



MHUB

2019 Investor Report

From mHUB Leadership



Dear Readers,

Over the past 5 years, investment in hardware has been steadily increasing as investors have realized the return potential and economic benefit of product-based startups. This renewed interest in hardware investing has fueled entrepreneurial activity across sectors.

Industry leaders and innovators have come together to develop an ecosystem in the Midwest which has reduced the barriers to vital manufacturing resources and tech talent that has led to the commercialization and success of Uptake, Jibit, Nest, LightPad and more. Despite this momentum, there is still a dearth in funding for hardware companies.

In 2019 for the first time, the majority of national tech industry leaders surveyed by KPMG expected that Silicon Valley will be surpassed as a leading innovation center¹. Midwestern investors and industry have long known that the region is poised to lead in product innovation and drive the fourth industrial revolution here in the U.S. But in order to get there, we need to close the gap in funding for seed-stage product-based companies.

Last year, mHUB leadership convened leading angel, VC and institutional investors to discuss how to accelerate the momentum that's been building over the past few years in Midwestern product innovation². We identified three priorities:

Educate and communicate with the wider investment community about the opportunities and value in the Midwest

Capacitate early stage innovation by designing programs and mentorship to build sustainable businesses

Increase the capacity and availability of seed and series A funding to further create market conditions

The Midwest is making progress on these priorities. By 2020, we hope to launch the first cohort of the mHUB Accelerated Incubation program, an industry demand-driven intensive incubation program to fast-track startups into becoming sustainable and scalable businesses. We're also raising a \$15M impact fund to answer the funding challenge for young hardware innovation companies. mHUB member companies represent the success that can come from expanded resources. In just two years with access to education and prototyping resources, our startups have generated more than \$48.5M in revenue, hired more than 780 employees and launched more than 640 products.

This is just the beginning. We need more to get involved in driving the next industrial revolution to truly elevate the Midwest to its place as a leader. We hope that you'll join us in closing the gap in resources and funding for early-stage product-based businesses.

Michael Seedman

Kevin Willer

Steve Koch

Haven Allen

Michael Seedman Chairman, mHUB Board of Directors
Executive Partner, Siris Capital

Kevin Willer Executive Committee, mHUB Board of Directors
Partner, Chicago Ventures

Steve Koch Chairman, Spurring Investment Committee, mHUB Board of Directors
Managing Partner, Bowline Group

Haven Allen Chief Executive Officer and Co-Founder mHUB

¹Global Technology Industry Innovation Survey, KPMG, 2019

²See list of convened groups on back cover



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Betting on The Middle:



MIDWESTERN INVESTMENT LANDSCAPE

Over the last decade digital innovation has enabled incredibly accurate target marketing geared towards impulse purchasing, instant satisfaction and opportunities to live in the moment. Anecdotal success stories from high-yield exits to great Kickstarter campaigns to companies inking partnerships may serve as a distraction from true trends. It's easy to get caught up in the excitement of the moment, but most innovators and investors aren't just focused on the now, they are looking to the future. To do that lets look at the at the past, the future and then the signals we are seeing in the present.

PAST:

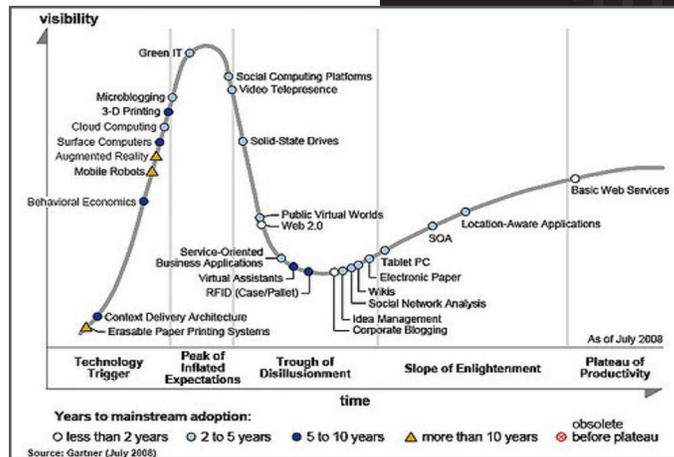
The past 10+ years has seen tremendous investment and growth in the software space. After centuries of solid returns investing in manufacturing powerhouses, investors experienced incredible returns in digital startups driving efficiencies, productivity and convenience to new levels. Looking at a Hype Curve from 2008³, many of the identified emerging technologies played out as expected. Cloud computing, microblogging, social computing platforms, telepresence, web 2.0, virtual assistants, service-oriented business applications, idea management, location-aware applications were all emerging technologies rooted in software. Investments in these areas proved fruitful.

