



A Digital Approach to On-Demand Production



Data is king

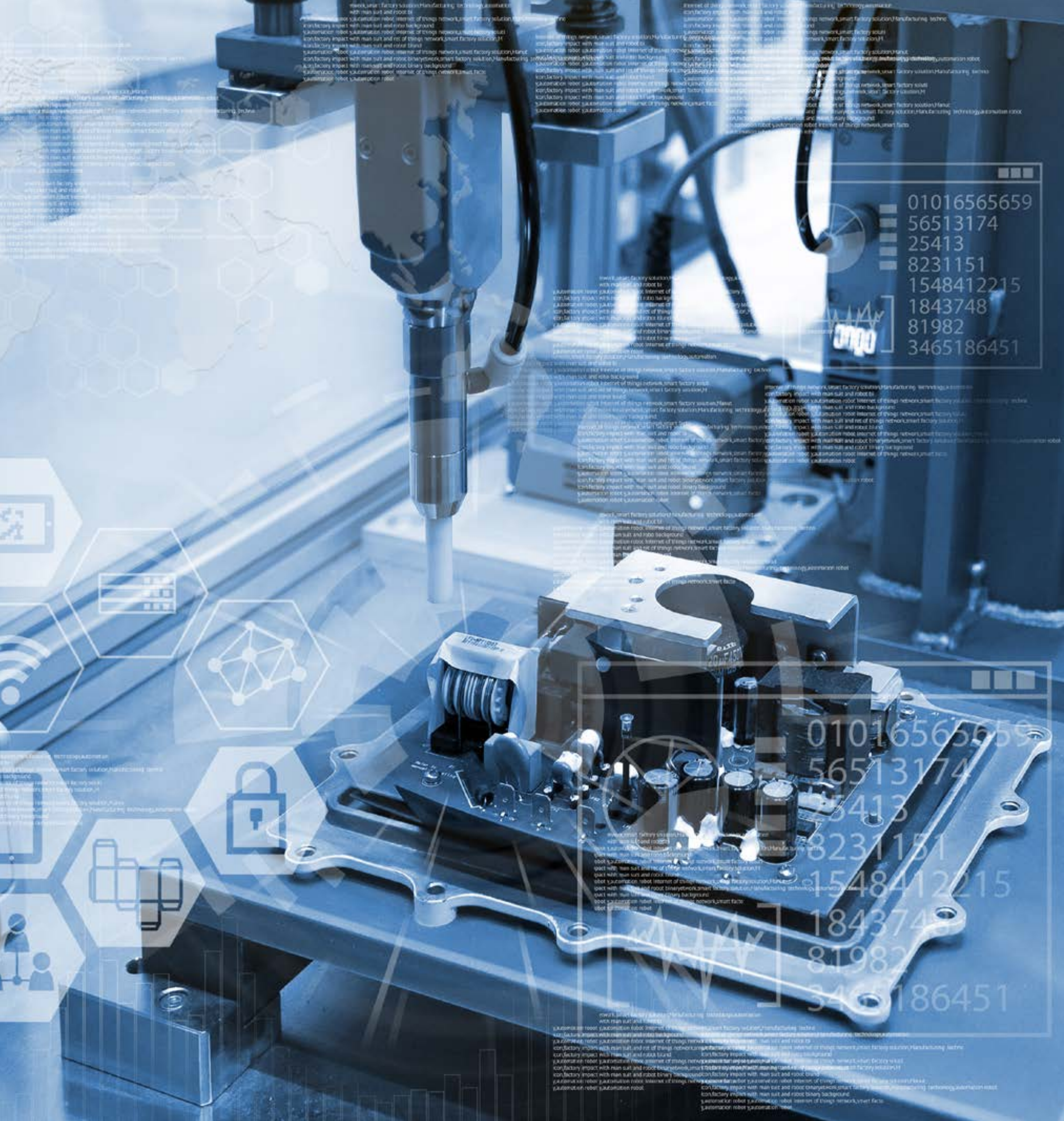
Traditionally, successful production has relied heavily on skilled personnel. Experienced employees installed equipment and implemented processes. Then they relied on their expertise and intuition to keep everything running at peak efficiency.

