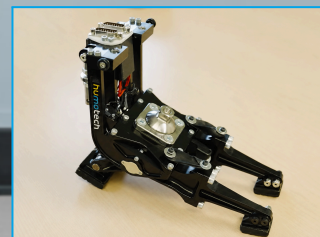


The Right Foot Forward: Humotech Puts Patients in Control of Prosthetic Selection



Choosing a prosthetic limb is a life-altering decision, yet patients rarely get the chance to evaluate their options before committing. Designs vary widely in performance and price, often costing as much as a new car without the option to test-drive or return the device. Historically, clinicians have had little choice but to rely on experience and subjective feedback to guide selection. **Humotech** changes that equation by allowing patients to physically test-drive different prosthetic designs while generating objective, patient-specific data to help clinicians make the right choice the first time.

Drawn to mechanisms, control systems, and robotics from an early age, **Josh Caputo** initially envisioned building a better prosthetic foot during his doctoral work at Carnegie Mellon University (CMU). But working alongside clinicians and patients led him to a more fundamental realization. The prosthetics industry did not necessarily need *another* foot. With hundreds of options already available, clinicians simply needed a reliable way to determine which design would work best for each person. That insight led Caputo to shift his focus from developing a single prosthetic to creating a robotic platform that could emulate many designs and help personalize the selection process.

Founded in 2015, Humotech has developed the Caplex System, a wearable robotic platform capable of emulating thousands of prosthetic foot profiles through a single device. Today, more than 47 research and development institutions across North America and Europe rely on the platform, with key installations at Veterans Affairs and Department of Defense (War) facilities. Now, after more than a decade of rigorous testing and validation, Humotech is entering its next phase, bringing its technology from the lab into prosthetics clinics through a clinical trialing service designed to make personalized, evidence-based foot selection a standard part of care.

Challenge

Humotech had already proven its technology and built a stable business serving the biomedical research market. The challenge was moving beyond a highly iterative, custom-build model that could be manufactured more consistently and at greater scale. That meant aligning product specifications, improving component cross-compatibility, and creating a clearer path from engineering concept to production.

Documentation presented its own challenge. Much of Humotech's manufacturing knowledge lived with its experienced engineers, making it difficult to standardize processes, hand off designs, and onboard new team members. The company needed to formalize that knowledge through manufacturing documentation and work instructions, while also meeting federal compliance requirements for its medical devices. The goal was to create a system that could capture how the product was built today and provide a roadmap for building it at scale tomorrow.

Project Details

Company:	Year Founded:
Humotech	2015
Founder:	
Josh Caputo, PhD	
Programs Participated In (Year):	
Robotics Factory Scale Program (2025)	
Robotics Factory Accelerate Program (2026)	



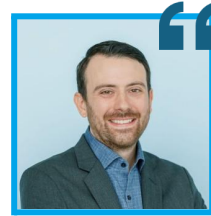
Solution

For Humotech, the Robotics Factory served as a key satellite location, offering both the advanced manufacturing tools and the hands-on engineering expertise needed to turn concepts into production-ready hardware. Through the 2025 Scale Residency, Humotech engineers fabricated aluminum frame components, prototyped new electronic designs, and CNC-machined specialized carbon fiber parts. Beyond equipment, guidance from robotics technician **Luca DeGroot** and the broader engineering team helped Humotech navigate complex technical challenges in real time.

That practical experience proved especially valuable as Humotech worked to scale. Robotics Factory mentors helped the company transition away from tribal knowledge by providing templates and guidance to build standardized work instructions and manufacturing documentation. Converting hundreds of pages of unwritten processes into formal documentation reduced dependence on single individuals, created seamless handoffs from engineering to production, and established the foundation required for medical device compliance.

The relationship also gave Humotech a technical sounding board for the challenges that come with developing novel hardware. Robotics Factory staff helped the team make its systems more compact, navigate specialized manufacturing questions, and identify potential pitfalls before they became costly problems. When expertise fell outside Humotech's core capabilities, the team could tap into Robotics Factory's wider network for guidance on everything from carbon fiber machining and motor drives to footwear manufacturing and suppliers. Paired with the strategic business guidance and supplier/designer sourcing from Robotics Factory Accelerate, this collaboration gave Humotech the operational maturity and ecosystem support needed to successfully scale.

Pittsburgh's unique strengths in cutting-edge robotics and world-class healthcare have helped shape Humotech from its earliest days. The company continues to leverage strong



The Scale program forced us to get serious about our documentation. We had the expertise, but needed to formalize it."

--Josh Caputo
Founder & CEO, Humotech

research and talent pipelines with CMU, while a partnership with the University of Pittsburgh offers direct access to physicians, prosthetists, and amputees. That regional ecosystem now extends directly into front-line healthcare delivery. Through a flagship pilot with ēlizur, a top regional provider, patients are actively using the Caplex System to evaluate prosthetic options before committing to a final purchase. Coupled with research initiatives alongside Penn State Health to validate real-world patient outcomes, Humotech is building the clinical proof points required to establish hardware emulation as a new standard of care.

Today, Humotech is accelerating clinical adoption with the debut of its first Mobile Clinic, commercializing an on-demand prosthetic "TestDrive" service across the region. The service integrates seamlessly into clinical workflows to generate the data needed for evidence-based care while extending reach to rural communities. Following a decade of rigorous development, Humotech is stepping out of the lab and into the market, shifting from a proven research platform into a new standard of care.

Innovation Works and the Robotics Factory

Innovation Works is one of the most active early-stage investors in the country and the most active in Pennsylvania. Since its inception of the seed fund in 1999, Innovation Works has invested in over 800 companies that have gone on to raise \$3.74 billion in follow-on funding. Innovation Works is part of the Ben Franklin Technology Partners network, which has catalyzed economic growth over the last 30 years by providing access to capital and networks that help foster innovation and technology-based economic development in Pennsylvania. The Robotics Factory is an array of robotics programs led by Innovation Works and the Pittsburgh Robotics Network. Learn more at innovationworks.org and roboticsfactory.org.