Silicon Valley became a clear hub for software startups and investment. Fueled by its history in semiconductor manufacturing, software was a natural evolution. Innovation is strongest in clusters where knowledge, resources, talent and creativity hit a critical mass. Cities like San Francisco, Boston, New York, Austin and Chicago have invested in innovative communities to accelerate opportunities for business creation.

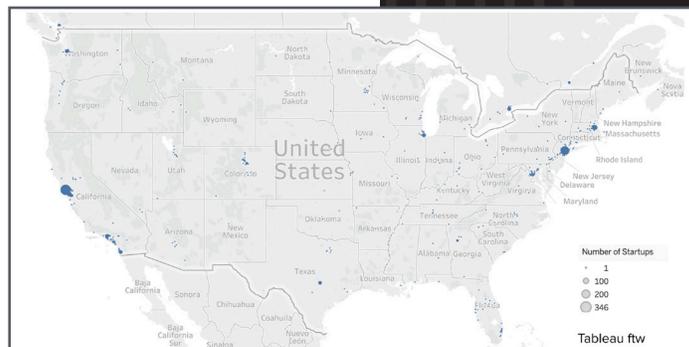
FUTURE:

The hype cycle for emerging technologies in 2018 looks noticeably different. The technologies are much more hardware focused. Smart robots, brain-computer interface, biochips, IoT platforms, Silicon Anode Batteries, connected home, mixed reality, neuromorphic hardware, self-healing system technology, autonomous mobile robots, smart fabrics and carbon nanotubes. These technologies open up opportunities for

Hype Cycle for Emerging Technologies, 2008



Startups are generally clustered (by city)

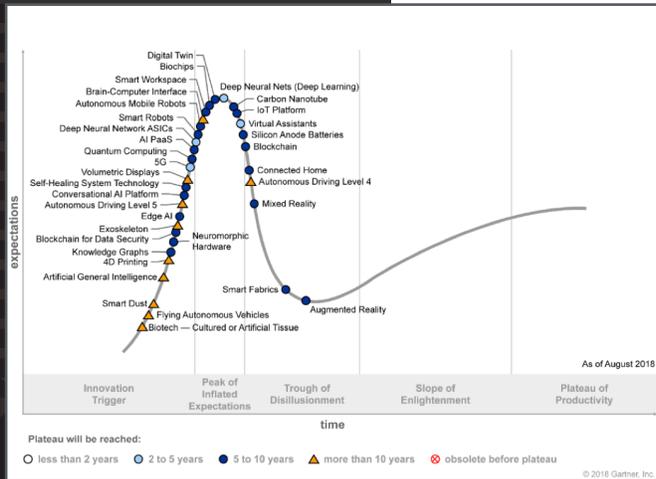


historic disruption in the hardware and physical product space, and with it a likely shift in investment.

PRESENT:

Makerspaces are popping up everywhere. Libraries and grade schools have 3D printers and even desktop CNC machines. Corporations are investing in innovation centers with manufacturing equipment. All of this helping to drive the increase in investment in hardware and product startups by lowering cost and barriers.

