



FORGE

2022 Impact Report

Table of Contents

Introduction	1
Overview of Mission: The FORGE Story	2
Timeline	3
Startups Helped	4
Manufacturers/Suppliers	9
FORGE In Action	11
Partners	13
Become a Partner	14
2023 Priorities	15



Introduction

At FORGE, we believe in the power of manufacturing-focused support for innovators with physical products. That's why we dedicate 1:1 time to each innovative company we work with. We learn their specific situation, product, and development needs so we can help them make it through the 'valley of death' to manufacturing at scale. We reduce obstacles and technical risk by educating our startups, supporting them, and making right-fit connections to innovation-friendly suppliers. Our startups have an 87 percent survival rate (unheard of for hardware-based startups) so we think it's working.

Hundreds of local manufacturers, suppliers, design firms, and engineers have joined our supply chain network. We're proud that they've teamed up with us to build a resilient, economically robust future in the region. Our belief that "if you can invent it here, you should be empowered to manufacture it here" is bearing results. Sixty-two percent of contracts made between our innovators and supply chain network after our tailored introductions were within 60 miles of each other.

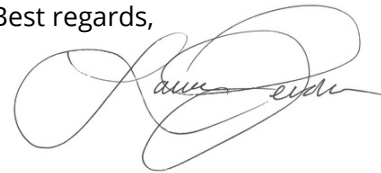
This year brought some exciting developments to FORGE. We served over 300 innovative companies with manufacturing strategies and connections, launched our new Manufacturing Readiness Workshop Series, and distributed over \$100k in non-dilutive product development funding to our startups. One of our former interns, David Thompson, came on as our full-time Program Manager. Anya Losik rose from Senior Program Manager to become our first ever Chief of Staff. And Adam Rodrigues returned to FORGE to lead our expansion into new territories.

In 2022, we saw supply chain companies and manufacturers redouble their focus on digital transformation and technological improvements – things like smart factories, predictive maintenance, additive manufacturing, and intelligent automation. Manufacturing adoption of IoT is projected to rise from 10 percent in 2020 to 50 percent by 2025.*

Nearshoring continued to trend, driven by supply chain disruptions from the pandemic and other events like the Russian invasion of Ukraine that increased global supply chain costs and delays. Interest in sustainability – from companies, their customers, and investors – continued to grow. Investors are focusing their venture capital in biotech, climatetech, and agtech. And, desire for more stability and sustainability is a further factor in localization trends. In 2020, 54 percent of US manufacturing companies said they would be reshoring; in 2021, that number was 83 percent.

As a nonprofit making local connections between innovative companies making physical products and manufacturers and suppliers, FORGE is positioned to respond to these trends and make a big impact in 2023. We're here to support scaling your manufacturing and your business, your reshoring efforts, your resilience, and your sustainable product development. Read on to see the amazing things FORGE, our supply chain network, and our startups achieved in 2022. I can't wait to see what we'll create together in 2023.

Best regards,



Laura Teicher,
Executive Director

*Grand View Research "Industrial Internet of Things Market Size, Share & Trend Analysis Report, January 2023

The FORGE Story

FORGE's mission is to help innovators navigate the journey from physical prototype through to commercialization and impact at scale.



The Problem

Startups making physical products are solving some of the world's toughest problems, but they face more obstacles to scale. High early production costs and burn rate mean the right choices in design, supply, and manufacturing are crucial for success, yet many innovators lack the expertise and connections to make those choices.



The Solution

FORGE addresses accelerates the path to market for startups by making introductions to industry expertise and providing training and support to ensure productive collaborations. We help startups source their supply chains from initial prototyping and design to full-scale production, connecting them with right-fit suppliers to establish early working relationships. Our programming and resources prepare startups and suppliers to scale production and work effectively together.



