

DESIGN

JAM

2020

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Urban
Manufacturing
Alliance

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INTRODUCTION

Manufacturing plays an enormous role in our country's safety, resilience, ability to innovate, and economic sustainability. Yet, manufacturing over generations has become regarded as insignificant in a regional economy, disconnected from the design and innovation economy as well as from communities. However, the COVID-19 pandemic brought a moment of awakening that manufacturing matters, and matters deeply, to our country. Now we have the opportunity to capitalize on this renewed need for and interest in manufacturing. This requires myriad activities, including new federal policy and cooperation between agencies; addressing the negative stigma against manufacturing; and removing silos between designers, makers, manufacturers, and decision makers. This report will focus on the latter issue.

The National Endowment for the Arts, in their *Valuing the Art of Industrial Design* report, identified that small- and medium-sized manufacturers (SMM) are generally

unfamiliar with industrial design's value, but the few manufacturers that do partner with industrial designers see revenues increase and costs diminish¹. The Urban Manufacturing Alliance's (UMA) *State of Urban Manufacturing*² research captured insights on a regional level which illustrate an interest from designers, makers, and small batch manufacturers to connect to SMMs in their regions, but barriers to connecting limit potential business development. These two reports highlight the importance of helping designers and manufacturers connect to one another: increased awareness of product design, creative entrepreneurship, and manufacturing builds connections across communities and sectors, leading to more economic activity, and helps build a stronger, resilient local manufacturing ecosystem.

UMA's Design Jam event establishes a strategy for connecting designers, makers, and engineers to legacy manufacturers and

1 "Valuing the Art of Industrial Design: A Profile of the Sector and Its Importance to Manufacturing, Technology, and Innovation." August 2013. <https://www.arts.gov/sites/default/files/Valuing-Industrial-Design.pdf>

2 "The State of Urban Manufacturing, National Report." June 2019. <https://www.urbanmfg.org/wp-content/uploads/2017/11/SUM-National-Report-Final.pdf>

policymakers, thus opening up new markets, new scalable businesses, new product concepts, and new relationships. The Design Jam very intentionally goes beyond a simple introduction and unites groups that don't naturally work together — and who have preconceived notions of how the other operates — into a collaborative and supportive environment. UMA's intention is to foster the change necessary to bring disparate but reliant communities together — and it starts with getting disconnected people to spend more time talking to one another.

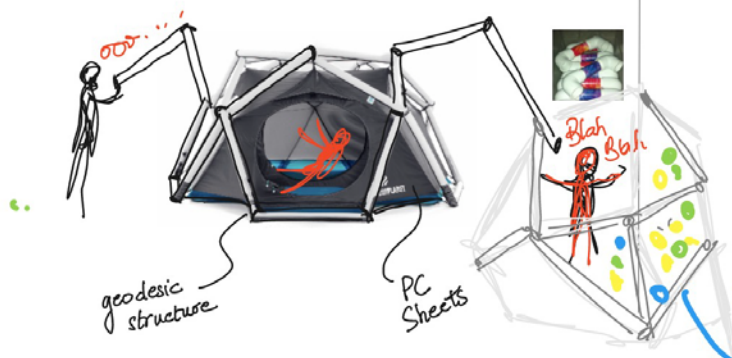
These events, at their core, are about building community and bringing unlikely partners together. This includes manufacturers interfacing with designers; students with industry; communities of color

with manufacturers; economic development practitioners with designers; and everyone in between. The manufacturing sector historically, and continues to be today, a key source of employment for the middle class and workers without a college degree, which makes up approximately 65 percent of the workforce³. Increased opportunities combined with a more connected manufacturing ecosystem leads to a resilient, nimble, and equitable economy and engine for innovation. The net effect is more, better paying jobs with career paths for all communities. At UMA, we work to harness moments like these to connect communities to each other and to new opportunities in manufacturing, helping illuminate the power and promise the sector holds.

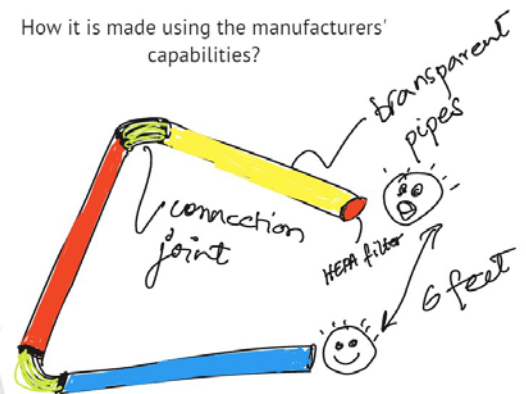
Classroom interaction

Build your own new colorful world and interact with your build

What is the User Experience? How does it improve their lives?



How it is made using the manufacturers' capabilities?



3

"Almost two-thirds of people in the labor force do not have a college degree." March 2016. <https://www.epi.org/publication/almost-two-thirds-of-people-in-the-labor-force-do-not-have-a-college-degree/>

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MANUFACTURING NEEDS DESIGN AND DESIGN NEEDS MANUFACTURING

When manufacturers team up with industrial designers and product developers, they can prototype new ideas and design more efficiently, and quickly than if they were working alone. Collaborating reduces product defects, helps spending stay on budget, and encourages entrepreneurs to ground their supply chain in the resources and services available within their local economy. However, designers and manufacturers are often not aware of how they can benefit one another. According to a report by the National Endowment for the Arts, small- and medium-sized manufacturers are generally unfamiliar with industrial design and how it can benefit their business. At the same time, those few small and medium-sized manufacturers that do partner with industrial designers saw revenues increase by 17.5 percent on average, while diminishing costs.

Similarly, UMA and thought partners have identified, through our *State of Urban Manufacturing* research, a disconnect

between the design and manufacturing communities. This gap is creating missed opportunities in the innovation economy and limiting the promise of employment and economic activity up and down the manufacturing value chain. In regions across the country, there are robust ecosystems of production businesses and designers, but they rarely speak to one another. This is partly because they are seldom in the same room (virtually or physically). UMA sees a role for intermediaries to help facilitate supply chain connections between designers and manufacturers, which would encourage mutual business growth.