Hype Cycle for Emerging Technologies, 2018⁴



Investment in hardware and physical products continues to grow as investors seek to maximize their returns in increasingly competitive markets. Meanwhile, innovation ecosystems have matured outside of Silicon Valley. This development is important because we are seeing that across the country, there has been a shift towards larger funding rounds despite lower revenue from investments. A trend that may concern some investors. In the Midwest, funding rounds have grown, but so has revenue of the invested companies, a great sign for investors looking for favorable investment conditions. Round sizes in the Midwest are also less than half of that of the rest of the country, further reducing the risk profile of investments. These conditions are delivering greater returns in the Midwest than the rest of the country.⁵

Excitement around products is impossible to ignore in the Midwest. The metropolitan Chicago region was built on manufacturing and engineering ingenuity. Chicagoland has been the birthplace of devices like the cellular phone, the LED light, and needle-less IV. Technology and innovation are needed to restore the state’s manufacturing preeminence, launch new products that can be produced locally, and grow high-skill, high-wage jobs in industries like heavy equipment, consumer electronics, aerospace, and agribusiness.⁶

Home to thousands of manufacturers managing global supply chains and sales channels, top tier engineering schools like the University of Illinois, Northwestern, Purdue, Michigan and dozens more and R&D anchors like Argonne, and Fermi Labs the Midwest is a melting pot for hardware innovation. It has the talent, the domain knowledge, R&D commitment and the collaborative environment to create the spark necessary to ignite the next wave of investment success.

At mHUB, we are focused on lowering the barriers to commercializing product-based businesses by providing them low cost access to shared equipment. We also surround them with mentors, programs, and a community of manufacturers and other hardware startups to position them for commercial success. The impact is reflected in the lower funding targets and higher revenues from our member companies.

Now is the time to capture the growing value in Midwestern product-based startups.

“ Investment in hardware continues to grow as investors seek to maximize their returns in increasingly competitive markets.

Sources:

³<https://www.gartner.com/en/documents/717415/hype-cycle-for-emerging-technologies-2008>

⁴<https://www.gartner.com/en/newsroom/press-releases/2018-08-20-gartner-identifies-five-emerging-technology-trends-that-will-blur-the-lines-between-human-and-machine>

⁵<https://www.forbes.com/sites/peterandrewwilkins/2019/05/16/why-the-midwest-is-among-the-best-places->

⁶<https://jonb.blog/2019/02/21/2018-startup-trends/for-venture-investment/#6fbb014c4742>

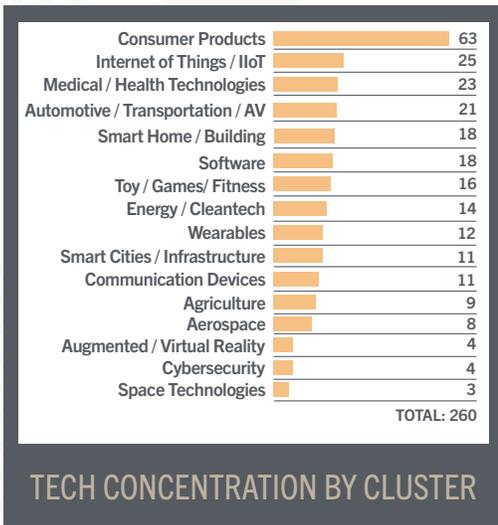
THE SUCCESS: CREATING THE CONDITIONS FOR PRODUCT INNOVATION TO THRIVE IN THE MIDWEST



A direct result of industry collaboration, mHUB was launched in 2017 to drive the industry 4.0 in the Midwest. Its mission is to develop an entrepreneurial ecosystem around physical products and hardware innovation and accelerate industry growth by cultivating a community of collaboration and connection between innovators, entrepreneurs, and manufacturers.

mHUB IMPACT AND COMMUNITY BY THE NUMBERS

Composition and success of member companies



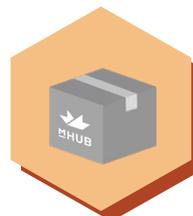
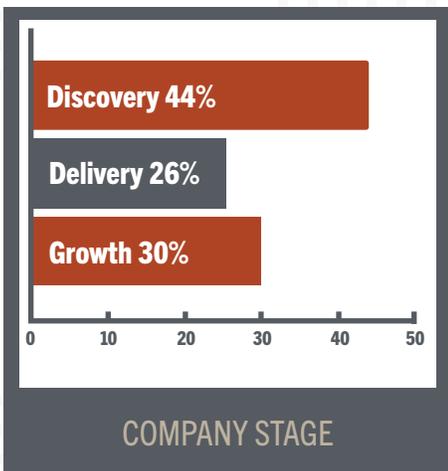
\$48.5M
Revenue Generated



