



News Release

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3D Systems Partners with Mystic Aquarium, ACT Group and Middle School Students to Help Disabled Penguin Walk Again

- Custom orthotic boot created using 3D scan-to-print workflow improves mobility of endangered African penguin

ROCK HILL, South Carolina, July 18, 2016 – [3D Systems](#) (NYSE:DDD)

announced today that its end-to-end digital design and manufacturing solutions led to the enhanced mobility of a disabled African penguin at [Mystic Aquarium](#) in Mystic, CT. In a collaborative endeavor led by the aquarium's veterinary staff, students at [Mystic Middle School](#) worked with technical experts from [ACT Group](#), a Connecticut-based 3D Systems partner, to make a lightweight, custom-fit boot for Yellow/Purple (AKA "Purps"), a resident of Mystic Aquarium's endangered African penguin colony. Using 3D Systems' 3D scanning, design and printing solutions, the group improved upon previous efforts by providing Purps with a more efficient and effective boot.

[Watch a video](#) to see how 3D Systems' technology helped Purps the penguin regain mobility.

Purps was left with a nonfunctional flexor tendon in her ankle following an altercation with another penguin. In an initial effort to immobilize, support and protect the site of injury, veterinarians at Mystic Aquarium fashioned a boot for Purps from moldable plastic material. While adequate, the animal care team at Mystic Aquarium knew there were more modern solutions



Purps the penguin's new 3D printed orthotic boot delivers both support and flexibility to help her walk more easily

available for the boot that would not only be more durable and less cumbersome for the small bird, but also would require less time than handcrafting a boot.

Interested in taking advantage of the design freedom and customization benefits of 3D printing for Purps' rehabilitation, Mystic Aquarium contacted its long-standing partner Mystic Middle School, which had just acquired a 3D printer through ACT Group. A new partnership formed among these three entities, and through their joint efforts a superior boot was fabricated for Purps using 3D Systems' [Geomagic Capture® 3D Scanner](#), [Geomagic® Sculpt™](#) software and multi-material [ProJet® MJP 5500X](#) 3D printer.



The lightweight and flexible orthotic boot was printed in the ProJet® MJP 5500X multi-material 3D printer as a single piece

With support provided by ACT Group, the students of Mystic Middle School successfully executed the majority of the design to manufacturing workflow. Following a workshop facilitated by ACT Group, the students used 3D Systems' Capture 3D Scanner to scan an existing cast of Purps' foot, then imported the scan data into Geomagic Sculpt for modification and customization. The boot they created not only enhanced Purps' mobility, but also provided the students with a meaningful, goal-oriented framework from which to develop a design within a digital workflow.

"The students truly amazed us in how their creative thinking, imagination and intuitiveness led this process," said Nick Gondek, Director of Additive Manufacturing and Applications Engineer, ACT Group. "It was rewarding to provide them with a technology that could keep up with their ingenuity, and to watch them pick up the software so quickly. It further demonstrates the need to have students learning to digitally design and manufacture at a younger age."

The final boot was printed on a 3D Systems ProJet MJP 5500X, a multi-material 3D printer that enables both flexible and rigid materials to be printed and blended simultaneously at the voxel level for custom strength and elasticity. 3D printing the new boot led to a final product that was better fitting, lighter weight and more durable, allowing Purps to walk and swim like the rest of her peers.

“Our goal is to inspire people to care for and protect our ocean planet through conservation, education and research,” said Kelly Matis, Vice President of Education and Conservation, Mystic Aquarium.

“In this project we achieved each of these desired outcomes while benefiting the health and well being of one of our endangered species.”

“This project not only helped a member of an endangered species, but it gave our students a hands-on understanding of the 3D printing process and how to carry an idea through from a concept to a design to a usable object,” said Sue Prince, Library Media Specialist, Mystic Middle School.



The veterinary team from Mystic Aquarium, the student team from Mystic Middle School and staff from ACT Group who collaboratively created Purps' new orthotic boot using 3D Systems' end-to-end manufacturing solutions

“This project demonstrates how our end-to-end 3D printing solutions provide a seamless workflow that can enable enhanced results from the classroom to the lab to the factory floor,” said Derek Johnson, Director, Product Management, Professional Printers, 3D Systems. “With the right tools and the right focus, no problem is too big or too small to solve.”

About Mystic Aquarium

A nonprofit 501(c)3 organization, Mystic Aquarium is counted among the nation's leading aquariums with more than 300 species and an extensive collection of

marine mammals, including New England's only belugas. Mystic Aquarium has been a pioneer in offering guests a variety of up close encounters with a wide range of marine animals. The mission of Mystic Aquarium is to inspire people to care for and protect our ocean environment through conservation, education and research. Mystic Aquarium receives major support from The Coca-Cola Company, Foxwoods Resort Casino, Resorts World Sentosa, and United Technologies Corporation. Learn more at MysticAquarium.org.

About ACT Group

ACT Group 3D Equipment & Services is Connecticut's expert resource for additive manufacturing equipment, service, and support. ACT Group is the top 3D Production Dealer in New England with customers ranging from small manufacturers to Fortune 500 companies. On-staff engineers and dedicated development team continuously collaborate with UCONN, CT Innovations and CCAT on educational programs, as well as being a resource center for this ever changing and expanding industry. Members of the ACT 3D team have received professional education on additive manufacturing from MIT. They have also traveled to France for an exclusive, in-depth training on direct metal 3D printers. ACT Group has been featured in Forbes Magazine three times and has received back to back Metro Hartford Alliance/Hartford Business Journal's Business Champions Award for Innovation. ACT Group is proud to be a certified women-owned and family business. Learn more at GoACTGroup.com.

About 3D Systems

3D Systems provides comprehensive 3D products and services, including 3D printers, print materials, on-demand manufacturing services and digital design tools. Its ecosystem supports advanced applications from the product design shop to the factory floor to the operating room. 3D Systems' precision healthcare capabilities include simulation, Virtual Surgical Planning, and printing of medical and dental devices as well as patient-specific surgical instruments. As the originator of 3D printing and a shaper of future 3D solutions, 3D Systems has spent its 30 year

history enabling professionals and companies to optimize their designs, transform their workflows, bring innovative products to market and drive new business models.

More information on the company is available at www.3dsystems.com