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### 3D4VET Capacity building trainings for trainers have been carried out



The 3D4VET project partners have met in Venice and Seville in order to share and learn about the learning materials already created by them.

The first Capacity Building training took place in San Donà di Piave, Venice (Italy), between the 18th and 21st March 2019. It was organised by FORCOOP and presented some contents related with 3D software, such as Freecad installation and setup, mesh analysis and repair with Freecad, basics for 3D modelling, how to create a parametric sketch, 3D modelling with open cascade technology tools, overview of 3D printing technologies and its history, 3D scanning technologies

overview, etc.

The second Capacity Building training was held in Seville (Spain) in the premises of BIOAVAN, between the 8th and 11th April 2019. The main content of this training was the hardware perspective of 3D printing. The contents included the main elements and components of a 3D printer, assembly techniques of a 3D printer, functional tests and start-up of 3D printing equipment and practical implementation of a 3D printing process. During this training, the trainers had the opportunity to assembly two 3D printers that have been donated to different VET Schools.

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### **Lithophanes for all!**

Lithophane  
Designed by David Casado Aliaga



One of the contents and activities carried out in BIOAVAN (Seville) was how to design lithophanes. Lithophanes are essentially embossed photos generated by a 3D printer. The print results don't show much at first but shine some light through in order to see several details. The way it works is that light passes through the thin parts while being blocked by the thick parts. Below you can see some example of the lithophanes carried out by the partners in Seville!

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### **Restoring important monuments with 3D printing**



Natural or human-made disasters have historically destroyed several priceless monuments through history. Nowadays, 3D printing can be a solution to solve this kind of problems.

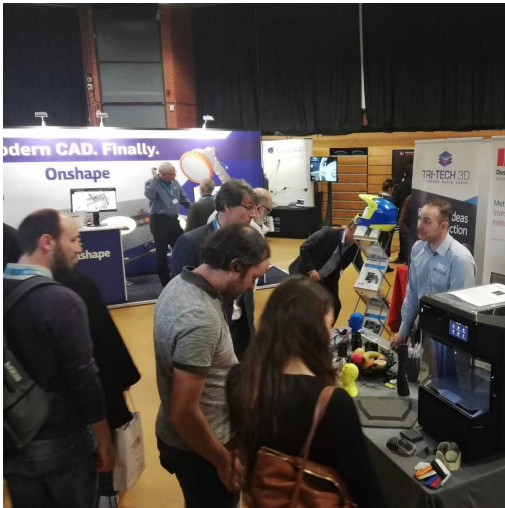
The Notre Dame in Paris was partially destroyed by an accidental fire last month, it was a worldwide shock, but not the first, and unfortunately will probably not be the last one in History. Accidents, wars, and natural disasters occur and some important archaeological sites or building have already disappeared forever: Buddhas of Bamiyan in Afghanistan, Royal Opera House in Malta, Timbuktu mausoleums in Mali or the Great Mosque of Aleppo in Syria.

Nevertheless, there are several 3D printing projects that seek the restoration or reconstruction of historical sites. For example, UNESCO, Project Mosul and the Institute of Digital Archaeology (IDA) are developing a project to restore the Lion of Al-lat monument, that have been destroyed by ISIS in Syria. What is more, Syria's Arch of Palmyra, a Roman archway dating back to the 3rd Century, which was destroyed by ISIS in 2015, was replicated by IDA and UNESCO using 3D scanning and printing technologies.

Similarly, the Dutch company CONCR3TE proposes to rebuild Notre Dame in a very innovative way, as they want to 3D printing its ashes. Although it is impossible to restore the building exactly as it was, this company proposes to collect the ash, dust and damaged stone to turn it into a 3D printable powder, so Notre Dame would rise from its ashes like a phoenix.

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**8th annual edition of Develop 3D Live**



On the 17th of April, the University of Sheffield hosted the 8th annual edition of Develop 3D Live, an event dedicated to product development technology and design. The event focused on the software market featuring the latest tools for engineering design and manufacturing; the additive manufacturing and optimisation field; and the visualisation and VR sector. Most topics were covered by keynote speakers on the exhibition Main Stage whom presented up to date applications of additive manufacturing, simulation, design and manufacturing technologies, including representatives from Brompton Bicycles, Siemens, Solidworks, Autodesk and GKN.

In addition, an exhibition area gathered more than 60 companies, allowing participants to get in touch and compare technologies from suppliers from all over the world.

Without a doubt, the workshops were the highlights of the day. The first workshop was led by the bicycle manufacturer, Brompton, where participants learnt about how the company uses simulation software to capture mechanical behaviour, optimise designs and assess structural performance in an efficient and incredibly quick way. Other workshops focused on legal aspects that concern both big and small companies, like intellectual property and tax management.

For the 3D4VET partnership, this was an opportunity to get in contact with local stakeholders like academics, researchers and start-ups in the 3D printing field, as well as gaining a deeper understanding of the potentials of these innovative technologies. Have a look at all the event details

and check relevant videos [here](#).



Sapere utile



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