More than \$100M*
Funding Raised To-Date



47%
of all funding efforts are in
Venture-Style Vehicles



648
Products Launched



786
Employees Hired

mHUB's members create breakthrough products in robotics, connected devices, sensors, energy tech, medical devices, and other cutting-edge innovations. By providing the right resources, mentorship, and access to manufacturing industry insiders, mHUB helps early-stage innovators go from prototype to product to sustainable business, driving a greater likelihood of success.

DISCOVERY: Assessing customer demand before building a prototype, and identify necessary design pivot points along the way.

DELIVERY: Assessing customer demand before building a prototype, and identify necessary design pivot points along the way.

GROWTH: Establishing systems to prepare for and support continued growth.

*Raised by top 22 mHUB member companies primarily located within mHUB by 2019

THE OPPORTUNITY: MEMBER FUNDRAISING AMBITIONS

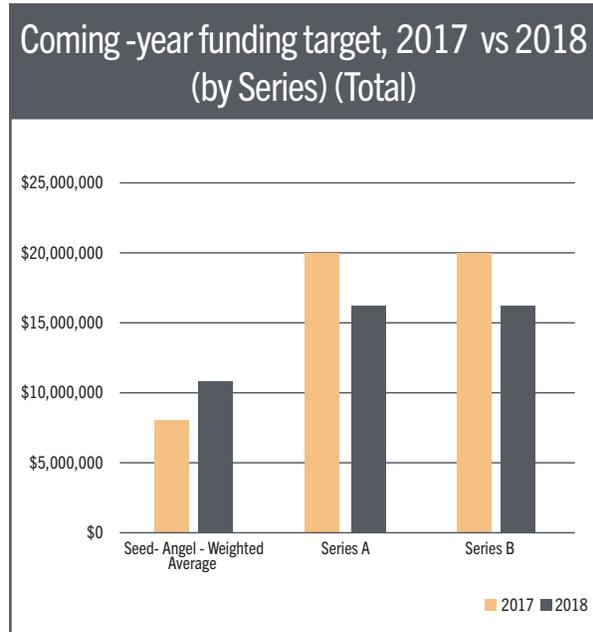


The mHUB member company base is largely early stage with the majority of members seeking or active in seed rounds. Venture-style financing is prevalent, although many companies rely on personal savings and friends and family. Equity, debt, convertible debt, and safes together make up 47% of member fundraising efforts. Early data points to the fact that barriers to commercialization are being reduced, and with that the risk profile of investments.

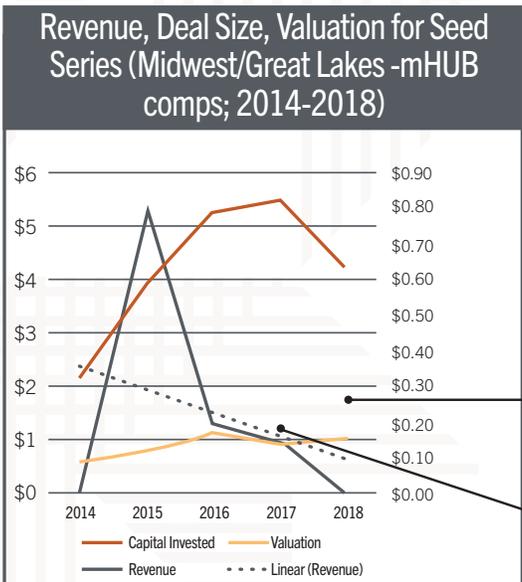
MEMBER FUNDING ASKS

Series	2017	2018
Seed Round	21	25
Angel Round	8	7
Series A	5	7
Series B	4	1

The opportunity is growing, with the majority of companies looking for early investors.



