



Digital Transformation

*Why it's real. Why it matters.
And why you need it now.*

By Andy Reeher, Chief Executive Officer, Brighton Science and Yannick Schilly, President and CEO, ALTIX Consulting



Introduction: **Wave of the Future or Corporate Buzzword?**

It's easy to be a little cynical when you hear people talk about digital transformation. Even though it's become a hot and popular topic in many industries, the term is being used — and sometimes overused — to promote a wide variety of products and services. In fact, so many people are talking about it that it's natural to wonder if anyone actually knows what it is.

Look closer, however, and you begin to understand why so many people are talking about it, and why a growing number of CEOs care about it. Smart companies that have embraced digital technologies are making better decisions, improving the consistency and quality of their products, reducing their costs, and more.

What's more, digital transformation isn't just a change that's "coming soon" anymore. It's already happening in many industries, especially since the pandemic. Plans which were five or ten years away (or simply simmering on the back burner) suddenly became a top priority when social distancing became the new normal. The result was a massive wave of automation and digital innovation in everything from manufacturing to remote banking to inspections of pharmaceutical facilities.

But one of the biggest reasons we believe in digital transformation is because we've experienced its benefits for ourselves. When we set out to eliminate paper-based systems in our own company, we didn't just transform our processes — we ended up changing our entire business model.

In this ebook, we'll share what digital transformation really means to companies of any size, why it's worth looking beyond cynical reactions, and how it can generate real progress for your business.



What is "Digital Transformation," Anyway?

At the most basic level, digital transformation is taking a leap forward in adopting empowering technology. This can mean something different to every company and a lot depends on your starting point.

For example, you could be a multibillion-dollar company that's transitioning into e-commerce. For your company, digital transformation is likely to mean more automated warehousing, supported by digital modeling, supporting R&D, and greater integration with your customer's R&D.

For others, the leap forward may be implementing more digital systems, such as ERP, MES, PLM systems, or other digital tools you haven't used before. It could be artificial intelligence (AI), the cloud, data analytics, or some combination of them all.

Whatever the transformation looks like to you, we're not just talking about buying new equipment or software. Digital transformations are significant changes that have a radical impact on your organization. They shake up the way cross-functional collaboration works, the way you design products and industrial systems, how you collaborate with suppliers and vendors, and much more.

Why go to the effort? Because there are two proven benefits:

- **You'll be more efficient.** Digitalization can help you improve arbitrage, reduce cycle times, optimize inventory, and drive other process improvements.
- **You'll make better (and faster) decisions.** Digital technologies can improve communication within your organization by getting the right information to the right people at the right time. Predictive modeling, for example, can help you find a market niche or eager customers you might not have thought to target. Done right, better quality data leads to better quality decisions.

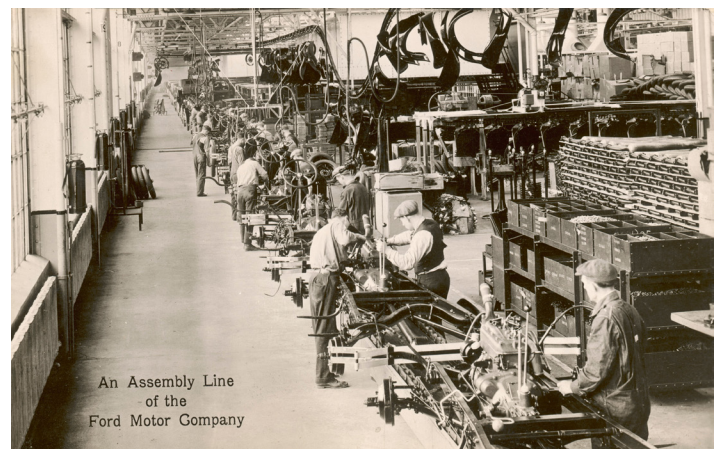
Together, these two factors combine to drive the biggest benefit of all: *you'll be more competitive.*

Why Digital Transformation is **Real**

Although the term "digital transformation" started cropping up relatively recently, in many ways it's just a continuation of innovative trends enabled by the use of data. If you've been around long enough, you've probably been hearing about it under one name or another since the introduction of the first laptop computers.

In fact, the idea is even older. Factories and manufacturing operations have been evolving at a rapid pace since the early 1900s, when Ford and Taylor embraced the science of industrial engineering. Since that time, every new innovation in hardware or software that has been developed and every process we've improved has had one goal: to create better quality products, manufacture them faster, and produce them at a lower cost.