Team

Our talented team is what makes FORGE such a powerful force for connection and innovation. [Meet the entire team here.](#)

Locally Built

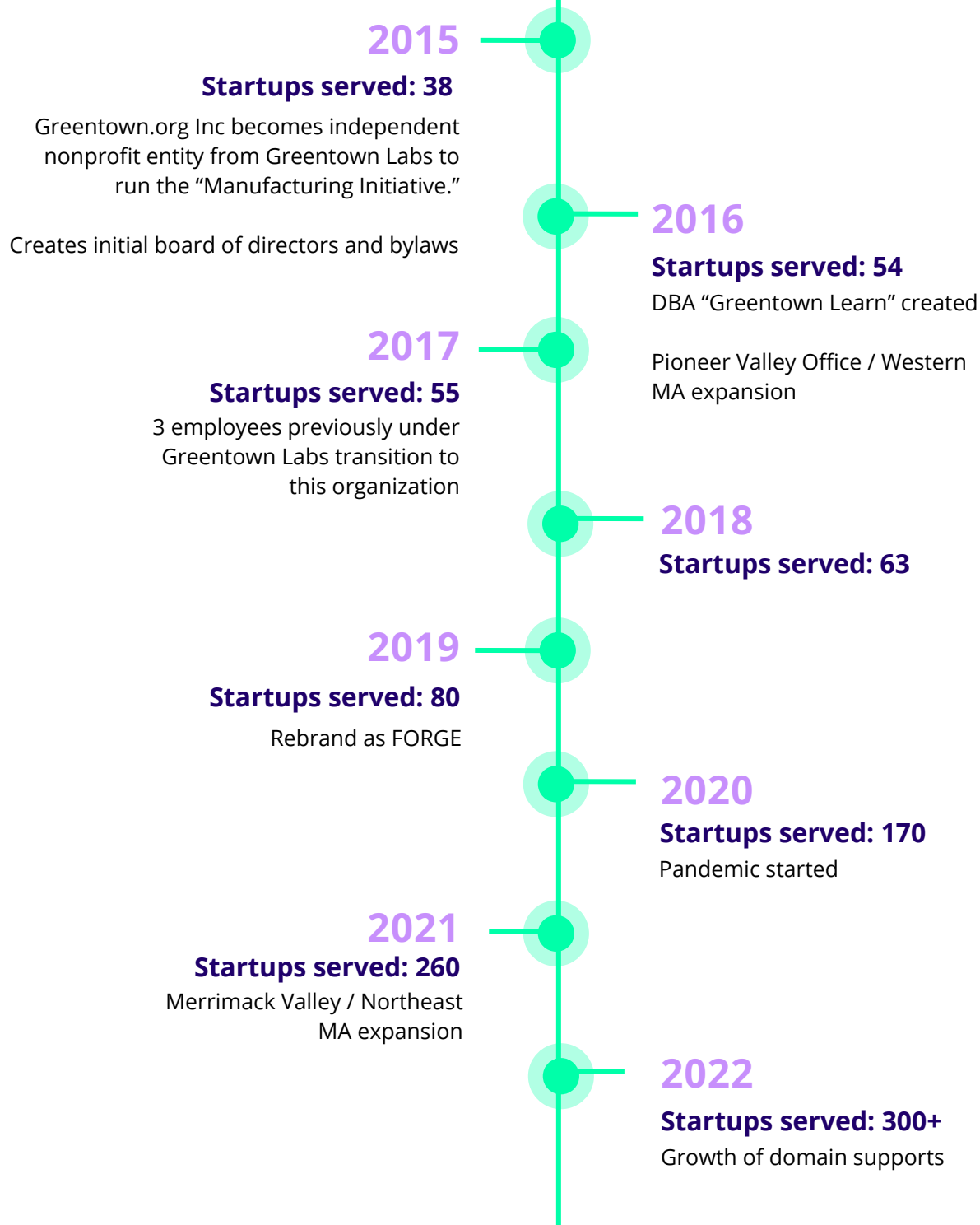
Massachusetts' innovation ecosystem has long supported those inventing new products here. But far too many innovators default overseas to manufacture their products when they reach the production stage, not realizing the wealth of manufacturing resources that exist locally and the competitive advantages that can come from nearshoring. FORGE wants to change that.