Companies are asking for smaller rounds, while posting higher seed-series revenue than the average Midwestern hardware startup.



2018 mHUB Seed-Series revenue (\$28k)

2017 mHUB Seed-Series revenue – 2017 (\$20k)

Though trends in the Midwestern market show decreases in both capital invested and revenue, revenue for mHUB member companies is trending up.

KEY TAKEAWAY*

mHUB Companies Compared to the Average Midwestern Hardware Startup

- Are asking for less
- Post higher seed-series revenue
- Pose lower risk profile for investment

*Based on mHUB's annual member survey and market analysis and PitchBook data

A LOOK AT mHUB MEMBER COMPANIES



PraxiCut™



Medical Technology

Employees: 2



\$110K



Patents: 1 US awarded, 1 pending

PraxiCut makes more effective models for physicians to learn and practice surgery. The physical models both look and feel like real tissue and are also compatible with the same tools physicians use in the operating room. This includes minimally invasive electrosurgical tools, imaging instruments and surgical robots as well as traditional cold-cut tools. Task Trainer models for surgeons-in-training are available online at www.praxicut.com. Founders Cecilie and Sabina Tassone use mHUB as a product development resource and are currently planning marketing efforts.

ClearFlame ENGINES



Energy Tech & Transportation



Employees: 2



Seed \$2.15M



Patents: 1 awarded, 2 pending

ClearFlame has developed a novel heavy-duty engine technology that completely eliminates the need for high carbon Diesel fuel and instead utilizes clean, alternative fuels to provide an unparalleled combination of improved performance and reduced emissions. ClearFlame's technology offers a 10% reduction in fuel costs, 30% more torque, near-zero NOx emissions, and a 40% lower CO2 impact by using low-carbon fuels in a high efficiency manner. These benefits will allow existing compression ignition engine designs to better address the challenges of the 21st century. Developed with mHUB partner, Argonne National Labs' Chain Reactions Innovation program, ClearFlame is using mHUB's education and mentor network to commercialize its technology.

“(mHUB) being very collaborative and open has really helped my business to grow.”

– Cecillie Tassone,
Co-Founder,
PraxiCut

“Working with mHUB has allowed ClearFlame to access the Midwest's robust manufacturing network, and has provided us with the resources we need to complete development and scale towards product deployment.”

– BJ Johnson,
Co-Founder,
ClearFlame Engines

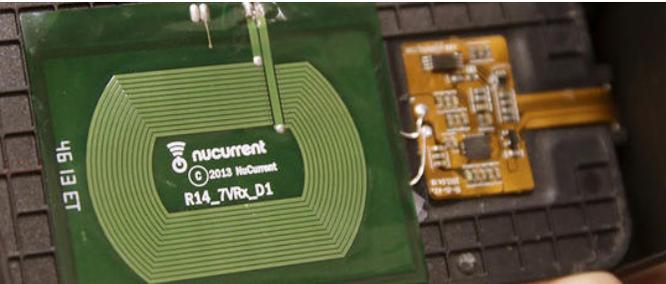


 IoT	 Series A \$41.9M
 Employees: 11-50	 Patents: 8

With over 4,000 lives lost on the job in the U.S. annually and more than \$250B in safety costs for U.S. businesses, Guardhat is disrupting the costly job safety market with feature-packed wearable technology and proprietary software to alert and help prevent hazardous industrial work-related incidents.

Guardhat, founded in Detroit, MI, moved its engineering team to mHUB in June 2018 looking to utilize the in-house equipment and diverse community. The ability to prototype and test product designs quickly brought down barriers to entry for its products.

In September 2018, the company closed a \$20M Series A funding round, which will support international strides in development of its technology, growth of business, and breadth of reach.



 IoT	 Series A \$4.5M
 Employees: 1-10	 Patents: 85

As wireless technology improves, manufacturers are looking for innovative ways to integrate wireless charging into their solutions. Through NuCurrent's proprietary NuIQ Technology Platform, the company delivers breakthrough wireless power solutions to product teams through expert systems integration.

