



INDUSTRIAL INTERNET INVESTMENT STRATEGIES: NEW ROLES, NEW RULES

New Research by the Industrial Internet Consortium Suggests a New Breed of
Venture Industrialists Are Reinventing Investment Models

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“Now is the time. Not five years before and not in two years. Start now. Join forces. Don’t wait until you’re pushed back one, two or three positions in the supply chain.”

- Thomas Weber, Director, Bosch Software Innovations

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“There is no business as usual. You won’t find it easy to get stakeholders aligned internally. Parts of the company will have entirely different ideas. Big companies can be tough places to effect change. Come to the table not thinking you have all the answers. These are seismic shifts happening, enabling a completely different way of solving problems with completely different types of information. Companies that don’t recognize the magnitude of the change and don’t recognize how fast things are moving are going to lose. If it’s still business as usual for these companies, most of them are going to wake up in a few years and it will be over for them.”

- Robert Locke, Senior Vice President, Corporate Development, Tyco

SUMMARY

The Industrial Internet, or Industrial Internet of Things (IIoT) represents the next big wave of innovation and will fundamentally transform industrial sectors of the economy. McKinsey Global Institute estimates an annual economic impact of \$2.7 trillion to \$6.2 trillion by 2025¹. Gartner estimates it will lead to a digital workforce and smart machines that will replace 1 in 3 knowledge workers by 2020². General Electric estimates that the Industrial Internet could add \$10 - \$15 trillion to the global GDP over the next 20 years³.

This transformation has already started, yet the Industrial Internet is still in its infancy stage. Given the trillions of dollars at stake, there will be a wave of investments: in companies, in processes, in technologies, in capital equipment and in people.

Last year, the Thought Leadership Task Group of the Industrial Internet Consortium commissioned a project with Judith Kelley, principal at New England Partners, on investment strategies around IIoT. We wanted to find out what was changing, how companies were evaluating new opportunities, and what were considered best approaches.

What we found was that traditional investment models simply don’t work. As one Venture Capital executive told us, IoT is turning the Venture Capital model upside down. We dub this new role the Venture Industrialist, a new role played by new rules.

The goals and timelines have shifted. In Industrial Internet environments, ideas don’t have to be broad and fine-tuned; they can be narrowly focused and under development. Speed and flexibility are critical success factors. In this area, the goal is to transform existing businesses or to create an entirely new business. The new investment hot spots are around innovation that targets operational efficiencies that can save companies tens of millions of dollars.

In this environment, many companies are opting not to ‘go at it alone’. Ecosystems such as the Industrial Internet Consortium are emerging, enabling public and private companies alike to collaborate to drive innovation and subsequently, to profit from new technologies, applications and approaches in the months and years ahead.

¹ McKinsey Global Institute, May 2013; ² Gartner Symposium ITXpo October 2013

² Gartner Symposium ITXpo October 2013

³ General Electric: Industrial Internet, Pushing the Boundaries of Minds and Machines, November 2012

1. UPENDING THE TRADITIONAL INVESTMENT MODEL

To “upend” something means to turn something upside down or turn it over. Speaking to companies who are involved in the Industrial Internet of Things, or Industrial Internet, we’ve heard the term applied to traditional investment models. These models simply don’t work for them. Or, at least, they aren’t the dominant model for investment.

To find out what was going on, the Industrial Internet Consortium decided to ask some of our members, plus a few venture capitalists, if they would share their perspectives on investment strategies for the Industrial Internet. We weren’t looking for actual investment numbers (those stayed off the record). Here are some of the things we wanted to understand and share with the rest of our membership:

- Is the Industrial Internet changing the way traditional investment models work, or why does it need to be augmented with new strategies?
- Is there one standalone investment model that has emerged for all of these companies? Or is everyone pursuing different paths?
- What advice would these companies have for startups and would-be entrepreneurs who hope to attract the attention of the industrial powerhouses?

2. STARTING WITH THE BASICS: WHAT IS THE INDUSTRIAL INTERNET?

We thought that a good place to start a discussion of the Industrial Internet is with a definition. Do all of our interviewees define it the same way? Is it the same as the Internet of Things (IoT)? If not, what’s the relationship between the two?