FORGE grew out of our sister organization Greentown Labs, in 2015. We have a simple message: if you can invent it here, you can manufacture it here, too.

From our headquarters in Somerville, MA and our offices in Merrimack Valley and Pioneer Valley, we serve a broad community of hardware, manufacturing, and materials startups, helping them bridge the gap from prototype or small batch production to scale. FORGE connects startups in the medical device, robotics, advanced materials, and consumer products industries to suppliers, manufacturers, and business consultants.

Our network of regional innovation support organizations, ecosystem collaborators, partners, and sponsors works together to improve the manufacturing space and move more startups along the path to production and scale. Through these connections, we've helped more than 500 startups to date.

Timeline



Startups Helped

BY THE NUMBERS

580

Startups supported all time,
300+ in 2022 alone

87%

Startup Survival Rate

42%

Minority Led
Startups

32%

Female / Nonbinary
Led Startups

SECTORS SERVED



Aerospace & Transportation



Medical Device & Diagnostics



Building & Energy Efficiency



Agricultural Water & Waste



Chemical & Advanced Materials



Defense



Cleantech



Smart Cities



Consumer Products



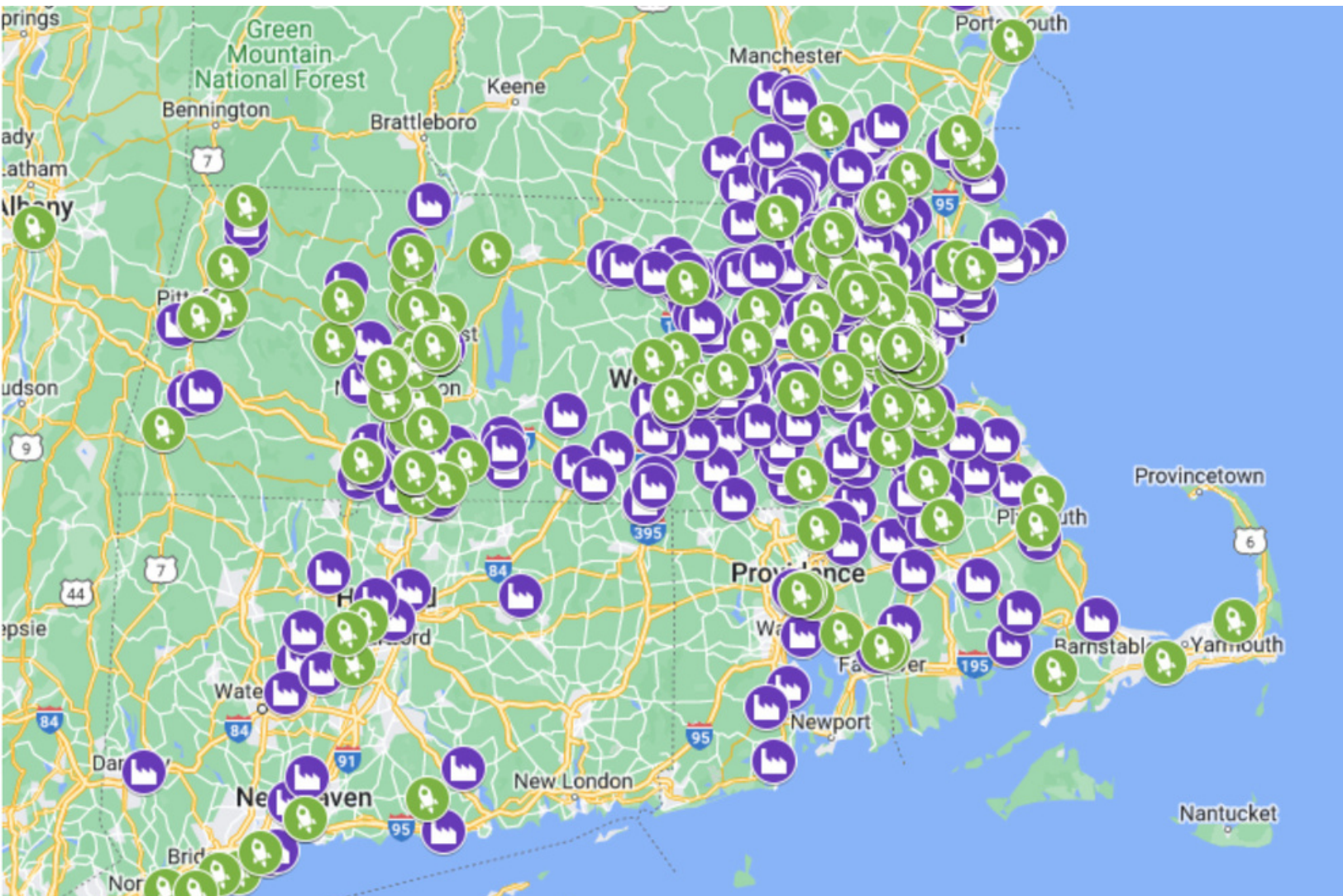
Robotics & Process Efficiency



Energy Generation Storage & Distribution

Reach

FORGE values localization for its economic and environmental benefits, and because it lets our startups develop closer collaborative relationships with their suppliers and manufacturers.



59%

of connections are within 60 miles

500+

indirect manufacturing jobs supported

\$34M+

in known contracts to manufacture innovative products locally



= startups



= manufacturers/suppliers

Success Stories

The startups and innovative companies that FORGE supports are working on physical products to disrupt industries, change lives, and save the planet. Here are a few of the exciting innovations we helped make connections for this year.



Tatum Robotics

Tatum Robotics created a robotic hand and arm that translates spoken language into tactile sign language for people with both visual and auditory impairments. Tatum's device offers potentially life-changing access to education and personal connections to the many DeafBlind people who can't read Braille.

[READ MORE](#)