NuCurrent, a founding mHUB member, capitalizes on mHUB's resources by utilizing the 3D printing, laser cutting, and cold metals prototyping labs. Its team has participated in mHUB's 40 course curriculum, as well as office hours with mentors of various industry focuses and subject matter expertise.

NuCurrent is now focused on scaling its business by working directly with manufactures across various industries to meet their wireless power needs.

“ It feels like mHUB has really brought down all the barriers of entry. This is why we came to Chicago, thanks again for building a great institution.

– Saikat Dey,
CEO and Co-Founder,
Guardhat

“ mHUB is more than a facility it is a community.

– Jacob Babcock,
Chief Executive Officer,
NuCurrent



Is caring about data privacy the new conspicuous consumption?

How much is digital privacy worth to you? I'm going to go out on a limb and bet that if you had to put a price tag on your privacy—as in, how many actual dollars you'd be willing to part with in order to make sure that Big Tech can't collect any data on you—that price tag would be pretty close to zero. Even the very concerned wonks at *The Atlantic* admit it: "Privacy" is abstract, confusing, and hard to sell to regular people who may have heard that "surveillance capitalism" is totes not cool, but still use Gmail and smartphones anyway. Which is why the makers of **Winston** aren't bothering to try. Instead, they're embracing the fact that, at least for now, simply caring about "the privacy problem" denotes privilege—and the best way to sell a solution is as a luxury good.

(Fast Company, 2019)

CadenceX reimagines the bottle dynamo for the 21st Century

Created by Chicago-based startup **PedalCell**, the device features a rubber-edged wheel that spins as it presses lightly against the bike's front wheel rim. That spinning motion generates electricity, which is sent via wiring to a capacitor-equipped handlebar-mounted Smart Power Hub. That hub in turn regulates the current, feeding it out stably and consistently (again via wires) regardless of cycling speed.

(New Atlas, 2019)



How this startup would revolutionize a 165-year-old medical device

Cast21's patent-pending casts are not solid masses like those of yore. Instead, they are made from a polymer injected into a honeycomb of a waterproof material that is comfortable on a patient's skin and easy to work with. The "windows," which measure around an inch in diameter, permit air to circulate and the patient to wash up. Also, Moy says the open architecture allows doctors to examine wounds and potentially directly apply electrical stimulation shown to speed healing. A forearm cast weighs less than a pound and can be applied in three minutes, while a conventional cast weighs much more and can take a half-hour or more for inexperienced doctors to mold.

(Crain's Chicago Business, 2018)

\$20 million funding round to fuel Guardhat expansion

IoT tech firm **Guardhat** Inc. expects to nearly double its workforce when the Detroit-based startup expands to Germany and bolsters its North American operations. The safety equipment manufacturer, which affixes software to hardware, plans for about 20 new employees to boost its international reach over the next year. The growth is being driven by a \$20 million Series A funding round on which the company closed in June. Guardhat has raised \$24 million since it was founded in 2014.

(Crain's Detroit Business, 2018)



Amber's sensors aim to save farmers' grain from spoilage

Now the **Amber** team is trying to help build the smart farm. The idea is simple enough. The sensors monitor temperature and humidity, along with the volatile compounds that signal how moist a farmer's grain is. Since this is 2017, those farmers will be able to monitor that key data from their smartphones, and that sort of easy access should help them figure out the ideal time to sell and ship their crop.

(Engadget, 2017)

WHAT'S NEXT

Join us in driving the fourth industrial revolution in the Midwest and closing the funding gap for seed-stage companies.

Watch for upcoming mHUB programs: Accelerated Incubation, a demand-driven program to fast-track startups and \$15M Product Impact Fund for seed-stage physical product and hardware companies.