No one saw the Industrial Internet and IoT as the same, but some saw a structured relationship between them, such as:

- The Industrial Internet is a subset of the IoT
- The IoT is the equivalent of a horizontal technology and the Industrial Internet is the equivalent of a vertical industry
- The IoT is in the consumer world and the Industrial Internet is the world of automation

The Industrial Internet: An internet of things, machines, computers and people enabling intelligent industrial operations using advanced data analytics for transformational business outcomes.

Source: The Industrial Internet Consortium

3. “WHO’S TO SAY WHAT’S PROPER?”

As we dug into the surveys, we were reminded of *Alice’s Adventures in Wonderland* by Lewis Carroll, where a very proper English girl is trying to adjust to a world in which all of the conventions she has been taught are challenged in ways that seem ridiculous.

What’s “proper” in the investment strategies for the Industrial Internet? It doesn’t appear to be the traditional venture capital model. But there is no single alternative, either. And you can feel a bit like you’ve fallen down a rabbit hole into Wonderland when you hear such contradictions as:

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- Patience is essential, but you have to move fast
- Industrial companies are risk averse; but if they don't take risks, they risk losing everything
- Things that are entrenched and immovable have the greatest potential for disruption

"We're building companies to be highly relevant, scale quickly and exit 2x faster than the average start-up. They are built from the ground up to solve real problems with intentional M&A in mind. This isn't unicorn hunting. We're turning the VC model upside down."

- Stuart Frost, Managing Partner & CEO, Frost Data Capital

If Venture Industrialists Had a Job Description, It Might Read Like This:

- Sole focus is the Industrial Internet
- Not part of enterprise R&D or IT within the manufacturer's organization
- Part investor, inventor and strategist
- Does not report up through existing product groups
- Has autonomy in budget and strategy for figuring out the best roadmap for Industrial Internet innovation
- Some portion of responsibilities includes internal development efforts and external relationships around innovation
- External consultants in this role may refer to themselves as incubators or accelerators, but they are pursuing different models for working with manufacturers

While you may not be able to find a job like this posted anywhere, if you're in the Industrial Internet, especially as a startup, you'll want to find the people whose responsibilities fit this description regardless of title and where they are situated in the organization.

4. MEET THE VENTURE INDUSTRIALIST, A NEW ROLE PLAYING BY NEW RULES

"There's a new sheriff in town!" is one of the classic lines from the film genre known as the American western. That line signaled to the audience that a hero had arrived just in time to restore order to a lawless frontier town.

In the new frontier of the Industrial Internet, we at the Industrial Internet Consortium believe there is a new type of investor in town. This person's role is to the Industrial Internet what the Venture Capitalists (VCs) have been in other technology areas.

As we conducted these interviews, it became clear to us that this is a new breed of "investor/inventor/strategist" whose focus is on the Industrial Internet.

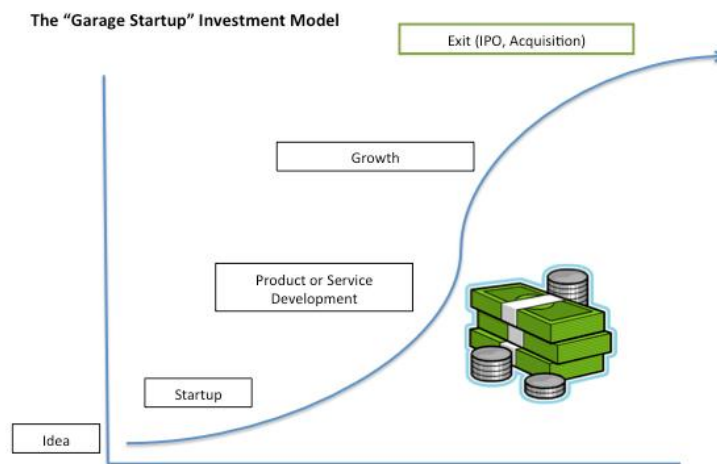
We call them the Venture Industrialists (VIs).

Traditional Venture Capitalists are specialists in making money by investing in technology companies. They are often influential in setting up their management teams and sitting on their boards. The end game for the VC is an exit strategy, usually within a few years of a company's founding, which makes a lot of money. Here, the successful VC invests early—but not too early—and success is based entirely on the fastest and most lucrative exit strategy possible.

