

# *Strength in Numbers*

*Public-private partnerships—such as those currently steering the development of connected and autonomous vehicles—are the wave of the future, helping manufacturers tackle the challenges that are too big, complex, and expensive for a single company to take on.*



**By Steven H. Hilfinger**

**B**IG NEW IDEAS ARE CHANGING THE SHAPE OF THE manufacturing industry. There is no better example of this than in the U.S. automotive sector, which is experiencing a renaissance thanks in large part to the rise of big ideas in advanced mobility, including the emergence of connected and autonomous vehicles that promise to change what it means to design, produce, service, own, and operate cars.



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But for manufacturers, making such vehicles will be only part of the equation; making them both workable and safe over thousands of roads and millions of miles across multiple states will be another. And, while each automaker can plan how it will participate in advanced mobility, beyond its proprietary technology and methods lies a plethora of large, complex, and costly infrastructure, legal, and social challenges—such as public safety, policy, liability, and insurance—that will need to be met to get our drivers and roads prepared for autonomous driving.

In the State of Michigan, where I recently served as Chief Regulatory Officer and Chief Operating Officer for the Michigan Economic Development Corporation, leaders are looking to public-private partnerships to address the challenges of advanced mobility. With more than \$12 billion of private research and development invested in the automotive industry every year in Michigan, there is a huge incentive for both the industry and state government to get things right with advanced mobility. That is why the Detroit Regional Chamber of Commerce formed MICHauto, a public-private partnership (P3) and, together with other partners—including the State of Michi-

gan—launched the Michigan Mobility Initiative this past May. Their mission: To grow the state's role as the global leader in smart mobility technology.

Michigan is not the only state and advanced mobility is not the only issue inspiring P3s today. As big new ideas abound in manufacturing, often the long-term scale, financing, and risks of research, development, and commercialization are more than any one company or federal or state agency wants to bear or can pull off on its own. That's why manufacturers and government agencies, universities, and others have formed P3s to advance everything from 3D printing to modern manufacturing materials, the digitally-integrated manufacturing enterprise, and even the development of transformative real estate projects.

A well-structured P3, such as the Michigan Mobility Initiative, will allow manufacturers to participate in their value-added areas, protect them, and grow them by leveraging valuable resources from governmental and non-governmental entities, including, some-



improvements, economic development projects, and even disaster recovery, and other social welfare initiatives.

Although P3 projects will typically have a financing component, it does not necessarily have to drive the project. Any time there is a project or service that cannot be executed with public or private participants alone because they require extensive skill sets, technologies, or capital, a P3 can be used to apply advocacy, economic development, and financing at the right scale and with the right parties at the table.

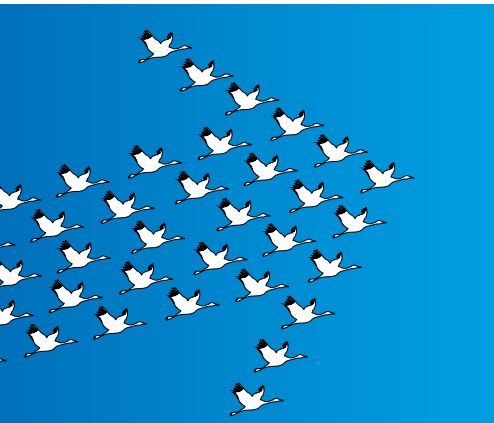
The benefits often go beyond just those companies that are officially part of a P3. Many P3s have a broad public purpose. For example, a public construction project might also help with local job creation, talent attraction, and spin-off development. Or a P3 that builds new telecommunication infrastructure will benefit all local companies by providing faster service, which impacts the efficiency of business operations. In turn, such improvements are likely to attract new businesses that contribute to economic development. In addition, companies that are thinking about relocating or expanding in a specific region might be lured by the type and number of P3s in that area, reasoning that P3s provide a glimpse into how that region func-

tions, the health of its infrastructure, and its level of commitment to economic growth—all important factors to know.