MEMBER COMPANIES

3Degrees	CDJ Technologies	GE	LifeBot	PedalCell	Synergeo Domes
3DHubs	Chamberlain	Get It Made	LifeMotion Technologies	Pepper	system5 llc
3S Advisory Group	ChipKick	G-Fast Distribution Inc	LLC	PGH Industries Ltd.	TheMakerMom.com
Accenture Industry	Colca	Ghost Lab Design	Limitless Studios	Pillar Technology	Toast
X.0 Forge	Comcast Business	GKN Walterscheid Inc.	LineShift	Powermatic	Trice Imaging
Aiwa	Concept Innovations Group	GoFi LLC	Littelfuse	Technologies	Troquer
aLoo	Concept2Creation Inc.	Good Proto	Loring Human Factors	PraxiCut	TWINdow, LLC
Analog Airwaves LLC	Cre8tive Capital	Graceful Works	Luft Studio Inc.	Prince Castle	University of Illinois
Analog Life LLC	CriticalM.io	Greenlight Planet	Luna Lights	Proxfinity	at Chicago
Argonne National	Crucial Detail	Hallsten Innovations	Lux Enterprises	PulsarLabs	UL
Laboratory	Cybrid Systems	Hank Industries	The Marmon Group	Quasar Design	UnChair
Arrow Electronics	DecisivePoint LLC	Harvest2o	McPond Inc	RATIO Architects	United Conveyor
Artikel Studio	Deft Design	Hire Abby	Mechanical Design Labs	RATIO Design	UPS
AstroGlu, LLC	Degree Six	HopFrog WoodWorks	Meridian Mapping	relaxpack	Uptake
Axial Case	Design Experience Lab	Howard Radio Company	Mesodyne	RetPort	Urban Rivers
Bathub Genie	DeviceDev Consulting ,Inc.	Illinois Institute of	Metabolize	Richard Yorde	Verena Solutions
Bevzi	DFM Toolworks	Technology	Miguel Angel Flores	RIGHT MTRLS	Vision Aquatics
Beyond Design	DieCast Studios	iMagine-it-Tech	Caballero	SER Studios	Winston Privacy
Bit Space	Digital Springboard LLC/	Imagiroo	MK Brody & Co. Inc.	ServerCentral Turing	Wintrust
Boat and Sunshine	Artisan Images	Impossible Objects	Modern Sprout	Group	WRIGO, COMFi
Bonbowl	DLT Inc.	Inbox3D	Modobag Inc	setlurs.com	Zenblen
Booster Box	dotUP	INNOPSYS	Molex	Shaped Solutions Inc	Zerv Inc
Botsensei	Durable Med Tech	Innova EV	Monos Menos Manos	Sheehan Nagle Hartray	Zong Liu
Bow Tied Wood	Ebco Inc.	IntuiTap Medical, Inc.	Motion Dynamics	Signature Bank	Zulu product
BrewBike LLC	Edmonds Energy Solutions	Inventables	Natl Society of Black	Skate Kastle	development
BRIGHT PEI CONSULTING	Enlighten Enterprises Inc.	Ivy Design	Engineers	Smdp	
LLC	Ergo Impact	J M Tagler Inc	Nemik Consulting Inc	SnapClips	
Briteseed, Inc.	Everyday Engineering LLC	JLL	Neopenda	SNH Architects	
Building Brown Workshop	Excelitas	JMI-USA	Nomen Home	Startchy Inc	
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CADcraft LLC	FIESTA POP STUDIO	Julio Mocellin Bernardi	Northwestern University	Steele Kersten	
Carbon Negative	Fisher Unitech	Just E Skincare	NuCurrent	Stride-360	
Technologies	Focused Labs	Keeping It Covered LLC.	Ogden Robotics	Studio Gang	
CareBand	Freedman Seating	Keet	OPS Solutions	Surgical Innovation	
Cast21	G Innovation LLC	Krueck Sexton	Orbital Transports	Associates	
Catch Co.	GamerPro Global	Architects	PDQ Mazoo, LLC	SymGym	



CONVENED GROUPS

Erik Birkerts, Clean Energy Trust
Ty Findley, Pritzker Group
Troy Henikoff, Math Venture Partners
Steve Kase, Individual Investor
Karen Kerr, Agile Equities
Steve Koch, Bowline Group
Logan Lahive, Techstars
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Mark Tebbe, Individual Investor
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