DeepCharge designed the world's first intelligent and programmable wireless charging platform. The technology turns work surfaces into high-power multi-device chargers. FORGE connected DeepCharge to beneficial Massachusetts-based rebates and introduced the company to a design and fabrication facility in Western Mass. which helped them improve their product's quality and aesthetic.

[READ MORE](#)



Aquagga developed an award-winning technology to safely and effectively destroy PFAS (polluting, toxic "forever chemicals" which do not break down over time) in water and other waste streams without secondary remediation. FORGE and the US EPA have both recently awarded Aquagga grants to continue scaling their PFAS destruction technology.

[READ MORE](#)



Zeptive's device started out as a vaping detector for schools, but expanded to air quality sensing because of the COVID-19 pandemic. Zeptive came to FORGE in 2020 for help with full-scale manufacturing. They've since received 2 patents, doubled their revenue and staff, and moved to a larger headquarters.

[READ MORE](#)

Product Development Grants to Support Diverse Leaders

In our more than 6 years working with startups, FORGE has collected a lot of data. That means we see who's getting the most funding and who's not getting the resources they need. This year, we started grant programs to fund startups led by two under-supported groups in our ecosystem: non-binary people and women, and historically marginalized people of color. It's important to FORGE to fight inequality by funding underrepresented innovators.

"The ability to raise early money is a good predictor of success... We see grants like these as an opportunity to boost their trajectory."

Laura Teicher, FORGE Executive Director

Female- and Non-Binary Led Startups

In April, FORGE and partner Woka Foundation **announced a non-dilutive product development grant** for cleantech startups with female and non-binary leadership. 28 percent of the startups FORGE works with have female founders. When those startups join our community, they usually have less than two thirds the funding of male-led companies. Grant recipients used the funds to address specific product development challenges essential to their ability to scale and reach the marketplace.

Grant Winners

THE NEW NORM

Lauren Choi founded The New Norm after developing a way to turn non-recyclable plastic cups into textiles. The FORGE Product Development Grant funding will let The New Norm test and troubleshoot their textile production at a larger scale.