Generating new business — whether design- or manufacturing-based — doesn't have to come from within one's own company; rather, if manufacturing firms and designers can envision an opportunity to work together, new products would emerge from those collaborations. UMA and partners know it takes a dedicated process, bringing together relevant stakeholders (including

Manufacturing Extension Partnerships, city agencies, chambers of commerce, and others) to connect designers, makers, and engineers to legacy manufacturers. And it can't stop at a simple introduction: again, often these groups don't naturally work together and have preconceived notions of

how the other does business. This is again a place for intermediaries to step in and broker communication and potential collaborations.

WHY ARE DESIGNERS AND MANUFACTURERS DISCONNECTED?

1800

Bridging the gap first requires understanding why the gap exists. Going back to the 1800s, large manufacturers scaled after developing craft and innovation at a micro level, most often as an individual artisan or family of artisans. The history of manufacturing in Europe and American cities like Philadelphia, Detroit, and Milwaukee are filled with stories of skilled workers creating family businesses employing themselves, gaining success with their wares, and scaling their production to meet demand. As that demand grew they trained and employed more people, innovated new production technologies, acquired equipment, and built bigger factories. The craftsperson (or crafts-family) grew to become what we now call a manufacturer.

1900

Industrial design as a profession originated within factory settings in the early 1900s. Individuals were tasked with developing new products that could be made using the technology, materials, and workforce within a single factory. The goal was to continue to innovate new products to help keep the manufacturer in business and the factory running. This model of scaling craft technologies and processes into more efficient production methods mixed with in-house innovation lasted until the 1970s.

1980

Starting in the 1980s, changes in values lead to policies with new emphasis on lowering labor costs and looking for untapped markets. The outcome was the development of global supply chains that shipped manufacturing jobs and capabilities overseas to other labor markets and new factory owners, while design stayed within the U.S. Initially design remained tied to specific manufacturing supply chains; however, brands saw opportunities to reduce overhead costs by depending on contract manufacturers, rather than owning factories themselves.

Designers were no longer limited to designing within the boundaries of a specific factory. They began to develop products based on market research, their own instincts, and novelty; and once the product was developed, they sought manufacturers, wherever they existed, to bring their concepts to life. There are examples of design consultancies existing prior to the 1980s, but after the successful break of the vertically-owned

1980

design and manufacturing capabilities, design consultancies grew, expanding the divide between the design office and the manufacturing floor.

The divide of the skills in the professional setting also drove changes in the educational setting. Skills that were once learned by both designers and factory floor workers — creating and reading blueprints, knowing how manufacturing processes worked, knowing how to operate fabrication technologies, understanding materials, and developing product innovations — were now divided with some being taught in design schools and others being taught in vocational schools.

2000

In the early 2000s, with the increased accessibility of computer numerically controlled (CNC) technologies — a piece of manufacturing equipment that can be controlled by a computer — increased the divide between these communities. Designers could now develop a concept, create a 3D digital model, and use multiple types of machines run by computers — previously only accessible through large scale manufacturers — to produce prototypes and small batches without ever having to engage with a manufacturing expert. Much like the shifts in design education in the 1990s, away from technical education and towards conceptual design and research, the 2000s saw another shift to educating students how to design and produce using digital fabrication tools.

2000

In parallel to changes in design and manufacturing strategies, business model development has changed too. *The Lean Startup* and *The Long Tail* business model theories, for example, defined what entrepreneurship looked like in the 2000s. These theories value starting small, testing products through customer engagement, and finding niche markets instead of mass markets. These new business strategies were able to take hold and prove possible with the development of e-commerce — which itself was made possible by any business owner now being able (1) access niche markets (through social media and e-commerce platforms), (2) access product distribution (through shipping companies) and (3) process payments online.

The new nimble, small startup business model further drove a wedge between the manufacturing community and product-based business development. Successful legacy manufacturers have business models built on producing lots of identical products by lowering unit price through investing in specialized tooling and less-skilled labor. This method requires the product to not change, and to be produced at high quantities, because even small changes require new investments in new tools and training labor.

From the manufacturing perspective, shifting from vertically-owned manufacturing to contract manufacturing created new business opportunities for entrepreneurial factory

2000

owners to create production facilities and have a diverse customer base. One company could produce for as many brands as they wanted. Over time however, as big brands grew and placed larger orders with manufacturers, smaller brands couldn't compete, making it difficult for them to get their products on the factory floor — a problem that still exists today. Manufacturers were then tied to shrinking customer bases — those that were placing large orders. Manufacturers became pressured by the big brands to meet certain price points, and if they couldn't meet the price points, they were forced to close, therefore shrinking the manufacturing base in the U.S. And those that stayed around, for the most part, adopted the same production methods as abroad — specialized technology with an unskilled labor force.

Those companies that lasted became very good at large-scale production methods. However, as the factors above have identified, the product development and business development models went in the other direction, at least in the early phases of business growth. Those early phases of product development prove very crucial because when a designer builds a successful relationship with a manufacturing company to make their initial runs, they are more likely to rely on that relationship as their business grows.

WHY IS RECONNECTING DESIGNERS AND MANUFACTURERS IMPORTANT?

The changes over the past 40 years have created and increased the distance between two key sectors within the larger manufacturing ecosystems: design and manufacturing. While manufacturing of durable and nondurable goods still accounts for close to 12% of the U.S. GDP⁴, the future of the industry depends on the ability to overcome these disconnections. UMA and our partners have seen the impact closing a factory can have on communities. Multiple closings within a region where manufacturing is a primary employer can throw whole neighborhoods, towns, or even cities into economic despair. This has been documented in many locations and deeply impacted communities of color⁵.

UMA has found that there is a growing number of designers and manufacturers who want to overcome the differences because they see the value of working collaboratively and understand there is opportunity to get multiple business needs met: entrepreneurs

seek to scale their production and manufacturers seek a diverse customer base.

