The Fab Lab Program relies on SOLIDWORKS design software—one SOLIDWORKS Premium commercial license is available to each officially designated Fab Lab and Fab Rcademy, and 10 SOLIDWORKS Education Edition licenses are available to each Fab Rcademy site—to provide communities around the world with digital prototyping platforms for local invention and entrepreneurship.
As Fab Labs establish themselves, they immediately recognize the need to utilize 3D design tools to drive the various digital fabrication systems in their lab,” Lassiter explains. “Fortunately, we have a valuable partner in Dassault Systèmes, developer of SOLIDWORKS® 3D design software, which is not only used in the MIT course from which Fab Labs were born but also is widely used across industry.”

The Fab Foundation chose to make one SOLIDWORKS Premium commercial license available to each officially designated Fab Lab and Fab Academy—as well as 10 SOLIDWORKS Education Edition licenses to each Fab Academy site—because the software is easy to learn and use, is a preferred 3D CAD package of companies and universities worldwide, and supports all of the different types of geometry data needs of the equipment within a Fab Lab. “Having access to SOLIDWORKS tools is a terrific benefit for Fab Lab users, whether they are students or entrepreneurs,” Lassiter stresses. “The growth of our Fab Lab network is very exciting—there are currently about 1,000 Fab Labs in 87 countries on the official list, with the number of labs doubling every year and a half—and the availability of SOLIDWORKS has been a significant contributor to our growth and success.”

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—— Sherry Lassiter, Fab Foundation Director
DELIVERING EXCELLENCE IN MANUFACTURING IN MANCHESTER, UK

The first Fab Lab established in the United Kingdom, Fab Lab Manchester, is owned and operated by the Manufacturing Institute, an independent charity with the primary focus of supporting and improving the manufacturing sector through training, education, and consultancy. The group works to promote STEM education in the U.K. and provide greater access to advanced digital manufacturing technology, according to Dr. David Armson, who manages Fab Lab Manchester and Fab Lab Altrincham.

“Fab Lab Manchester was established in March 2010 to educate local residents about digital fabrication technology and lean manufacturing techniques, with the ultimate goal of delivering excellence in manufacturing,” Armson explains. “Since we opened the doors, we’ve experienced fantastic growth with 16,838 visitors to Fab Lab Manchester and more than 2,500 registered users. Since establishing Fab Lab Manchester, the Manufacturing Institute has assisted in setting up an additional 15 independent Fab Labs in the U.K.”

“We used SOLIDWORKS software to work with two brothers who had the idea for the DryGrip to produce prototypes for certification by the governing golfing body and to secure a patent. We also used SOLIDWORKS to help them balance battery power requirements with the right combination of heat and compressed air to optimize the product.” — Michael Walsh, Fab Lab Manchester Lead Designer

An interesting commercial project that was completed in SOLIDWORKS at Fab Lab Manchester is the patented DryGrip portable dryer for removing moisture from golf club grips, which can make the grip slippery and negatively affect shots. “We used SOLIDWORKS software to work with two brothers who had the idea for the DryGrip to produce prototypes for certification by the governing golfing body and to secure a patent,” recalls Fab Lab Manchester Lead Designer Michael Walsh. “We also used SOLIDWORKS to help them balance battery power requirements with the right combination of heat and compressed air to optimize the product.”
BEST VALUE IN ENGINEERING EDUCATION NEAR RACINE, WI

Located just west of Racine, WI and almost halfway between Chicago and Milwaukee, Gateway Technical College made the establishment of its Fab Lab an integral part of the expansion of one of its Advanced Technology Centers in Sturtevant. The two-year technical college, which serves southeast Wisconsin, included a Fab Lab in its SC Johnson Integrated Manufacturing and Engineering Technology Center in 2013.

The Gateway Fab Lab, which has garnered statewide and regional recognition for its innovation and leading-edge practices, has embraced the educational and commercial aspects of the Fab Lab concept as a means for spurring innovation. With the addition of a Fab Lab, the two-year associate degree, technical diploma, and certificate programs at Gateway represent the best value in engineering education, according to Gateway Fab Lab Program Manager Greg Herker.