Elateq, cofounded by UMass Amherst's Dr. Ljiljana Rajic, is an advanced wastewater treatment company using sustainable new technology to remove toxic chemicals, metals and pathogens from water. Elateq is using its grant funding to upgrade its prototype and turn it into a user-friendly product that's ready to scale.



AeroShield CEO Dr. Elise Strobach worked on transparent silica aerogels during her Ph.D at MIT. Now AeroShield is working on an aerogel designed to effectively insulate windows, replacing older solutions like triple panes. They're using FORGE's grant to develop and perfect a scalable process for bonding the aerogel to windows.

BY THE NUMBERS

\$25,000

awarded to non-binary and female-led startups

1,742lbs

of CO2 emissions avoided for every ton of ocean plastics recycled into textiles by The New Norm

90% less

energy used by Elateq wastewater processing technology (and costs 80% less in total operating costs compared to reverse osmosis)

50%

more effective double-pane 3mm aerogel window created by AeroShield

Product Development Grants to Support Diverse Leaders

BIPOC Led Startups

In September, FORGE and partner Wells Fargo Incubator (IN2) **announced a product development grant** for cleantech startups with historically marginalized leadership. Black or African American, Hispanic or Latinx, and/or Indigenous, Native American, or Alaska Native. The grant helps diversify the cleantech space and support leaders with less institutional access. We announced the winners in December. Grant recipients will use the funds to address specific product development challenges essential to their ability to scale and reach the marketplace.

Grant Winners



Co-founded by bioengineer Dr. Andee Wallace and microbiologist Jai Padmakumar, Robigo engineers microbes to create more effective and environmentally friendly biopesticides. The biopesticides support the soil microbiome and provide a safe alternative to toxic conventional pesticides.



Atacama Biomaterials uses artificial intelligence and robotics to develop renewable, low-carbon materials for packaging and 3D printing. The three founders are machine learning developer and materials scientist Dr. Paloma Gonzalez-Rojas, industrial roboticist José Tomás Domínguez, and operations manager and climate tech entrepreneur Jose Antonio Gonzalez.



SEED stands for Sustainable Entrepreneurial Ecosystem Development – and that's what they do. SEED grew out of a project by community organizer, organizational development specialist, and master gardener Sabrina Williams, Esq. Concerned about sustainability and food insecurity, she created a kit with a soil carbon sensor and automatic irrigation system for small-plot gardeners.

BY THE NUMBERS

\$60,000

FORGE awarded to cleantech startups with historically marginalized leadership

70-75% lower

carbon footprint than PLA and LDPE plastics and could eliminate 2.5 gigatons of CO₂ emissions per year by Atacama's wood-fiber film Woodpack

350,000 liters

of water saved (equivalent to 8 residential swimming pools) and 382 metric tons of carbon (equivalent to 108 gas cars) via SEED's irrigation pilot in Los Angeles

10-100 trillions

microbes in the bioreactor in one batch of biopesticide by Robigo.

Manufacturers & Suppliers

FORGE's Supply Chain Network of local manufacturers, design firms, suppliers, and engineers work with startups to provide the critical materials and services for their physical products. We make right-fit connections between our startups and supply chain partners to mitigate risks and ensure successful, collaborative relationships.

Members of FORGE's Supply Chain Network:

- Differentiate and expand their business opportunities by securing new contracts
- Develop portfolios of exciting products for future production
- Attract an enterprising workforce by showing their dedication to innovative technologies

The manufacturer and supplier connections FORGE makes are at the heart of what we do. Building this network of regional suppliers is such exciting, fulfilling work that we never want to stop!



BY THE NUMBERS



489

connections made to
170 suppliers in 2022 alone



75%

of manufacturers in the
FORGE network have
fewer than 100
employees



81%

of manufacturers in the FORGE
network are willing to engage
on a contract less than \$10K



78%

of manufacturers in the FORGE
network are willing to engage at the
prototype level

Ecosystem Collaborators

The FORGE Ecosystem is an array of dynamic organizations that interact within the startup community. Through collaboration, mutual exchange and cross-promotion, our Ecosystem constantly evolves to serve current needs, and seed future innovation.