A designer in the start-up phase can benefit from understanding how products are made at larger scales: “design for manufacturing” processes can trigger cost-prohibitive redesigns, which can often force a start-up to stay small longer, or be dependent on overseas manufacturing to find lower price points for labor because their part(s) are too complicated to make regionally and cost effectively. By engaging with manufacturers early, product (and business) developers can save money not having to redesign for manufacturing — helping reduce risk, increasing chances the product can make it to market, and saving time scaling from small runs used for testing markets to larger runs for expanding markets.

A manufacturer connected to many new businesses and designers increases their

4 “United States Manufacturing Facts.” National Association of Manufacturers, 2019. <https://www.nam.org/state-manufacturing-data/2019-united-states-manufacturing-facts/#:~:text=Manufacturers%20in%20the%20United%20States,employing%208.51%25%20of%20the%20workforce.>

5 “Unmade in America Industrial Flight and the Decline of Black Communities.” October 2016. <http://s3-us-west-2.amazonaws.com/aamweb/uploads/research-pdf/UnmadeInAmerica.pdf>

potential market base and increases their own resiliency. This is due to two important factors and trends. First, only about one third of new businesses make it to ten years of being in business and only 25% make it to 15 years of business⁶. Because of this, a manufacturer needs to have many connections to new businesses to increase their chances of having multiple customers that will successfully have repeat orders, and larger orders, over many years. And second, more and more business owners aren't looking to grow indefinitely, instead they are looking for a stable and sustainable scale. Where before a manufacturer could depend on a handful of very large orders to sustain their business, this new trend means manufacturers need to have many more customer relationships in order to maintain a similar scale of revenue.

Newer, more, and stronger relationships between designers and manufacturers increases demand for regional manufacturing capabilities and opportunities for designers to design more products. This demand from both sides drives job opportunities across all types of careers within the manufacturing ecosystem. For UMA and our partners, increased jobs and accessible career paths are the driving goals. Careers in the manufacturing ecosystem — which include design,

engineering, production, logistics, management, and ownership — are more accessible regardless of education level, provide higher pay, and when the ecosystem is robust and resilient, offer dependable, lifelong careers.



6 "Top 6 Reasons New Businesses Fail." February 2020. <https://www.investopedia.com/financial-edge/1010/top-6-reasons-new-businesses-fail.aspx#citation-1>

HOW DOES UMA BRING DESIGNERS AND MANUFACTURERS TOGETHER?

Design Jams are interactive events that unite designers and manufacturers, inviting them to explore new product designs, systems, and processes based on locally-available production techniques. Together, they solve problems facing real businesses in their communities, all while inspiring greater collaboration within place-based manufacturing ecosystems and creating new supply-chain connections.

Design Jams bring designers (professionals and students) and manufacturers closer together to benefit supply chains, increase prototyping speeds, and spur new partnerships that could lead to economic growth for designers and manufacturers. Design Jams also expose local creative and production economies to local service providers, industry, and academic institutions.

Mo-Pod

DESCRIBE THE CONCEPT:

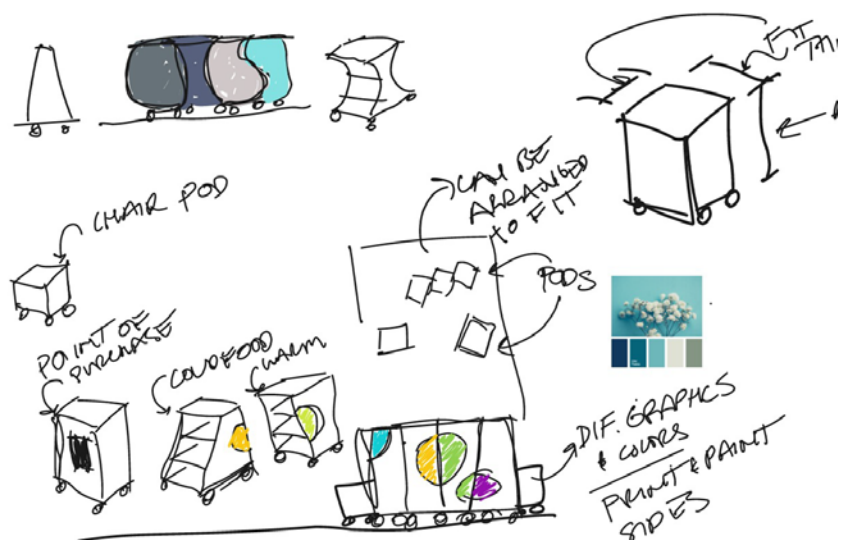
MULTIPLE PODS
OUTSIDE DESIGN REFLECTS INSIDE
PODS - BASED ON DIETARY NEEDS

WHO IS IT FOR?

GENERAL PUBLIC IN HOSPITALS + STAFF

HOW DOES IT HELP THEM?

EASE OF ORDERING FOOD, ESCAPISM FROM
HOSPITAL, NUTRITIONAL, CONVENIENT ORDERING
AND DELIVERY



With the right relationship development, collaboration strategy, and awareness, we can build new models of collaborative innovation in the manufacturing ecosystem, and bring together diverse parts of the ecosystem increasing innovation. By opening up definitions of what it means to manufacture, by providing places for all

stakeholders to have a place to speak, and by supporting co-learning about complex systems we see new attitudes, new connections, and new solutions to complex issues. To do so UMA's Design Jams focus on:

- **Educating people.** We invite people to look into manufacturing facilities and open the product development process so they can learn about its potential and their role in it.
- **Creating linkages.** We show how different stakeholders and organizations are tied together and impact one another.
- **Engaging untapped innovation.** We open the innovation process to all populations by doing work in a collaborative, inclusive space.

The Design Jam model creates a participatory process by bringing in diverse practitioners and voices. Design Jams shift product innovation, which typically happens behind a few closed doors, to a collective and open space. Our process leverages the belief that more hands, eyes, and ideas leads to more understanding and insight.

safety; and it creates jobs for people who are cut off from equity-generating career paths. We need to ensure manufacturing remains a valuable economic development strategy, which requires increasing the connections into and between the world of manufacturing, design, and policymaking.

UMA's goal is to elevate the power of manufacturing within communities. Increasing the value of manufacturing leads to dependable, stable economies; it addresses critical needs of people's

WHAT IS A VIRTUAL DESIGN JAM?