But times have changed. Today, data is king. Over 80% of companies say data analytics is one of the top three priorities for their company.¹

And the failure to implement robust digital capabilities into your production facilities puts you at a distinct competitive disadvantage. In a recent study, 84% of industrial companies said they believe data analytics have the power to shift the competitive landscape.² In fact, the number one fear of companies being unable to implement a data-driven strategy is that competitors will gain market share at their expense.³

Today, it's the refined collection, analysis, and application of data that optimizes efficiency and productivity. Data-driven predictive asset maintenance can save up to 12% of scheduled repairs, reducing overall maintenance costs up to 30%, and breakdowns up to 70%.⁴

The Aberdeen Group reported that 68% of manufacturers suffer from excessive costs related to materials, labor, packaging, and shipping.⁵ For the most part, these added expenses are due to waste resulting from rework, unscheduled asset downtime, maintenance, and late shipments. Predictive analytics have the power to help reduce all of these issues. In fact, one performance chemical company reports increasing capacity by nearly 20% after adopting a predictive analytics model.⁶



The bottom line: You can't afford to delay implementing a digital strategy

You're tasked with meeting production targets while keeping costs and risk under control. It's up to you to find the capacity to produce what the market wants, when it wants it, and at increasingly higher quality—even when that means quickly changing lines and entire facilities over to new products.

Fickle demand

The demand for change is increasingly common as consumer preferences shift almost daily. The result is a rapidly eroding time buffer between market demand and your production lines. In the past, you likely followed a make-to-stock model, with the luxury of months or years to line up your facilities. Now, products can be conceived, developed, and sold in a matter of weeks or days, and you're forced to compete on your ability to manufacture to order.

Aging workforce

You've always relied on the expertise of your people to achieve production targets. But, simple demographics point to the long-term attrition of operational know-how as your most experienced personnel—often your first, and only, line of defense in responding to machine failures—exit the workforce. Meanwhile, the potential for unexpected downtime builds, threatening to upend all your carefully planned schedules.

Siloed systems

To improve operations, you have automated select activities, primarily by purchasing point-product solutions. But production data is often gathered manually—isolated in siloed systems and different formats. Some manufacturers are taking a holistic, data-driven approach, but your organization has yet to take that step.

Growth at risk

Near-term, you risk not having the flexibility to make the goods people want to buy today. You just don't have the big-picture visibility you need with respect to equipment, people, processes, and materials. In an environment where overall manufacturing growth is stagnant, new revenues can only come from taking market share away from competitors. But, will other more nimble rivals be able to make the products that you can't?



Key challenges of your current environment—and strategies for tackling them

01 **It's difficult to start and stay ahead**

If you're like most organizations, you have equipment from multiple suppliers in plants of various sizes and ages, some of which you built and some you acquired—and no two facilities are the same. To realize benefits across the enterprise, you must create a common system for gathering and analyzing data. But integrating your systems falls outside of your core competencies. And hiring an outside vendor that is unfamiliar with your processes and equipment could result in installing technology that interrupts current output. Meanwhile, as you wrestle with your options, your competitors move further ahead.

48% of those surveyed said they have a talent gap for gathering and consolidating disparate data.