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According to the Venture Industrialists we interviewed, the VC model doesn't always apply to the Industrial Internet. Here are some of the reasons that our VIs gave:

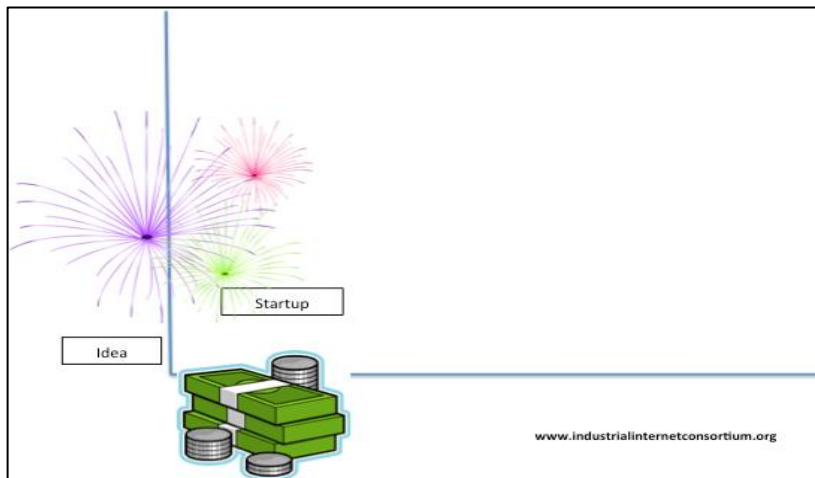
- The VC model simply isn't suited to the Industrial Internet, because there is no "billion dollar" exit strategy in the Industrial Internet
- VCs have money, but they don't have the kind of information about industrial companies and use cases that can help a startup
- The VC community is confused about the opportunities around the Industrial Internet:
 - Why start working with a new model when there's so much money to be made with the traditional model, perhaps in the IoT?
 - The incumbents are too large and the game isn't changing fast enough, And because VCs are known by the areas in which they specialize, there isn't enough money going around to have the larger VC firms dedicate a person to the Industrial Internet



5. IDEAS ARE MORE IMPORTANT THAN EXIT STRATEGIES

The Venture Industrialists are focused at a stage of thought, creativity and innovation that starts as early as the idea stage. In fact, the idea stage seems to be the ideal place to start.

Some of our interviewees were more interested in acquiring people than technologies. Here, they were



interested in people with experience in specific areas, like data analytics software. Attracting talent was cited as a key success factor across the board.

We collected some of the investment advice that our VIs had to offer. The message we heard, over and over, is that the Industrial Internet is at an early stage, where it's too early to

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become rigid about a right way of doing things. In fact, some of our VIs said, quite plainly, that arrogance is one of the things that these industrial companies have to fight against. They've had so much control over their information and processes for so long, that it's hard for them to conceive that they may not have all the answers in this new world – or that they have to share control with formerly disconnected silo'ed groups across their companies.

It doesn't have to be perfect

To once again quote Alice in Wonderland, Alice observes, "I knew who I was this morning, but I've changed a few times since then."

Startups rarely end up as the same company they started out to be, as one interviewee observed. In the case of the Industrial Internet, the commercialization of an idea may likely rest with the industrial customer. Even before that, the industrial customer will have to provide actual data to really start exploring the product or service's viability and financial potential.

One VI told us that if an idea is good enough, they will create the teams and build the companies around it. Another said that they prove ideas in collaboration with each industrial customer, using that company's channels and customers. If the idea becomes a viable business model, the VI can buy the company for comparatively little money as compared to billion dollar VC exits.

Many cautioned against spending resources to create a perfect prototype or demo. The use cases are what are valuable in Industrial Internet scenarios.

"Senior management of big companies ask, 'How the hell do these startups keep beating us and passing us?' It's because, in the traditional model, they might have no one or just one team working on a new idea. But there may be 100 small companies that are addressing the same problem. Mature companies have to find new ways to tap into the smartest people, wherever they are, and work in relatively small teams moving very quickly."

- Robert Locke, Senior Vice President, Corporate Development, Tyco

Don't try to solve every problem with one idea

VIs simply don't believe that one technology can solve all their problems, or even the biggest problem they have. This advice should be reassuring to entrepreneurs who can stay tightly focused on a narrow opportunity.