### ***Launching a P3***

**G**etting a P3 off the ground requires detailed economic analysis, complex negotiations, intense public scrutiny, long-term commitments, and political leadership. While larger companies in the private sector often maintain personnel devoted to these kinds of complex deals, only a handful of states—Virginia, California, and Michigan among them—have set up dedicated offices with the legal, financial, and technical capacity and expertise needed to consider and structure P3s. Still, public financing strategies in the U.S. are starting to change, and a growing number of states are passing legislation that enables them to tap into the P3 market.

While the majority of P3s are initiated by federal or state agencies, the private sector can also drive them. In Detroit, the Red Wings hockey team and its private developer owners proposed the development of a new and transformative downtown event facility that will be home for the hockey team as well as concerts, shows, and other major events. Surrounding the proposed site between mid-town and downtown Detroit is a large area of under-developed land. When completed, the event facility, with a projected cost of



**There are simply some things that are better done at scale. **Connected and autonomous vehicle development** is one of those things.**

at least \$450 million, could bring new residents, businesses, and tax revenue to the city. With the private sector expected to finance roughly 56 percent and the public sector 44 percent of the total project costs, the new event center will anchor a 45-block area of commercial and residential redevelopment that will further connect these two vibrant areas of the city. The city's role includes some land transfers and zoning support, while the state's role includes continued commitment of dedicated tax revenues to the project and assistance with the demolition of the old hockey arena. The developers—the Red Wings owners—will be bringing another \$200 million to the table for the redevelopment surrounding the arena. Thus, a transformative and catalytic P3 was born.

Because such a P3 involves complex legal and regulatory issues that need to be identified at an early stage—when the parties are drafting a memorandum of understanding or letter of intent to identify the project and what each of the entities are bringing to the table—it is important for a party participating in a P3 to consult legal counsel and other professionals early. The legal authority of and risk allocation among the various parties, the financing plans, and related tax and financial impacts, need to be established at the onset.

### ***A Wave of P3s in Manufacturing Research and Development***

**A** new wave of partnership between industry, academia partnerships, and the research community is emerging to advance American innovation in manufacturing, as evermore-complex, early stage, and promising technologies require not only funding but also collaborative expertise. Thus various advanced manufacturing-focused P3 initiatives are

being formed, initiated by industry, academia, and government.

For example, a growing network of tech-targeted institutes for manufacturing innovation are being formed and supported by the Nationwide Network for Manufacturing Innovation (NNMI), a P3 established by the federal government to scale up advanced manufacturing technologies and processes. These institutes will share common goals of nurturing manufacturing innovation and accelerating new technology commercialization, yet each will have a unique concentration. These P3-based institutes are designed to foster pre-competitive collaboration in cutting edge technologies and solve industry-relevant problems.

Each institute will serve as a regional hub, bridging the gap between applied research and product development by bringing together companies, universities, federal agencies, and academic and training institutions to co-invest in key technology areas that will foster U.S. investment and manufacturing competitiveness. These institutes represent a unique opportunity for the education and training of students and workers at all levels, while providing shared assets that can be used to help manufacturers. Most importantly, small manufacturers will gain access to cutting-edge capabilities and equipment, allowing them to design, test, and pilot new products and manufacturing processes.

The first of the advanced manufacturing institutes supported by the NNMI P3, America Makes, was established in Youngstown, Ohio, in 2012. It is a research, development, and training facility focused on reducing the cost of additive manufacturing (3D printing), connecting small business with new opportunities, and training American workers to master these sophisticated technologies. America

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Makes received a federal contribution from the Department of Defense of \$50 million and \$39 million in matching private funds. In its third year of operation, the institute has launched research that will help accelerate the speed of 3D printing in metals by a factor of 10 and is partnering to provide more than 1,000 schools with access to 3D printers. America Makes has also initiated new workforce training programs that have trained more than 7,000 workers in the fundamentals of 3D printing. In addition, the institute is serving as a magnet for investment in the region. Last November, GE announced a \$32 million investment in a new 3D printing research facility in the region, citing the advantages of locating near America Makes.

