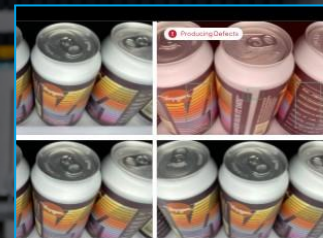


Inspect, Detect, Perfect: Shelfmark's Managed AI Transforms In-Line Visual Inspection



Pat O'Donnell hit pause on his software consultancy gig in 2022, when the opportunity to build something new proved irresistible. Though he did not yet have a fully formed vision of his company, he devoted six months to focused research with local manufacturers and industrial players to uncover their pain points and identify opportunities for inserting cutting-edge emerging technology solutions. His fact-finding mission uncovered three recurring themes: manufacturers face major labor shortages, the majority continue to rely on manual product inspections, and nearly all are eager to adopt AI. Existing automation tools, unfortunately, demanded expertise most manufacturers simply did not have in-house. In short, there was a strong demand but no ready-made solutions.

Shelfmark launched in 2022 in part to fill this void, giving manufacturers AI-powered vision tools to replace their manual inspection checks. Unlike piecemeal solutions, Shelfmark delivers the whole "Managed AI" package - hardware, software, machine-learning AI, and boots-on-the-ground implementation. Built on factory floors and shaped by customer feedback, the platform is plug-and-play, practical, and designed for manufacturers who would rather focus on making products than becoming AI experts. Shelfmark manages everything from cameras and training data to model building and long-term upkeep.

A wide variety of businesses are already putting Shelfmark to work, tackling inspection tasks that old-school computer vision could never quite execute. The results speak for themselves, as manufacturers go from zero to fully automated in-line product inspections, slashing waste by up to 90%, cutting labor costs in half, and tightening quality and consistency across the board.

Challenge

Of course, building Shelfmark Managed AI was not as simple as snapping a few cameras onto a manufacturing line and calling it a day. The company's first prototypes relied on off-the-shelf hardware, which worked for proof-of-concept but was not fast, economical, or scalable enough for real-world customers. Pilot partners needed something sharper, quicker, and more cost-effective, and Shelfmark knew it had to level up the camera resolution to deliver insights that truly mattered on the factory floor.

That meant prototyping an upgraded camera system that could go beyond "good enough" and scale appropriately. For a one-off build, Shelfmark was looking at manufacturing costs of \$100,000 for each iteration of a prototype, costs that were not practical for a new start-up nor sustainable long term.

Project Details

Company: **Shelfmark** Year Founded: **2022**

Founder:
Pat O'Donnell

Programs Participated In (Year):
Innovation Works Seed Fund (2023)
Innovation Works Scalable Grant (2023)
Innovation Works Manufacturing Assistance (2024)

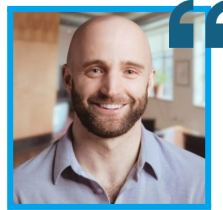


Solution

With support from an Innovation Works Seed Fund and Scalable Innovation Grant, Shelfmark was able to move past costly custom builds and refine its prototype in a more agile, cost-efficient way. When their first supplier fell through, a team of experts from Innovation Works stepped in, helping the team vet better design and manufacturing partners, offset expenses with grant funding, and tap into resources like industrial design, 3D printing, and trusted engineering expertise. What could have been a make-or-break moment instead became the launchpad for a scalable product built to grow with its customers. The process allowed for experimentation and shaped one of Shelfmark's biggest differentiators: a customer-focused product so intuitive that manufacturers do not need an in-house AI expert to run it.

Building the prototype was more than a technical milestone—it was a reality check. With a tangible product in hand, Shelfmark could finally separate real customer signals from the noise, turning early feedback into confidence that buyers were genuinely ready to commit. The Scalable Innovation Grant made that leap possible, transforming abstract ideas into something customers could see, test, and believe in. Until the prototype, Shelfmark's vision was just an idea; with a tangible product, they could finally measure customer commitment in purchase orders.

When the hardware journey had a hiccup mid-stream, Innovation Works Senior Manufacturing Program Manager, **Matt Verlinich**, brought the perspective that only comes from years of working with hardware startups. His vendor connections and practical advice helped Shelfmark push the prototype and grant implementation



“Without our scalable innovation grant we would be out of business - bottom line. Using IW resources, we could rapidly prototype cost effectively and refine our solution”

--Pat O'Donnell
Founder & CEO, Shelfmark

across the finish line. While the Scalable Innovation Grant may have been the entry point into the Innovation Works value chain, Shelfmark's biggest gain was the exposure to their larger nexus, connecting and building camaraderie with peers, founders, and mentors at events and venture fairs.

Shelfmark is not just building in Pittsburgh, it is building with Pittsburgh. Based in Uptown and firmly plugged into the city's robotics and entrepreneurial scene, founder Pat O'Donnell leverages deep local connections, strengthened by Innovation Works' support. What began as grants and mentorship has grown into long-term collaboration, making Shelfmark both a product of and a contributor to the region's innovative economy. The Shelfmark story illustrates how Pittsburgh's ecosystem does not just launch companies; it anchors them for the long haul.

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 780 companies that have gone on to raise \$3.4 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.