comprehensive digital 3D software and hardware for manufacturing companies, supporting and accelerating their journey to Industry 4.0. Thanks to SolidWorld, all stages of production - as far as sale and recycling - are integrated using technologies that make the production process faster and more sustainable and efficient. It operates through 14 offices and 3 technology hubs and has over 150 employees and more than 8,000 client enterprises. The SolidWorld Group reported revenues of Euro 57.7 million in 2022, with a value of production of Euro 60.8 million and EBITDA of Euro 4.1 million. The company has been listed on the Euronext Growth Milan segment of Borsa Italiana since July 6, 2022 (with ticker S3D). www.solidworld.it

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