The COVID-19 pandemic brought to light how much of a role manufacturing plays in our country's safety, resilience, ability to innovate, and economic sustainability. This new awareness helped solidify the importance of the Design Jam event and also created opportunities to elevate the event to not only bring communities together, but to also propose solutions for personal protective equipment (PPE) and innovate on new strategies to deliver services in ways that met safety guidelines.

UMA and our partners leveraged online tools⁷ to bring together local ecosystems, and national experts, in ways that were previously done in-person. While the new virtual experience posed some initial challenges it also opened up new possibilities. Over 50 people from across the country participated in each event and the virtual space created a level playing field allowing everyone an equal way to contribute regardless of skill set, prior experiences, or location.

UMA's strategies focus on multiple layers of innovation and change occurring at

the same time. The Virtual Design Jam works horizontally — reconnecting the creative and production processes — and vertically — reconnecting the decision-making power with individuals with needs for products. This yields impacts across multiple spectrums: new ideas for products opening new possibilities for manufacturers, new lines of communication removing barriers after the Jam, and new policy ideas impacting regional strategies to support local manufacturers.

⁷ *Zoom Meeting* ("Cloud platform for video, voice, content sharing, and chat across mobile devices, desktops, telephones, and room systems.") and *Miro* ("The online collaborative whiteboard platform to bring teams together, anytime, anywhere.")

Outcomes

The Design Jam event brings together many different elements of the manufacturing ecosystem. This creates a variety of diverse outcomes, some of which are easy to measure, and others of which are not; some result in immediate opportunities and others take time to develop. By interviewing participants, UMA has captured some

of these outcomes. As more events take place in other cities, and new events in New York City and Detroit build on these early exercises, UMA will continue to track, reflect, and learn from short- and long-term outcomes.

Manufacturers learned how valuable their knowledge of how products are made is to designers.

The owners of Burke Architectural Millwork, our Detroit Jam manufacturing partner, expressed how in the group work and brainstorming, they were looked at as the experts in how things are made. The questions went beyond just their company's capabilities — and were often about general manufacturing knowledge. This experience helped the manufacturer realize they have an opportunity to reach out to and engage with more designers to help them refine their ideas rather than just waiting for finished designs to come to their company.

Manufacturers realized they need to build their own network of manufacturers to collaborate with.

The majority of the designs proposed in the Jams required production techniques beyond those offered by the manufacturers that participated. This provided Burke Architectural Millwork with the insight to build more connections to other manufacturers, especially those with the ability to work with electronics and to respond to the growing number of smart products and the Internet of Things.

Manufacturers found new product opportunities and a need for more design expertise to refine the solution.

After the Jam, the CEO of Taxicab Products reviewed the designs and identified some that best leveraged his company's production capabilities. He has made it a priority to further refine the designs, to create prototypes, and to get feedback from teachers and school administrators, who were a part of the Design Jam New York. In order to further refine the solutions, he plans to bring in a designer — either a student or professional — to help on the project.

Design students were influenced by the interdisciplinary collaborations.

When asked how working together in the Jam was inspirational, design students described their typical design process — which doesn't include thinking about the production, profitability, or other limitations of manufacturing. For them, the interdisciplinary group work illustrated the importance of getting lots of input from a lot of different perspectives, especially the manufacturer, and not just the end user. One student expressed that the Jam has taught him that he has to do more to be in touch with people who have insights he doesn't in order to make sure his work is grounded and achievable.

Design teachers saw the opportunity to bring multiple stakeholders together in the classroom.

Two teachers, a professor at the university level and one who teaches high school, shared their motivation to replicate the Design Jam model in their classrooms. A professor at College for Creative Studies in Detroit is developing a class project that will bring together a manufacturer, a user group, and a project sponsor to engage with his industrial design students in the Spring 2021 semester. The project will start off with a Design Jam-style event. The early concepts identified there will then be refined over the course of the semester, with the end goal being one or two students working with the manufacturer as an intern or employee to get the project through the final steps of design for manufacturing. The high school teacher, who teaches

engineering, architecture, and interior design, wants to use the Design Jam concept to share the process and outcomes with her students to help them get excited about design and to illustrate how design can be applied in many ways, from different points of view.

The Design Jam showed industrial ecosystem supporters that different style events and programs are needed in order to respond to and leverage different levels of expertise.

2020's Jams showed there is interest in gaining exposure to both design and manufacturing, especially among those who have the least knowledge at the time of the Jam. The New York City and Detroit Design Jam events filled that niche on the design side. This year's events were heavily focused on the design process and creating new ways of developing product concepts. These events set the foundation for future work and events that ecosystem supporters can deliver — ones that can leverage subject matter experts, design professionals, and manufacturers in the ecosystem that can take early ideas developed here and refine them for local manufacturing capabilities. No one event will be able to meet interests or leverage all expertise, and rather than trying to achieve that, one outcome is to develop a set of programs that provide multiple opportunities for people to plug in and contribute, learn, and connect in ways that resonate personally. Different program models will draw different people together based on previous experiences and expectations. By creating a series of events, someone who felt comfortable with one event may try the next event even if that one seems outside their comfort zone. And vice versa, people interested in the more advanced stages of design and manufacturing can be exposed to learners and find ways to engage at other stages in the programming, for example as a facilitator or design and manufacturing expert.

Conclusion

Community resilience occurs when you have deeply connected stakeholders. The COVID-19 pandemic illustrated there are no hard lines between communities, and disconnections amplify problems for everyone. Our frontline workers are our vulnerable populations, our essential workers are working in factories making PPE; we're all in the same waters (while being in very different boats). While the major shifts in how designers create products and how manufacturing provides value over the past 40 years have contributed to these disconnections, the

new demand for locally-made products, increased investment in advanced manufacturing technologies, and a desire to collaborate are helping to bridge the gap and bring the ecosystem together.