Start with a complete foundation

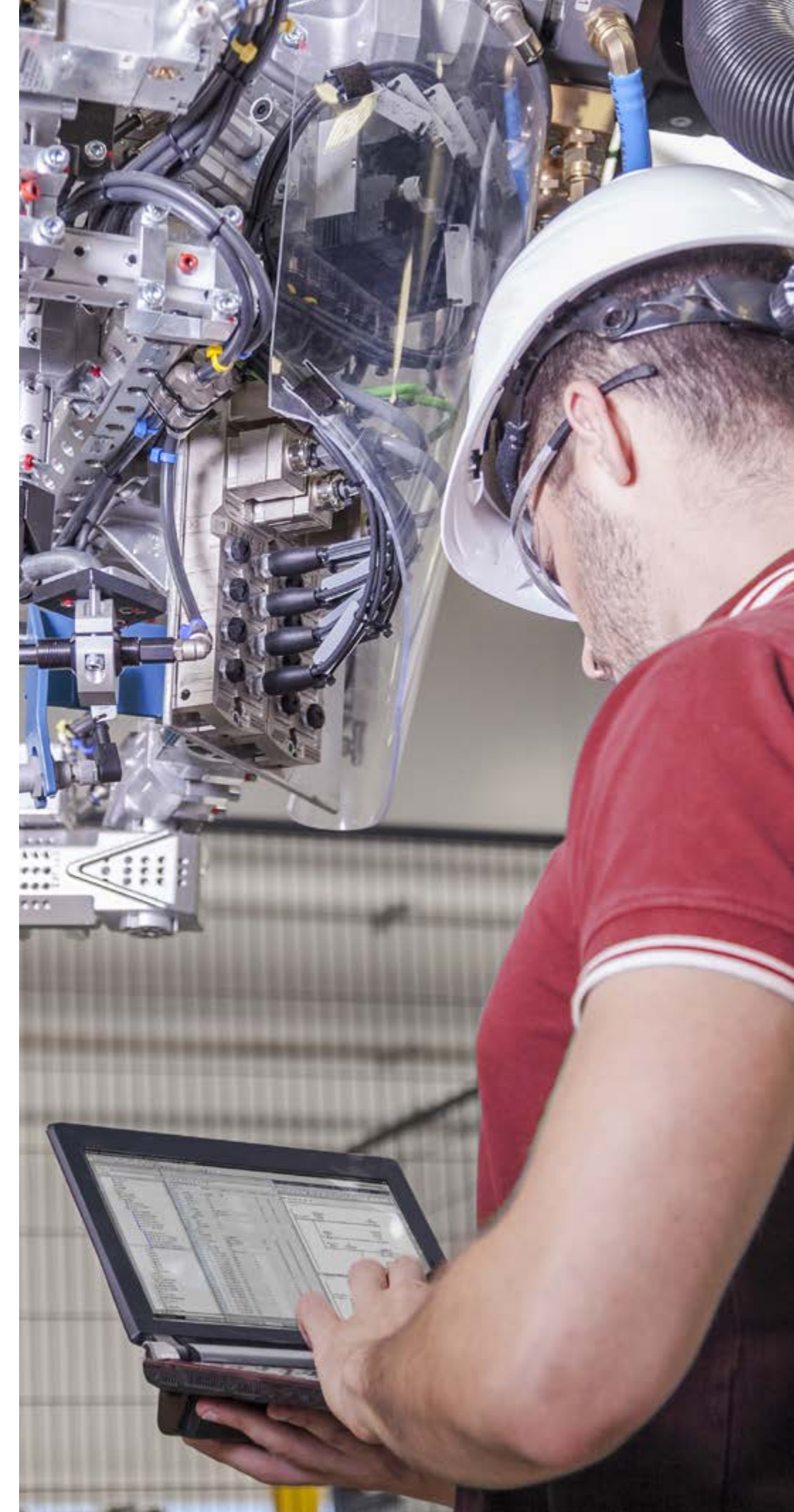
Your strength is production, not software applications and data management. Rather than spend time and resources building your own technology infrastructure, you need a trusted partner with proven skills and tools, including applications and hosting services, to make the transition to a data-driven model a practical reality.

Get the flow of data started quickly and efficiently

The journey begins with standardized connectivity to track data from your plants, equipment, materials, and people. The right partner can help you establish this capability in just a few days. You can then begin to measure and compare equipment metrics and operator practices to identify the reasons for production losses—without making costly investments in additional IT equipment or staff.