Where the VI's are willing to acquire, develop or invest is on solutions that solve any real problem with real measurements for customers who are willing to pay for it.

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“Don’t try to solve the biggest problems. No industrial manufacturer will take you seriously at this stage. If anything, I think these companies who are investing in the Industrial Internet would prefer what I call a ‘land and expand’ strategy. Here’s an example: Google Glass, which I would characterize as a horizontal IoT device, looked like a huge market success until it backfired. But then a small company took the same idea and simplified it to viewing color. Based on the color, someone in shipping or receiving would put a package in the right colored bin. The team was completely in tune with the use cases. They knew error rates, time measurements, and all the KPIs. They reduced the eight months of training to less than a couple weeks, and the error rate went almost to zero. There are other applications for the technology, I’m sure. Now they have credibility to initiate conversations about other use cases and discover those KPIs.”

- Jem Pagán, Managing Partner, Flatiron Strategies

Skip the animation on your presentation

Don’t spend a lot of time and money on dazzling presentations. Experience with industrial problems is still a rarity, according to our interviewees. Clever graphics and animation will not dazzle an experienced VI, who knows far more about industrial data and applications than the entrepreneur with the technology story.

Some of our interviewees expressed concern that there is already so much hype in the marketplace that they fear that people will become frustrated and drop out too early.

Ease of use is paramount

When in the early stages of an idea or prototype, focus heavily on ease of use, our VIs advised. Investors want to see that an entrepreneur has thought about how the product can be easily adapted by others in the ecosystem.

“I’m looking at small companies or people wanting to start a company. I’m looking for people who have something simple, not too complicated or too technically challenging. To industrialize an idea or a product might be your job or the job of other people. I’m looking for ease of use because it will be easier to develop an ecosystem or join an ecosystem and show people what you’re trying to do.”

- Thomas Weber, Director, Bosch Software Innovations

Think about use cases

Entrepreneurs will be a step ahead of everyone else if they have developed use cases. Sometimes, this may be more difficult than the development part. With the tremendous leaps in sensor technology, low-cost connectivity options and proliferation of data sources, there are few constraints on innovation. But it’s the use cases—the things for which customers will pay money—that are more elusive.

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“The Industrial Internet is a large space technically—it encompasses the lowest level of embedded systems and industrial equipment to the most sophisticated analytics, data, spatial and cloud technologies. At the same time, you have to be able to formulate use cases with subject matter experts who may not know any of the specific technologies, but who know a domain area. This diversity means the ability to create an ecosystem to help you co-innovate and co-solve is critical.”

- Roger Pilc, Chief Innovation Officer, Pitney Bowes

Be part of the ecosystem

Going it alone is a risky proposition for a startup. This is especially true in the Industrial Internet. Now, there is unprecedented speed and volume of innovation. Manufacturers are experimenting and exploring, which makes entrepreneurs like an all-you-can-eat-buffet. In order to stand out and show more value than the next person, entrepreneurs should try to make the best alliances in the ecosystem.

Industry isn't enterprise with big machinery

Industrial companies can evaluate a small company into oblivion. In part, this is the fault of entrepreneurs who think that industrial companies operate like enterprise organizations with heavy equipment. Similarly, our manufacturing interviewees admitted that there is enough uncertainty on the side of the manufacturer that it is easy to bury small companies with evaluations. Both sides of the investment may fool themselves to the detriment of both. Consultants can be a good buffer and interpreter.

“Too many startups think that industrial companies operate just like the enterprise companies, only with heavy metal. Entrepreneurs who want to be successful in the Industrial Internet need to be intellectually honest about the feedback that they're getting. Otherwise they can read the signs wrong, misinterpret where they stand and get stuck in a tar pit of evaluations.”

- Mike Dolbec, Managing Director, Venture Capital and Business Development, GE Digital

6. CAPITAL ISN'T NEARLY AS IMPORTANT AS ACCESS TO INDUSTRIAL LEADERS

In the traditional VC world, raising capital is important not only to a company's ability to grow but also in its reputation. Those who attract a lot of money, must be worth it, or so the assumption goes.