The Design Jam event establishes a new way to connect communities. Manufacturers, designers, decision-makers, and citizens all have a stake in finding solutions for short- and long-term problems. Our Design Jam process:

- **Generates new innovative ideas** for problems developed during the COVID-19 pandemic — from PPE-related demands to need for new packaging systems to tools for social distancing.
- **Opens doors** for the very large, untapped community of innovators who are disproportionately being impacted by the pandemic to help provide solutions
- **Creates open lines of communication** so that when new problems arise, a response can be organized in a much shorter timeframe with less disruption and more stability and sense of control.
- **Increases the value and demand for manufacturing** which increases job opportunities for vulnerable populations.

Put together, these outcomes build a more competitive manufacturing ecosystem, which when embedded in communities, creates more sustainable, equitable economies. When you integrate design into the manufacturing process, it makes manufacturing more competitive which makes it more economically stable. Manufacturing not only produces the products we need to keep us safe, but it

provides family-sustaining careers to broad sections of our communities.

The Design Jam is a strategy to elevate the power and importance of manufacturing to communities. This is a long term goal made visible through the Design Jam events, where in each event UMA creates:

- **New relationships** between suppliers and policymakers, between manufacturing supply chains and creative communities.
- **New product ideas** that have vetted feedback from manufacturers.
- **New awareness** about professions within the manufacturing ecosystem.
- **New understanding** of the role manufacturing plays in our communities.

These events collectively impact how students think about themselves and their future, how designers and manufacturers develop products in the future, how people think about the role of manufacturing, and how decision making — from consumers to designers to policymakers — can lead to more stable, resilient manufacturing ecosystems. These impacts lead to more investment, beneficial policies, and promotion of the manufacturing

sector establishing more stable career opportunities in communities.

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VIRTUAL DESIGN JAM: HOW IT WORKS

Before the Jam

Way before the Design Jam event brought people together for a fast-paced, interactive session, a lot of work took place. UMA first recruited cities to participate in the 2020 Design Jam series. More than a dozen cities applied, and UMA chose Detroit and New York based on the similarities and differences in the cities, the existing manufacturing and design communities, and the presence of manufacturing leaders in both communities. Once selected, UMA and teenyBIG⁸ worked with local partners to curate manufacturer(s) that would be willing to open up their facility, share their production capabilities, and engage with a range of stakeholders in a collaborative process. Together, we also identified Design Schools as advisors and partners. The team defined a design challenge that leveraged the manufacturers' capabilities and pushed designers to think creatively while taking into account multiple stakeholder groups needs. Next, local partners and UMA recruited a diverse array of designers (students and professionals), manufacturers (small to at-scale), and service providers to come together for the Design Jam event. Teams were organized by mixing backgrounds and skill sets to establish cross disciplinary collaborations. In the week leading up to the Jam, participants shared their profile with their team, tested out the online tools used to collaborate, and were introduced to the manufacturers that were opening their facilities via videos and stories that explained their capabilities and the products they currently produce.

8

teenyBIG Principal Emily Taylor uses two decades of experience in Human-Centered Design, experience design, and nonprofit leadership to help small to medium nonprofits engage the people that matter most to achieving their mission.



During the Virtual Design Jam

At the beginning of the three-hour Virtual Design Jam, participants logged into the virtual meeting space and were prompted to start connecting with their teammates and fellow participants. The Jam started with introductions of partners and leaders and an interactive “stroke” to further create an inviting and energetic environment. These initial interactions were about setting the table and acknowledging that stakeholders who don’t often naturally come together — designers, manufacturers, and service providers — are now together and that the event is about providing a space for facilitated conversation and interaction. To get everyone focused, we provided insights into the traditional product design process and how there is a disconnection between the design development process and manufacturing engagement. We offered a different model, one that is implemented during the Jam, one that mimics the farm-to-table idea where a chef cooks what is locally in season, and challenged the participants to do the same: design products based on what manufacturing capabilities are locally available, versus the prevailing method of design first, *then* find manufacturing capabilities. We then shared the specific design challenge teams were to tackle and a breakdown of how their time would be spent.

Designers, manufacturers, and service providers worked in teams to develop new product ideas that addressed the assigned design challenge. Some time was initially spent doing brief intros so teams could get more comfortable collaborating. Then, remaining time was broken into three segments: Explore, Cluster & Build, and Create a Concept. During the Explore phase, all team members were asked to record what thoughts, ideas, and possibilities came to mind given the manufacturing capabilities, the assigned challenge, and other constraints. Each person shared what they brainstormed and everyone on the team had a chance to reply and build on each other’s ideas. The Cluster & Build phase asked the team to find commonalities within ideas



After the Event

These events plant the seed for potential partnerships, products, and capacity-building opportunities for manufacturers and designers that could grow into longer term economic development opportunities. The manufacturers that share their production capabilities have an opportunity to utilize the new ideas that came from the Design Jam collaborations to address capacity or business challenges. They also get recognition from the design community as being a forward-thinking, innovative organization that is open to creative projects. And the manufacturers gain access to a larger network of designers and supporters to tap into for future projects and business opportunities.

Designers leave the event with an understanding that their design abilities can be utilized to rethink a challenge facing a manufacturer and support the local economy. By having a more direct conversation and connection with the owner of a manufacturing company they gain an awareness of how to navigate the challenges of working with a local manufacturer. And like the manufacturers, designers have an expanded network with other designers, manufacturers, and makers working to build businesses and contribute to the local economy.

After the Design Jam, organizations that support either the designer community or manufacturing community, or both, continue their work with new understanding of how to collaborate with their customers to better support and grow supply chain connections in their region. They also are better able to advocate for manufacturing businesses having learned how they bring good paying jobs to low income communities. Lastly, service providers can continue their work to bridge the gap between manufacturing and design to strengthen the local manufacturing sector with new understanding of how both communities work.

Roles & Responsibilities

The following are important roles and responsibilities that are taken into account for each Design Jam session.

Program Leader

Urban Manufacturing Alliance

The Program Leader is responsible for getting all other roles to collaborate, setting the goals and criteria for success, and championing ecosystem building before, during, and after the event.

Design Challenge Leader

teenyBIG

The Design Challenge Leader, working with the program leader, creates the framework for what design methods are used, defines the expectation for what can be accomplished, and provides insights into traditional design processes versus integrated design processes.