Access a single source of expertise

Point products only provide a view into a single production step or technology area. To become a truly digital company you need the enterprise-wide ability to deliver data from the source equipment to the cloud where it can be shared and analyzed. The resulting insights enable you to reduce production losses and drive additional efficiency.



02 **My current system doesn't provide the visibility I need to take action**

Over the years, you've installed separate best-of-breed systems for inventory, production, downtime, and quality—and systems vary from plant to plant. Often, data is relayed from one system to another manually, with corresponding delays and the potential for transposition errors. Some data isn't captured at all. As a result, no one can get a single, up-to-date view of the entire manufacturing process or view the situation from a historical context. When a problem arises, it's difficult to identify the cause. You're forced to rely on the intuition of your most experienced staff—a resource you are steadily losing to retirement. Unable to optimize, you're experiencing too much downtime and scrap produced at your busiest plants, while excess capacity sits idle elsewhere.

Deliver insights to the right people at the right time

When core operational knowledge is isolated in the minds of a few key people, a vital resource is lost. You need to extract the right equipment and quality data from your operations and share it with the right people across your organization in an easy-to-consume format.

Have the information you need

Without complete, uniform performance data from equipment, it's impossible to make valid comparisons. Your partner should be able to help you determine exactly what metrics to track across all your equipment—and how to ensure data is always consistent regardless of the equipment generating it. Standard data will allow you to easily roll up production results across all your lines and plants to give you a single source of the truth.



Show each person what they need to know

No one has time to sift through mountains of raw data to locate what's relevant to them. So, you need to deliver custom information to meet each user's individual needs. You need to be able to provide an operator with real-time performance data on a single machine, material availability levels, and instructions in case of equipment failure. Plant managers need to know which lines need their attention and the likelihood of meeting production targets. Meanwhile, executives need a perspective that spans multiple facilities to spot common problems and initiate programs to resolve them holistically. And all of that information needs to come from the same data stream to eliminate errors and conflicting perspectives.

Understand all the implications of a change

No single operator, process, or piece of equipment lives in isolation—nor should the data they generate. When you can define the relationships between each element of your manufacturing process, you can create a digital representation of your plants. The next time a machine goes down, you can quickly spot the other equipment, operators, and processes that are impacted and quickly redeploy resources. Or, you can use unexpected downtime as an opportunity to perform much-needed maintenance. With real-time data and analysis, your workforce can make informed decisions on the fly.

For 23% of executives, quality and cost of collecting machine data are a top-three barrier to implementing Big Data initiatives.⁷



03 **My plants can't keep pace with changing customer demands**

Using sophisticated data analytics, world-class companies have developed finely-tuned market-sensing capabilities to stay on top of changing purchase patterns. Your company is introducing new products more rapidly than ever, with a direct impact on your daily production schedule. It can take weeks or months—and require a huge capital investment—to make plant changes. And often, before you can switch over to a new product, market demands shift yet again. But, if you can't meet the cycle time of today's market, your customers will take their business elsewhere.

Only 40% of companies surveyed can predict based on existing data and only 36% can optimize operations.⁸

Operate adaptable facilities

Differentiation now depends on reading demand signals from the market and synchronizing your output accordingly. And using information is the most efficient and successful way to adjust production and account for issues related to materials, equipment, people, and processes. You can track each component as it moves through each stage of the manufacturing process, regardless of how many mid-stream changes you make. By being able to quickly and efficiently switch production, you maintain margins even as your run sizes diminish, profiting from the new market model.

Quickly identify the steps needed to change production

Your existing facilities were not originally intended for today's small runs and rapid change-overs. Complete visibility into all your plant's operations makes rapid output shifts possible. Plus, you will have the information necessary to generate new bill of materials, reroute components, change equipment schedules, and re-assign employees—allowing you to keep pace with today's shorter demand cycles.

Make quality a fixed point of excellence

Your ability to monitor the production process ensures you are making each component correctly. Any deviations from the engineering specifications surface in time to adjust equipment before you create unusable products. And you can monitor the quality of individual products as they are made and identify areas of rework so only the highest caliber goods are shipped. You consistently meet your goals for superior products and delight your customers.