Yet in the Industrial Internet, more than one VI said that access to information has far more value to an entrepreneur than money. Industrial companies have always been closed off, operating in a largely-proprietary and disconnected world based on custom systems. Getting close to one of these industrial giants can give an entrepreneur much better insights into real pain points, meaningful KPIs, and perhaps even access to data for prototypes.

The power brokers in this may well be the consulting organizations. They offer a way for entrepreneurs to get their ideas in front of industrial heavyweights. This then allows them to get closer to information about use cases, pain points and even that most coveted asset—industrial data.

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“Until recently, big industrial companies didn’t often communicate directly to entrepreneurs about the issues they’re struggling with. Their first instinct is to solve problems themselves or to seek help from other large companies. Taking an open innovation approach is relatively new for them. We’re now seeing more of these industrial leaders communicating and willing to collaborate with startups to help them understand use cases—and commonality across use cases.”

- Mike Dolbec, Managing Director, Venture Capital and Business Development, GE Digital

7. WHAT’S THE DIFFERENCE BETWEEN RACING AROUND A WHEEL AND A TRACK?

Hamsters are naturally active creatures, which is why they require a lot of exercise to stay healthy. Despite that, the hamster wheel has become a negative business metaphor for running very fast and getting nowhere. It’s an odd concept, actually. Do racecar drivers on tracks get nowhere? Or do they win races?

In talking to our VIs, it was clear that—at least at this stage—speed and lots and lots of innovation are more important than careful and refined presentations from innovators and entrepreneurs.

The magnitude of the challenges requires rapid innovation and experimentation. Everyone we interviewed talked about this need for speed. And one VI even said that the company that stands still can be killed competitively.

“Using a sprint approach to software development isn’t new, but using it to create interest and belief in a future probably is. For a year and a half, we invited all the internal groups at Bosch to a bottle party. We told them to bring their Bosch technology and, at the end of the week, we’d have a use case developed. We came up with 10 really good use cases. Two are commercially available. Two will be out soon. Six were shelved or died one way or another. But the commercialization was not as important as the fact that we got so many people in the organization thinking about and even excited about the Industrial Internet and the Internet of Things when they saw no value in it previously.”

- Thomas Weber, Director, Bosch Software Innovations

Given this fast-paced consumption model, entrepreneurs may feel almost like a commodity instead of a high-value ally or acquisition. On the other hand, the opportunities are tremendous. As one interviewee said, processes that have been rigid for decades are now being revisited. Disruption is possible in areas where no one could conceive of disruption before.

Speed has become an imperative for survival. Everyone we spoke to was looking for a different kind of thinking. And since no one is exactly sure what they’re looking for, that means putting a lot of hamsters in a lot of wheels at the same time. Which, in investment terms, translates to:

- Conducting more pilots and sending up trial balloons for more innovations at the same time
- Using the ecosystem to an even greater degree to get more done faster and tap into more sources of innovation
- Involving customers and internal stakeholders in this rapid innovation model
- Looking for innovations in less familiar areas (“at the edge,” as one VI characterized it); the areas most often mentioned were software, analytics and services

8. ECOSYSTEMS PLAY A CRITICAL, IF SLIGHTLY FUZZY, ROLE

We probed the VIs about acquisition strategies and strategic partnerships, the traditional vehicles for acquiring technology on an accelerated basis.

We were surprised at how often the VIs chose to use the word “ecosystem” over partnership. So we asked for an explanation of why ecosystem seemed more popular. Was there an actual difference between the two?

First and foremost, an ecosystem seems more relevant to VIs because of its inherent fluidity. Partnerships may be part of the ecosystem, but they are just one type of relationship.

“You need to surround yourself with different perspectives and backgrounds. That’s why it’s good to have organizations like the Industrial Internet Consortium. Keep an open mind. Don’t get bogged down in process. Your mindset is as important as the market space. You won’t know exactly how you might engage and in what way. You just know that you need to find a way to solve a customer problem and you can’t do it alone.”

- Robert Locke, Senior Vice President, Corporate Development, Tyco

“We use the concept of a bridge maker, which is another way of talking about open innovation. The industrial companies we work with are highly risk averse. Entrepreneurs are nimble and creative, which is what the big companies need. As a bridge maker, we alleviate the risk by doing the due diligence for the big companies. We’re also giving the entrepreneurs more of the attributes they need to represent themselves to these big companies as a viable part of a bigger solution.”