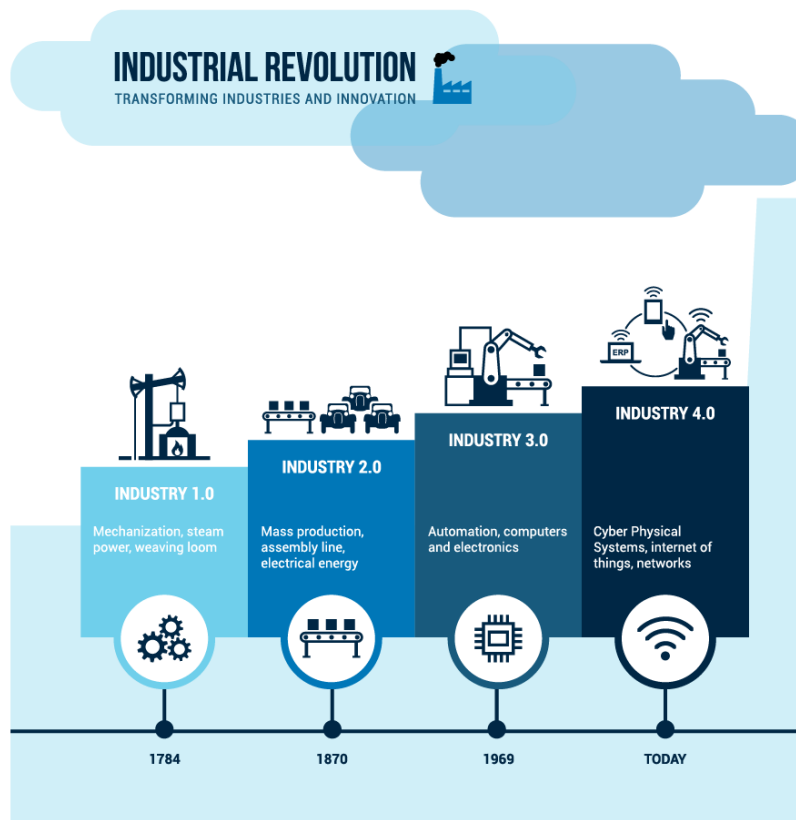
Whenever this goal is achieved, companies become more competitive and prosperous. That's exactly what's happening in organizations that are doing digitalization right. The proof that it's real can be seen in the products they're making and markets they're taking by storm.



A New Industrial Revolution

Major waves of this type of innovation become known as industrial revolutions. To date, there have been four:

- The first industrial revolution was led by the steam engine, which brought the power and mechanization needed to enable the production of steel, textiles, and heavy materials. This in turn led to the construction of roads, railroads, and trains.
- The railroad and the telegraph led to the second industrial revolution, which brought electricity and modern production lines to the factory.
- The third industrial revolution, which occurred in the second half of the 20th century, was marked by the arrival of computers, automation, electronics, and robotics.
- The fourth industrial revolution is underway today, and it's happening faster than any previous transformation. It's fueled by globalization, modern information systems, and global connectivity, as well as the mobility of people, goods, and capital. Industry 4.0, as it is often called, is considered to be the "age of data" and is bringing about the adoption of cyber-physical systems, including connected, smart, integrated, self-learning, and self-regulating systems.



Why Digitalization Matters

Technology is impacting every dimension of business and its ecosystem, regardless of location, size, or industry. It's also impacting every individual in the company, from the operator to the CEO. Digitalization has enabled a new, real-time and data-driven business decision environment. This in turn is creating a variety of benefits, including increased competitiveness.

Data-driven ecosystems are boosting productivity, performance, and speed while reducing costs across all business functions, and ultimately the cost to the customer as well. For example, by utilizing "digital twins" to test simulations before making expensive changes, you can avoid spending millions of dollars with little or no return on investment.

As growing numbers of manufacturers embrace the principles of digital transformation, they're experiencing the benefits of its cornerstone concepts, including system and process integration, information transparency, and smart technology — all of which enable manufacturing across a variety of industries to become more streamlined and cost-efficient. The result is higher productivity and ROI as well as improved quality control and reduced costs.