Design Jam Facilitator

Urban Manufacturing Alliance

The Design Jam Facilitator's job is to keep everyone — including the leaders — engaged, energetic, and moving forward. The facilitator has to both respond to the energy of the group and individuals and draw people in by making them feel comfortable to contribute.

Local Leader(s)

Varies

Local leaders are tasked with recruiting local designers, manufacturers, and supporting organizations to participate in the Design Jam. They work in partnership with the program leaders to broadcast the why, how, and where of the Design Jam and help communicate the benefits to all stakeholders.

Manufacturer(s)

Varies

A local manufacturer must be willing to share their company capabilities, what they traditionally make, and where they see opportunities for their company to expand. They must be open to having designers challenge their ideas of what they do and how and they must be open to challenging how the designers think about manufacturing and product development.

Team Facilitators

Varies

Each team is assigned a Team Facilitator to keep the team moving during the breakout sessions. At the beginning of the design exercise, the facilitator leads each team to help establish the collaborative process, assigns someone to help scribe, and someone to keep time. After the expectations are set, facilitators are responsible for asking questions to the team, gaining clarity and feedback, making suggestions on next steps, and promoting discussion and contribution.

Designers - Students and Professionals

Varies

Designers are tasked with contributing their skills and knowledge of the design process to respond to the design challenge. They must be open to feedback and willing to work quickly to go from broad thinking to refined thinking in a short time while processing multiple stakeholders' points of view. Having design professionals from different disciplines — for example product design, industrial design, architecture, graphic design — provides multiple points of view of what design is and how it can be applied to create a successful product. Design students — in high school, undergraduate, and graduate schools — are invited to participate to gain more exposure to design and non-design professionals. This also provides them an opportunity to apply what they have learned in their classrooms to industry projects.



Teamwork & Spontaneity

All participants come to the Design Jam with preconceived ideas about how designers and manufacturers work. These beliefs are what tends to get in the way and limit interactions within the ecosystem. These same beliefs are what UMA and partners are working to change with the Design Jam program. Participants in the Design Jam event need to have a willingness to work together, quickly and spontaneously. Everyone needs to be open to hearing something unexpected and open to learning about what other individuals within the same ecosystem value and what drives their motivations.



Design Jam Detroit

ABOUT DESIGN JAM DETROIT

Design Core Detroit partnered with UMA and the College for Creative Studies to run Design Jam Detroit. Burke Architectural Millwork (BAM) opened their facility as inspiration for the design community. BAM is a woman-owned, custom architectural millwork manufacturer and interior finish contractor based in Metro Detroit. BAM's technologically-advanced facility is a one-stop shop for all types of wood, metal, plastic, and stone fabrications.

Participants developed designs for point-of-purchase displays for food in hospital settings. With the backdrop of the pandemic in mind, teams created solutions ranging from carts stocked with pre-packaged food and mini cook stands for making food on demand to modular mobile carts that could help deliver food floor by floor.

Kelly Victor-Burke Story Burke Architectural Millwork

Kelly Victor-Burke is a hands-on business owner who sees both the minute details and the broader vision of the manufacturing industry. Burke Architectural Millwork has a special place in her heart; it's the reason why she started the business.

"It was a combination of my father passing away, and him leaving us a gift," she said. "Barry, my husband, and I wanted to honor him and pay it forward. At the same time, we were having regular conversations about starting our own company, and that we could do things in a better way." They wanted a company that would do woodworking differently, and make an impact beyond making



money. “We are not only producing the finest architectural millwork, but we’re also giving back to our employees and our community.”

The couple wanted to run a company where women and people of color were active participants, to counter the lack of representation that they were seeing in the industry, and change its perception. “There has been this misconception that the woodworking industry is the career choice of last resort, as opposed to the fact that these are well paying jobs,” she said.

Barry has been in the architectural millwork industry for over 25 years, but works both in the office as president of the company and on the shop floor on every project. Both Kelly and Barry are examples of the types of employees they want: capable of working both the white- and blue-collar sides of the business. They see removing the front/back office divide as the best thing for their company, in contrast to the other companies where cross-functioning is not done.

They also want to minimize the gap between design and making: “There was this constant schism between the employees that worked out on the shop floor versus the front office. There was a high rate of return of projects because they weren’t done to specification. So for our company, we have cross-functioning not as a goal — it is just the way it is,” said Victor-Burke. “Nothing comes back. We do it right. We do it the first time. It never comes back.”

Burke Architectural Millwork mainly fabricates commercial woodwork on projects nationwide the U.S. Although demand for such projects has slowed down during the pandemic, they have started to do work for the high-end residential sector.

“Pre-COVID, the bulk of our business and really our specialization was in bars and restaurants in the hospitality sector,” she said, before naming some of the prominent projects in Michigan that they have worked on. “We did the millwork for Cork & Gabel (an Irish,



Italian, & German restaurant with a full bar) in front of the Michigan Central Train Depot. We did Vertical Winebar in downtown Detroit. We've done a lot of work at University of Michigan. We did Cantoro Trattoria restaurant, both when they were in Troy, and also the one that they have now in Northville. Now we're beginning to do a lot more retail, which is very exciting."

The process from design to construction depends on how quickly each project advances, and the collaboration with the design consultants whose drawings set the boundaries for her millwork. "We work with both designers and architects, and we're the millwork contractor on the job. So that means we are part of the overall discussions from the inception of the project," she explained. The completion of the millwork depends on the progression of the project, and not vice versa. Even though millwork can often be a small element in the scope of a project, its installation depends on the advancement of that project.

"The progress depends on a lot of things. What is the status of the building? Is it a new build or a remodel of an existing space? Once we get to the stage of making the shop drawings, the process begins to really quicken. Once we have a sign-off on the shop drawings, that's when we start cutting the material and then fabricating. A typical project is probably going to take us about two to three months to fabricate and then install. If we're not installing, we just put it on the back of a truck, and then somebody else does the installation."