FORGE In Action: 2022 Event Highlights

MashUp

On September 16, 2022, manufacturers, startups, suppliers, students, and legislators met to celebrate manufacturing in Massachusetts at Worcester's Polar Park. FORGE hosted a pitch event as part of the celebration, awarding \$15,000 in funding to Tatum Robotics and rStream Recycling.



Lowell Manufacturing Celebration

During National Manufacturing Month (October), FORGE, MassCEC, MassMEP, the City of Lowell, Middlesex 3, MassHIRE/NAMC, Mass Tech Collaborative, and UMass Lowell iHub came together to celebrate all things manufacturing with demonstrations, roundtable discussions, and awards. Nth Cycle won Manufacturing Innovator of the Year, and 6 other community members won awards for everything from sustainable manufacturing to supplier of the year.



Demo Day

On Tuesday, June 14th, the Western Mass Founders Network (WMFN) successfully held its first Demo Day. Fifteen scale-ready Western Massachusetts-based startups and local leaders connected, networked, and celebrated the culmination of WMFN's eight-month program to scale executives by embedding them in the Western MA economy.



Factory Tour

In April, FORGE gathered startup entrepreneurs to tour facilities owned and operated by Somerset Industries and Plenus Group Inc. The tour helped food-related startups connect with food-related manufacturers in Lowell, strengthening their local networks and knowledge.



News & Media Coverage



FORGE nonprofit connects entrepreneurs with manufacturers in Western MA [READ MORE](#)



Anya Losik, FORGE's Chief of Staff, named a BostInno 25 under 25! [READ MORE](#)



FORGE Factory Tours Connect Innovative Startups and Lowell Manufacturers [READ MORE](#)



FORGE and IN2 Announce Grants for Cleantech Companies [READ MORE](#)



Western Mass Founders Network Inaugural Demo Day Recap [READ MORE](#)



FORGE Announces Cleantech Grants for Female- and Non-Binary- Led Startups [READ MORE](#)



MashUp Took Manufacturers Out to the Ballpark [READ MORE](#)



Two greater Boston "cleantech" startups awarded \$175k for their work [READ MORE](#)



UMass Lowell iHub Hosts Celebration of Manufacturing [READ MORE](#)

Our Current Partners

At FORGE, we connect the region's most forward-thinking startups to our local supply chain network to support a self-fueling ecosystem of innovation. To continue advancing our vision, we rely on our committed partners. Through their dedication to supporting innovation, FORGE partners fuel the regional manufacturing ecosystem and gain unequalled access to our expansive network of companies across the supply chain.

