

Guinness World Record: Largest 3D Printed Structure 2016

Client: Rise Education

Design Team: DeFacto

Project Manager: DeFacto

3D Printing Partner: UCRobotics

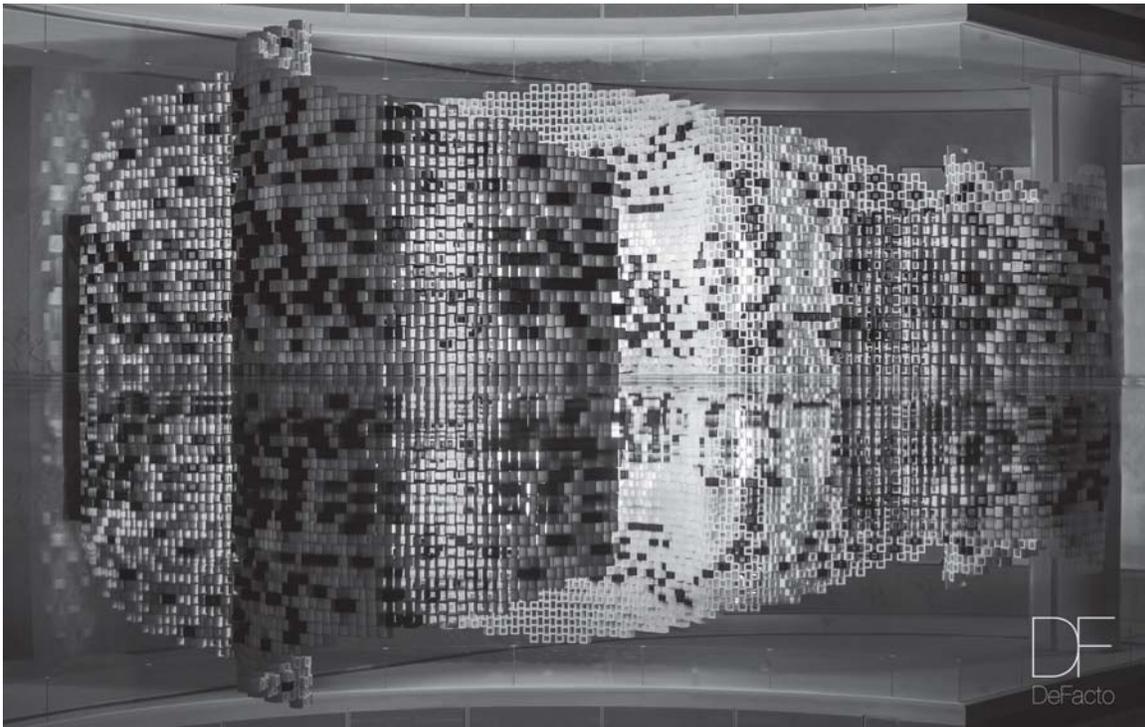
Filament Partner: PolyMaker

Photographer: Hanep Studio

Additional Partner: Edelman

In celebration of Rise Education's *Young Creator Cup*, Rise and Edelman approached DeFacto to design, 3D print, and construct **The New Guinness World Record's Largest 3D Printed Structure!** Each of the pavilion's 5 arcs represents a sector of the competition: health, transportation, society, education, art & design. Doubling as exhibition space the arcs feature 3D printed objects paired with QR codes linking visitors to videos of the competition's top students' projects and designs.

Weighing in at 1.87 tons, towering over 3.4 meters (11+ feet) with a span of over 110 square meters (1180+ square feet), The Rise pavilion was awarded the Guinness World Record on August 20th of 2016!



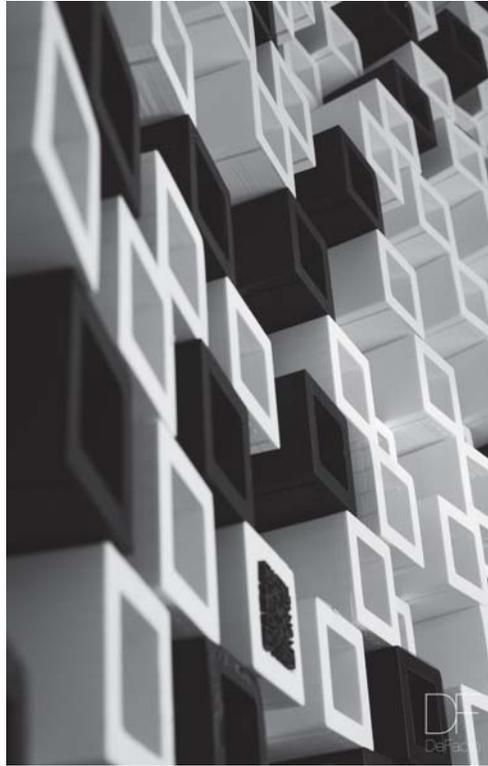
DeFacto, led by American Architect Leandro Rolon, is constantly trying to challenge design and fabrication norms. The Rise pavilion was no exception. The Beijing-based international design team's main concern while designing the pavilion was controlling the environmental impact of 3D printing 1.87 tons of plastic. As a result the design was fully driven by maximizing the after-use and up-cycling potentials. It was important to the team that the structure had a use beyond the life-span of the pavilion. Thus leading to the project's central theme, "A pavilion made up of 5000 lamps."



The Rise Pavilion is constructed with over five thousand 3D printed Poly-Blocks, made with PolyMaker's PolyPlus biodegradable filament. Careful thought went into the Poly-Blocks connection system. It was essential for the team that the structure was easy to construct and deconstruct, yet stable enough to withstand a significant force. Most importantly the structure could not use adhesives or contain non-3D printed hardware as per Guinness World Record regulations. With modularity in mind a Lego-like connection system was utilized, allowing the pavilion to be reconfigured in various environments while remaining structurally sound. As a result the pavilion took only 3 days to construct! Approximately 24 consecutive hours!



The Poly-Blocks were carefully designed to maximize print efficiency, accounting for the variety of the 3D printers' print-bed sizes and speeds. In order to reduce waste, print and production time, the Poly-Block was designed to print without support material. Using seventy desktop 3D printers, it took DeFacto's partner, UCRobotics, 45 days to 3D print all of the structure's components.



The dimensions of the Poly-Block were specifically designed to increase its up-cycling potential. Up-cycling is known as the creative re-use of idle products into new material or products of better quality or environmental value. The pavilions Poly-Blocks come in three lengths and have hollowed interiors designed to match standard planter (pots) diameters, commonly found in retail stores. These dimensions also match mini desk humidifiers, thus acting as vessels for planters and/or humidifiers.



The Poly-Block's infill percentages vary to optimize its level of translucency. When installed with lighting, the block transforms into a lamp creating a warm glow. Each block also features a small opening to give way for wiring when acting as a self-standing desk lamp.





After the competition, each Rise student will receive a Poly-Block to further explore its up-cycling potentials. The design team's goal with the Rise Pavilion was to create an interactive structure that inspires young minds to think about design within the context of the environment, encouraging a shift towards multi-functional and environmentally friendly goods.



About the Design Team:

Founded in 2015 by American Architect Leandro Rolon and Austrian Designer David Doepel, DeFacto (design factory) is a Beijing-based international 3D Printing Innovation Company that provides custom design and fabrication services for companies and institutions.

DeFacto's mission is to accelerate the global shift towards locally produced goods with the introduction of well-curated, highly customizable, 3D printed lifestyle goods that are 3D printed and consumed on demand.

*For more information about DeFacto follow the link below
www.defactobeijing.com*