Despite spending 90 percent of her time in the front office, working in the shop on the ideas that designers bring to her is her favorite part of her job. "I just retired from my career in teaching in higher education. Five years ago, I didn't know anything about woodwork manufacturing. So having to learn about it has been an incredible experience," she said. "This one particular designer Nicholas Giammarco, at Studio H2G, did a sketch and just gave it to us and said, Okay, well you guys figure it out. For one project, we had



to build a two-story wine-box wall in our shop, then we had to fit into where the circular staircase was on site, with this big hanging chandelier that they didn't take down when we came to install. The detail was, you have to make it look spectacular." To see the entire project start to finish: <https://youtu.be/UxGBFql8Rq0>.)

To help her design and install these exquisite projects, she finds ways to mentor her employees, no matter what position that they hold. Mentoring also inspired her to create the new Department of Labor registered apprenticeship/occupation, Woodworking Manufacturing Specialist. She drafted the initial framework to address the employment gap in the wood products industry through cross-training and upskilling new and existing employees in a combination of CAD, mechatronics, wood processing, coatings, estimating and project management. After three arduous years, the federal government approved it.

"We had an employee who came to us and said he'd like to do a registered apprenticeship with us. This person, who before this had said he was going to a four-year university for an engineering degree, really shocked us," she recalled. "Looking at the established apprenticeships, I found them completely lacking. For example, the drafting apprenticeship with the U.S. Department of Labor was created in the 1960s." Their solution was to think about what they would want an apprentice to do for them as a small business that would benefit their business and other woodworking companies.

As a result of Victor-Burke's work in creating this program, any person in the U.S. can get this apprenticeship. According to her, getting it passed was only step one. "Step two is now we have to go out and tell people about it. We have to tell the industry, we have to tell businesses, and most importantly, we have to do a very strong campaign, where we're telling people, young people in particular, this is something that you should look at."

Detroit

Data About City

TOTAL DESIGN JAM PARTICIPANTS

54
total participants*

- 6** Facilitators
- 6** Manufacturers
- 7** Maker / Entrepreneurs
- 8** Practitioners
- 9** Professional Designers / Design Faculty
- 18** Design Students

(not including UMA team and local leaders)

*Individuals identified which title best fit themselves when registering for the Design Jam event.

PARTNER DATA



1,317 Design Students
100 Undergraduate and Graduate Design Programs
100+ Partner Brands



100 Member Companies
250 Businesses Served each Year



Design Jam New York City

ABOUT DESIGN JAM NEW YORK CITY

UMA, Manufacturing and Industrial Innovation Council (MaiiC), and the Pratt Center for Community Development brought together the owners and employees of New York Embroidery Studio and Taxicab Products to (virtually) open their facilities, share their manufacturing expertise and insights, and participate in a three-hour Design Jam. Design students, design professionals, manufacturing experts, and stakeholders worked together in small teams to develop new product ideas for schools in New York that need new ways to keep students safe and learning during the COVID-19 pandemic. Solutions ranged from modular dividers that could be used as games and learning materials, to bubbles for students to play inside, to new mask and face shield designs. All proposals leveraged New York Embroidery Studio's manufacturing capabilities to cut, sew, and embellish fabrics and materials, and Taxicab Products' abilities to cut, form, and assemble polycarbonate and plastic sheeting.

Alberto Villalobos Story Taxicab Products

When Alberto Villalobos' grandfather started Taxicab Products not long after immigrating to the United States from Cuba, it was in response to a series of tragedies.

In the 1970s and 1980s, when his grandfather was a New York City taxi driver, several of his colleagues and friends were murdered.



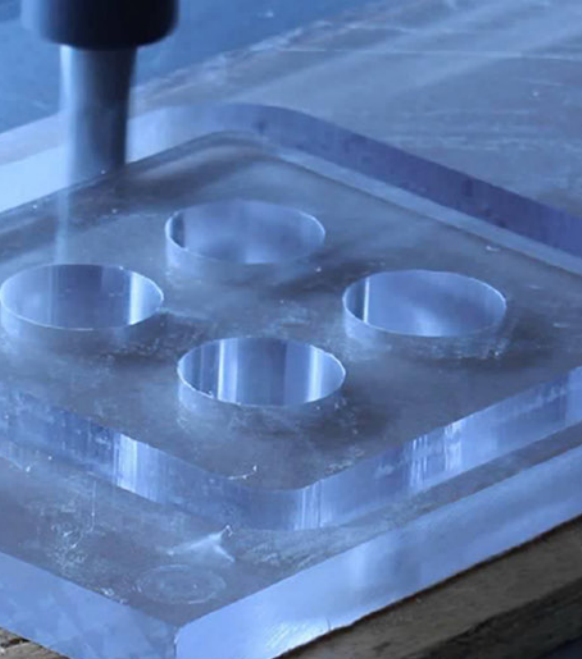
Being a handy person, he felt that there was something he could do. In 1986, his grandfather started his own company manufacturing the first taxicab safety shields which would soon become almost ubiquitous across the city. The company was eventually passed down to Villalobos' father, and then to Villalobos himself, though his father still owns 50 percent.

While the business started to protect drivers from violent passengers, these days, the company creates shields to protect drivers during the pandemic.

The best part about designing products for cab drivers is that they are very vocal and descriptive about their needs. "I need to replace this piece, because someone tried to stab through it," says Villalobos, paraphrasing an example of the types of requests he's received over the years. "It's a different landscape right now with COVID, but I think the intent is the same. We try to make the best product to keep both drivers and passengers safe."

Unlike the inside of a private vehicle that may only be used by the same number of people daily, the inside of a taxi cab can be used by hundreds of people a day. How different is the manufacturing process between moderate heavy use and extreme heavy use? "We have engineers who design things to be as heavy duty as possible," he said. "If you think you need x in terms of strength, we're going to add 10 to 15 percent more strength than what you think is necessary, just because our experience in the taxi industry tells us that you'll need it."