Titanium



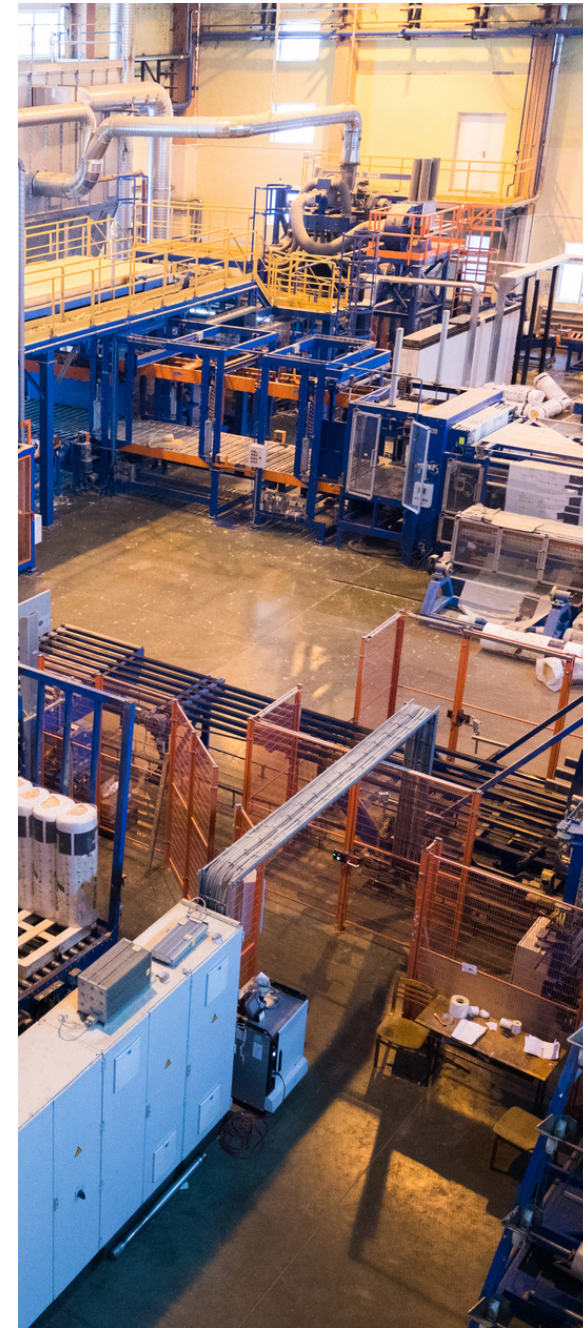
Steel



Iron



Friends of FORGE



What It Means To Be A FORGE Partner

Partnering with FORGE gives organizations access to our robust network of startups and innovative companies, connects them with other industry leaders, helps them build their brand, and invites them to exclusive FORGE events. And that's just the beginning. FORGE offers multiple partnership commitments at different contribution tiers. Here are some of the benefits of becoming a FORGE Partner:



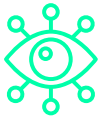
Targeted sessions with curated startups.

We'll introduce you to great matches from our portfolio of more than 500 startups. Possible events include virtual product development sessions, rocket roundtables, and factory tours.



High visibility at annual Supplier & Innovation Showcase.

You'll get a table in the event showcase, your logo in our banner and presentation, and the opportunity to network with dozens of relevant startups and our broader ecosystem partners.



Physical display in the FORGE Manufacturing Showcase room.

We'll display your logo, product, and print materials in our Manufacturing Showcase room.



Social media mentions.

We'll post about you and retweet you. At higher levels of sponsorship, we'll write a company feature about you for our website and email newsletter.



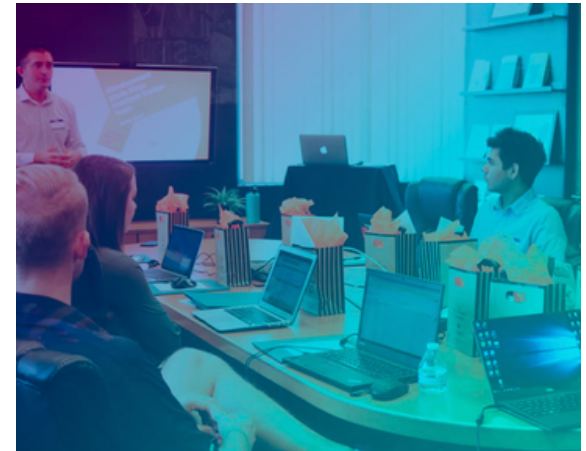
Exclusive networking opportunities.

At higher levels of sponsorship, FORGE offers the opportunity for you to join our local advisory councils.



Tools of the Trade.

We'll feature an article about your field-specific expertise in our Tools of the Trade resources page, showing potential clients the value you have to offer.



2023 Priorities

- Expand our service and impact through growth into new US territories
- Continue our new series of regional manufacturing celebrations, offering opportunities to network and updates on manufacturing ecosystem news
- Debut our Spring Startup Showcase and Pitch event for our startups to seek funding, show off their achievements, and see what's happening in the community
- With support from the EPIC 2 program, pilot systematizing a broader pool of on-call experts to provide relevant, additive, special manufacturing-focused support to startups
- Run the next iteration of our popular virtual Manufacturing Readiness Series, targeted to address the most common gaps in readiness to engage with manufacturers that we have seen across hundreds of startups served
- Collaborate on third annual statewide Massachusetts Manufacturing MashUp

TO-DO LIST