- R&D Executive, Fortune 500 company

Given the pace of innovation, VIs seem to prefer the freedom of thinking in terms of ecosystems. One day a company may be your competition, and the next day your partner. They may be both at the same time, depending on the use case.

9. WHAT TO OWN AND WHAT SHARED RESOURCES TO USE

One of the things that drives investment decision is what a company feels it must own in order to derive a competitive advantage. But the companies we spoke to were not yet settled on this question.

“You won’t see the kind of walled gardens that dominate the large industrial companies today. Open innovation and interoperability instead of walled gardens. Open mindedness instead of parochial thinking. These will be crucial to staying competitive in the Industrial Internet.”

- Steve Teixeira, Director of Program Management, IoT Team, Microsoft

Models for ownership are changing. Companies have a long way to go to figure out what they need to own for a competitive advantage and what they don’t. Standards are still emerging, and VIs are hoping that there will be a preponderance of shared resources available. These resources will not be differentiators, so companies can focus on what will be differentiators. But as that is still unclear for all of the people we spoke to, a comprehensive ecosystem offers more options.

There is also the notion of taking a shared resources, which some see as commodity platforms or technologies, and making it robust, interoperable and secure enough for Industrial Internet use cases.

10. MAKING MONEY ON AN INVESTMENT ISN'T THE GATING FACTOR

“Strategic acquisitions are the new R&D for Industrial companies. For VCs, ROI is the primary driver. Industrial companies make investments based on market conditions more so than for pure ROI purposes. VCs are looking for ‘one big check’ at the end of their investment cycle. Industrial companies are looking for sustained market share (and protection) and market growth from their investments.”

- Jem Pagán, Managing Partner, Flatiron Strategies

The VIs we interviewed aren't thinking about ROI, certainly not in the short term. And the long term is too far away.

In more sweeping terms, VIs talk about gaining operational efficiency that could save their companies tens of millions of dollars. Some companies may be more interested in this than others. But the companies we spoke to said their focus is the longer term goal of transforming existing businesses or creating an entirely new business. And this is where the need for patience emerges.

More has been written about that vision or the Industrial Internet, so we won't cover those new business models here. The important thing, from an investment perspective, is that these VIs aren't being asked to provide a business plan for all of these innovations and innovators.

To find the right use case and make it real—that's the current end game for these VIs at the moment.

The Industrial Internet is ushering in a new era of industrial economic growth. Traditional investment models are giving way to new approaches, led by the Venture Industrialists, a new role played by new rules. We invite you to follow this discussion on www.iiconsortium.org.

APPENDIX

Interviewees

Over the course of six months, we interviewed executives from Venture Capital companies and from investment departments within corporations. While some asked not to be quoted, their input is captured in this paper. In particular, we wish to thank the following individuals and companies:

Mike Dolbec, Managing Director, Venture Capital and Business Development, GE Digital

James Fairweather, SVP of Technology and eCommerce, Pitney Bowes

Stuart Frost, Managing Partner & CEO, Frost Data Capital

Robert Locke, Senior Vice President, Corporate Development, Tyco

Jem Pagán, Managing Partner, Flatiron Strategies

Roger Pilc, Chief Innovation Officer, Pitney Bowes

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Steve Teixeira, Director of Program Management, IoT Team, Microsoft

Thomas Weber, Director, Bosch Software Innovations



ABOUT THE INDUSTRIAL INTERNET CONSORTIUM

The Industrial Internet Consortium® (IIC™) is a global, member supported, organization that promotes the accelerated growth of the Industrial Internet of Things by coordinating ecosystem initiatives to securely connect, control and integrate assets and systems of assets with people, processes and data using common architectures, interoperability and open standards to deliver transformational business and societal outcomes across industries and public infrastructure. The Industrial Internet Consortium is managed by the Object Management Group (OMG). For more information, visit www.iiconsortium.org.

ACKNOWLEDGEMENTS

The Industrial Internet Consortium wishes to thank Judith Kelley, Principal at New England Partners, Dr. Brian Westcott, CEO at Intelligent Structures, Inc. and Amy Quiring, Director - User Experience and Rapid App Development at Tyco, for their leadership on this project.

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