Designing products to be sturdy enough to withstand the excessive usage experienced in America's largest city has also helped the company get contracts from other clients who need durable vehicle interiors. They also manufacture products for the Fire Department of New York (FDNY), the city's Metropolitan Transportation Authority (MTA), and even as far away as the taxi industry in North Dakota. "The same materials for conventional automotive accessories that you'll see on Amazon are not for mass transportation," explained



Villalobos. “So it looks good, the price is good, but a lot of times, it’s just not as effective.” The lack of quality from overseas manufacturers gives companies like Taxicab Products an advantage, because they can use their close relationship with their clients and their knowledge of how robust products should be designed. Despite their expertise, some of Villalobos’ clients still learn things the hard way.

“Throughout COVID, we were designing protective products for taxi and Uber drivers. We have the most expensive products on the market, no question. Some of those customers come in, they’ll scratch the price and say: No, you guys are way too expensive. This is a temporary partition,” he describes. “Then, about a month goes by, and they come back like: whatever I got from someplace else, it’s already broken. Now they’re willing.”

This awareness of what works and what doesn’t work is less obvious to fleet owners than individual cab drivers according to Villalobos. The people who own fleets are removed from the daily usage of the products, so they tend to value low cost products more. In contrast, the individual drivers who witness the wear and tear of the upholstery, shields, and other accessories are more willing to spend more money on better design. The direct line between Taxicab Products and the driver leads to a better appreciation of design.

“We have a more consistent relationship with cab drivers because we see them everyday. With a fleet owner, we may only see them once,” he said. “Drivers give us daily information that we can immediately take to the shop floor. Some fleet owners send their shop managers to meet Villalobos, which makes up for the distance between user and designer.

For now, he hopes the reputation of Taxicab Products gets them more public contracts, similar to the one with the FDNY — steady work that is both recession and pandemic proof.

Michelle Feinberg Story

New York Embroidery Studio

For more than 30 years, they have been the go-to company for embroidery in New York's fashion industry, all from their location in the middle of Manhattan's Garment District. If you wanted to create a small business that could be successful supporting a larger industry, you would create the New York Embroidery Studio (NYES). Their envied position did not come overnight. Since its inception, the studio acquired nine other companies, and amassed a wealth of quality machinery the industry needs. "We have a tremendous amount of equipment. From turn of the century technology to current, state-of-the-art, brand new welding equipment," says Michelle Feinberg, owner of NYES.

Feinberg has been very patient while growing her company, and is now benefiting from sustaining close relationships with fashion designers that took years to build. Some have never left her, while she has stuck close to them. Instead of following many competitors who left the Garment District in search of more affordable rents, she stayed right where she needed to be. To hear her explain it seems like she made the best decision. However, that's not what it felt like in the moment.

In the 1980s, she worked for a company called Manhattan Scalloping, what was then a century's old manufacturing embellishment factory. As soon as she graduated from college, Manhattan Scalloping went out of business. The equipment was sold to a company called Mona Slide Fastener, and through certain connections, the owners were made aware of Feinberg. They wanted her to help them get the company started, because she knew how to operate the machines. A little while after that, she became a partner in that business. Then 9/11 happened, and forced her to make a career-changing decision.



“After 9/11, the owner of Mona Slide Fastener wanted to move the business to the Bronx,” recalled Feinberg, “but I felt my customers were here in Manhattan. So he went and I stayed. And that’s pretty much how it’s been. I’ve been doing my thing here for years.”

In-house technology and a location in a high-profile cluster have made NYES highly sought after. Fashion designers may compete or collaborate with each other, while some may even relocate to a different part of Manhattan, or to another borough altogether. Nevertheless, many of them value the expertise and the experience of NYES. “We’ve worked with all different fashion designers from different companies and brands,” said Feinberg. “As they’ve moved around, we’ve stayed pretty consistent. We’ve been in the same location for 30 years. So that’s enabled us to build our network of design customers.”

What separates NYES from other studios is that they know fashion designers well, know what they want, and bring them personally into the shop. “Because of our creative studio, we engage them in the design process, and they can come right here to see how our machines work,” she said. “They can create in tandem with us, because we’re flexible when it comes to showing people what the machines can do, and how they can make their visions come to life.”

But, much like 9/11, the pandemic has forced her to adjust her business based on the new reality. When COVID-19 hit, Feinberg reached out to local elected officials and healthcare agencies letting them know that she could manufacture PPE in NYC. NYES was the first named essential business to open back up after the city was shuttered. NYES pivoted business so well that they are now making approximately two million gowns per month, along with face masks and shields.

Of course Feinberg is producing PPE to keep her factory busy waiting until the fashion industry starts back up again and the



pandemic has forced her to adjust how people work in the studio, while still retaining the collaborative atmosphere. The transition was easier for some than others. “We had to space everyone, and not everyone was willing to work. People used to share machines, and now we ask for single users. We disinfect everything, and take temperatures and contact details for visitors. Some employees did not return and new people needed to be hired.”

Feinberg is a hands-on leader, and fashion designers love that about her. They know that when it comes to designing trims or embossing, that working with NYES will deliver on their design. “I’m involved in all aspects of the creative process, and I definitely have certain customers that do want to work with me. But I do have an amazing team of artists for them to work with too,” explained Feinberg. “I think it’s a great place to learn all different types of machines from pleating to three-dimension printing. We offer direct to garment printing, distressing, strapping, tucking and all different types of services. It’s hard for anybody to step in and know all of those things, but my team does.”

The studio is a place where people can learn specific skills which she calls “dying arts,” at least for anyone in North America. “I feel like the fashion industry as a whole is a fairly tough way to earn a living. I’ve seen it just steadily decline for the last 30 years. But anybody that feels excited or passionate about embroidery and making things, there’s definitely a living to be made.”



New York

Data About City

TOTAL DESIGN JAM PARTICIPANTS

67
total participants*

- 5** Maker / Entrepreneurs
- 7** Facilitators
- 7** Manufacturers
- 8** Practitioners
- 14** Professional Designer / Design Faculty
- 26** Design Students

(not including UMA team and local leaders)

*Individuals identified which title best fit themselves when registering for the Design Jam event.

PARTNER DATA



360 Members (Business, Academia, Service Providers)
150 Businesses Served each Year



1,524 Design Students
5 Undergraduate and Graduate Design Programs