Know the entire history of a product

Rapid changes to your product mix make step-by-step process tracking difficult. But you need the ability to track how each batch of material or components is used—even if a batch is split between different manufacturing pathways. When you make a change at the master level you need to be able to see the impact across all affected lines.



Let us help you find the right digital solutions for your business. To learn more, contact GE Digital for an assessment.

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References

¹ Industrial Internet Industry Report, GE and Accenture

² Ibid

³ Ibid

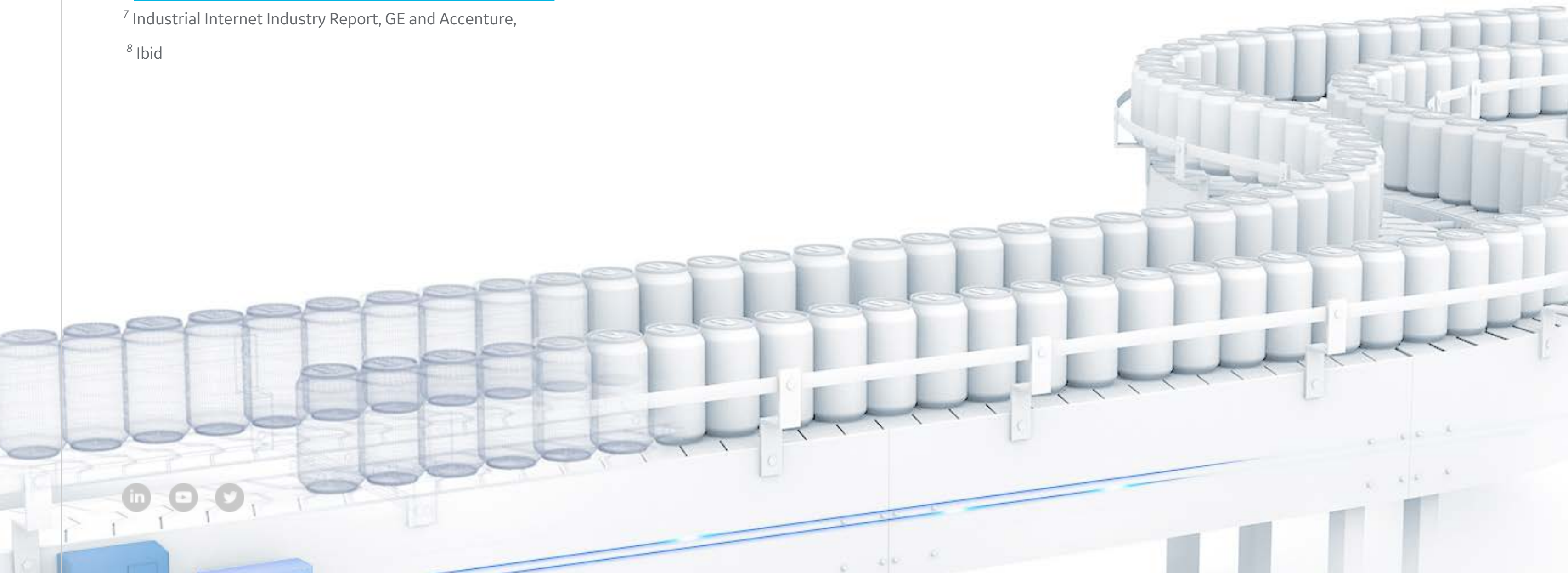
⁴ Operations & Maintenance Best Practices: A Guide to Achieving Operational Efficiency, Release 3.0, Sullivan, Pugh, Melendez and Hunt, Pacific Northwest National Laboratory—U.S. Department of Energy

⁵ The Aberdeen Group

⁶ GE Digital website,
<https://www.ge.com/digital/customers/food-beverage-cpg>

⁷ Industrial Internet Industry Report, GE and Accenture,

⁸ Ibid





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