"We are fortunate to have a very forward-thinking college president, who, when he saw a Fab Lab three years ago, tasked me with making it an integral part of our 15,000-square-foot building addition," Herker explains. "With our focus on digital manufacturing and access to equipment ordinarily only found on a factory floor, there’s no better value in engineering education than Gateway."

The fact that SOLIDWORKS educational and commercial licenses were part of the establishment of a Fab Lab was a natural fit for Gateway because the technical college already has 100 SOLIDWORKS educational licenses that is uses year-round to support several sessions of its Introduction to SOLIDWORKS courses—for which the final exam is the Certified SOLIDWORKS Associate (CSWA) exam. "Manufacturing companies in our area are really dominated by SOLIDWORKS," Herker stresses. "The additional licenses support our community outreach, such as the small public workshops that we offer for K-12 students, and the work of our local inventors and entrepreneurs.

"You can’t do commercial work with an educational license, so I was really glad that SOLIDWORKS stepped up to help the Fab Labs by providing a commercial license of SOLIDWORKS Premium software," Herker added. "John Thorson, a local inventor/entrepreneur who took advantage of SOLIDWORKS software and our equipment, founded a growing prepoured concrete forms business based on his work in our Fab Lab.

“The Fab Lab program has worked well for us, because most of our students who use SOLIDWORKS attend classes at night, leaving the lab available for workshops, summer camps for young students, and work by inventors/entrepreneurs during the day.”

— Greg Herker, Gateway Fab Lab Program Manager

“Fab Lab Padova’s 3D printer and CNC machine—to develop and manufacture the motorcycle in a shorter period of time.”

— Stefano Tagliabue, Fab Lab Padova Design Engineer

FABRICATING RACING MOTORCYCLE IN PADOVA, ITALY

In Padova—a city in the Veneto region of northern Italy also known as Padua in English—a unique organization called Talent Lab Civitas Vitae established Fab Lab Padova as part of its efforts to provide a development ecosystem through which promising design ideas can be created, tested, and transformed into reality. Relying on the spirit of innovation and entrepreneurship, Talent Lab serves local companies and individuals seeking to capitalize on the potential opportunities of advanced technology and the web-based economy, with the overall goal of creating job opportunities for growth and development for its local community.

"I used the top-down assembly design method, interference detection, and fast correction functions in SOLIDWORKS—and Fab Lab Padova’s 3D printer and CNC machine—to develop and manufacture the motorcycle in a shorter period of time.”
Similar to other Fab Labs, Fab Lab Padova sponsors workshops, seminars, and classes to complement local educational institutions, and works with local companies and individuals to provide affordable access to digital manufacturing and prototyping technology, according to Fab Lab Padova Design Engineer Stefano Tagliabue. “In addition to using SOLIDWORKS Premium software at Fab Lab Padova, we have also chosen to use SOLIDWORKS at Talent Lab because it is one of the most-requested 3D design packages at local manufacturing companies,” Tagliabue says. “This makes SOLIDWORKS attractive and useful for our students to learn and use in terms of seeking employment opportunities.

“Talent Lab provides our associates with a network of local enterprises and suppliers with which to collaborate and work. Fab Lab Padova gives them access to the latest digital fabrication technologies, and SOLIDWORKS enables them to concentrate on projects—particularly those involving mechanical design—without having to devote a lot of effort to CAD,” Tagliabue adds. “The main strength of SOLIDWORKS is the versatility of the software. By using SOLIDWORKS, you can create the project design and produce a 3D model for fabrication and rendering. Thus, we don’t need another CAD system.”

Tagliabue leverages Fab Lab Padova’s commercial license of SOLIDWORKS Premium software and digital manufacturing capabilities to work with local companies on exciting projects. For example, he used SOLIDWORKS to shorten development and production of the TS3 pitbike racing motorcycle from Casella Moto, Tagliabue’s start-up and a leading motorcycle frame and component manufacturer, which helped Team Casella win the 2015 and 2016 Motoasi Italian Pitbike Championship.

“I used the top-down assembly design method, interference detection, and fast correction functions in SOLIDWORKS—and Fab Lab Padova’s 3D printer and CNC machine to develop and manufacture the motorcycle in a shorter period of time,” Tagliabue says.