In Detroit, the American Lightweight and Modern Metals Manufacturing Innovation Institute, also under the NNMI umbrella, brings together a 60-member consortium that pairs the world's leading aluminum, titanium, and high-strength steel manufacturers with universities and laboratories pioneering new technology development and research. Collectively they aim to expand the market and create new consumers of lightweight, high-performing metals and alloys by removing technological barriers to their manufacture.

Additional NNMI P3 institutes have been launched or announced for the research and development of technologies such as wide bandgap semiconductors, advanced fiber-reinforced polymer composites, flexible hybrid electronics, integrated photonics, clean energy manu-

facturing, and revolutionary fibers and textiles.

All of these initiatives have the potential to create jobs and become talent magnets in key manufacturing regions. When graduates and other engineers see that a state such as Michigan is making investments in a particular manufacturing niche, it tends to attract people who want to be close to that niche and be a part of its development. This will strengthen all U.S. manufacturing innovation and leadership. Such P3s should be recognized and encouraged to ensure manufacturing in the U.S. continues to have a healthy future.

### ***Getting Involved***

**H**ow does a manufacturing company get involved with a P3? There is no one answer here. Some P3s are trade-group-driven, some are industry-driven, and some are a combination. But dialogue with government entities including regional, state, or local economic development agencies is usually a good place to start. Such agencies have access to a lot of federal, state, and local resources as well as knowledge of potential partners. For example, in Michigan, Pure Michigan Business Connect, a project of the Michigan Economic Development Corporation ([www.michiganbusiness.org](http://www.michiganbusiness.org)), matches up companies with common needs and brings together customers and suppliers. Other resources that companies may choose to access include the Small Business Administration ([www.sba.gov](http://www.sba.gov)), Small Business Development Centers in various jurisdictions, and [www.manufacturing.gov](http://www.manufacturing.gov), which posts lists and links to federal initiatives and provides information pertaining to where businesses can learn more about collaborations and funding. Additionally,

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federally-funded research may be generally available to U.S.-based researchers, with access rules, costs, and provisions for proprietary research determined by the individual facilities and their funding agencies.

Through other types of partnership and collaborative innovation, manufacturers are challenging each other, solving problems at scale, and helping to improve manufacturing competitiveness. Late last year, Ford announced that it is making 20 percent of its patent portfolio—over 400 patents in the electrification area—available and open to competitors in order to foster more collaboration and faster development of its electric car program. And in March, 2015, the U.S. Department of Commerce (DOC) launched The Manufacturing Extension Partnership (MEP), part of the DOC’s National Institute of Standards and Technology, which plays an important role in supporting our nation’s small and medium-size manufacturers.

The MEP state/federal network of 60 centers and 1,200 manufacturing experts will help small manufacturers improve their production processes, upgrade their technological capabilities, and bring new products to market. It will award approximately \$316 million annually for five years—\$158 million in federal funds matched by \$158 million or more in private investment—to operators in 12 states to strengthen and reinvest in creating the

nationwide network of manufacturing expertise. Nonprofits working with manufacturers in each of the 12 states will have the opportunity to compete for cooperative agreements allowing them to operate MEP centers and expand the range of production and technology-acceleration services offered to small and mid-sized manufacturers. The DOC also expects to launch new competitions over the next few years to strengthen the MEP network of centers in every state.

***Fueling Innovation and Economic Growth***

**C**ollaboration and advocacy through public-private partnerships are fueling innovation, economic opportunity, and growth, and delivering significant benefits to the public and private industry, particularly U.S. manufacturers. We are seeing this at work in Michigan through the Michigan Mobility Initiative and in other important ways.

The key to establishing and advocating for successful P3s: Don’t go it alone. Big challenges need big ideas and big partners with big resources. Get involved. Pursue advocacy through collaboration with your trade groups and economic development partners, and catch the wave of P3s. Some things are best achieved collectively. **M**



**P3s are used for any variety of projects or services that have a public interest and require a heavier lift than any one party can logistically pull off on its own.**