The COVID-19 pandemic has accelerated many industrial transformations, especially in automation, logistics, and material handling. It was a wake-up that made many organizations realize just how far behind they were — especially if they had more tech-savvy competitors. The biggest difference between the previous industrial revolutions and the one that's underway now isn't the type of technologies involved, but the acceleration curve. Digital technologies are evolving so rapidly that what's inconceivable today will be taken for granted in just ten years, or even sooner. Any company that's not working on digitalization today is taking a huge risk.



Why Now?

Many industrial companies fear getting "burned" by new technologies — often because they've had bad experiences in the past. They fear that change will disrupt the culture of their organization, cost too much, or even be a complete waste of the time and money they invest.

So what makes digital transformation any more compelling today than it was 20 years ago?

One of the reasons why it's possible to do more digital transformation today is a stronger digital infrastructure. It's no longer necessary, say, to require every employee on the shop floor to have a BlackBerry in order to control your security environment. There are apps that work the same way whether you have an iPhone or an Android device, making it possible to bring about transformations that weren't possible before with legacy technologies.

Another compelling reason is visibility. One of the most important key performance indicators (KPIs) in manufacturing is overall equipment efficiency (OEE). To measure that metric accurately, you need to be able to read and interpret the billions of data points of machine data being generated each year by manufacturing execution system (MES) software and the equipment it manages. If you don't have access to this kind of visibility, you're leaving a lot of money on the table.

In addition, the evolution of the cloud makes it possible to deliver secure data anywhere an internet connection can be established, eliminating the need for costly, customized on-premise data solutions. In this way, the internet has become a great equalizer, one that enables small companies to compete on a global scale, grow at their own pace, and even thrive against far larger rivals.



You Don't Have to Do It Alone

As recently as a few decades ago, digital transformation meant doing everything yourself, even if you were using an "erector set" solution like SAP software. These solutions were invariably purpose-built, and might even have worked well for a time, but could quickly create obstacles when times changed. Acquiring another company, for example, could mean recreating your entire bespoke framework for the new company or continuing to work on two different systems, sacrificing the advantage of integration.

Today, there are more flexible solutions driven by the software as a service (SaaS) model. These subscription-based platforms can scale up or down as needed and easily interconnect with each other via APIs. More importantly, they provide valuable tools and capabilities that your company doesn't have to create or maintain, such as expense management, customer relationship management (CRM), help desk ticketing, demand prediction, performance reviews, employee screening, time tracking, and project management. These solutions also relieve you and your team of responsibility for upgrades and data security, making you more agile, efficient, and up-to-date while allowing you to focus on your core strengths.

Letting go of ownership can feel like letting go of control, but in our experience, the benefits far outweigh the struggle of trying to do everything in-house. If you or your employees feel insecure about using a SaaS partner to provide capabilities that could enhance your business, the simple test is to ask yourself questions like these:

- Does your potential partner know more about their area of expertise than you do?
- Would the expertise or additional data available from their platform enable you to make better decisions?
- Can your partner give you capabilities now that it would take you years to develop on your own?
- Would it be easier for you to meet industry standards and compliance regulations with the help of a "best-of-breed" partner?

Putting the Theory to Work: **Applying Digital Transformation to Surface Analytics**

Every factory is looking to improve safety, quality, and delivery costs (SQDC). These goals can be achieved more easily when you have visibility into the factors that impact your KPIs. How much scrap are you generating? How much reworking are you having to do? How many parts are you rejecting because your vendor isn't meeting specifications? How many machine interruptions do you have? How many breakdowns do you have, and what are the root causes for those breakdowns so they can be prevented in the future?

Capturing this type of data, analyzing it, and translating it into process information is key, not only to the continuous improvement of your processes but also to perfecting product designs.

At Brighton Science, questions like these eventually led to our own digital transformation. At the outset, our relationships with many of our customers began when we were brought in to investigate a failure that had resulted in expensive production shutdowns. At that time, we were primarily known as providers of an innovative mobile measurement tool and advanced technical knowledge.

Working closely with hundreds of customers to resolve thousands of problems, we eventually came to an important realization: complex environmental circumstances and human choices regularly compromise the optimal design and manufacturing of products that involve chemical bonding, coating, and sealing throughout the product lifecycle. If we could use the power of networking and data collection to identify these hidden connections, we could deliver a powerful new capability that could help to prevent the kind of failures we were investigating.

From Surface Analytics to Surface Intelligence

For every industrial task, whether you're building an aircraft engine, making a car, painting a bumper, or whatever, there is a formal process that has been designed by an engineering team. But there's also a tacit process — what actually happens on the floor — which may or may not precisely follow the formal process.

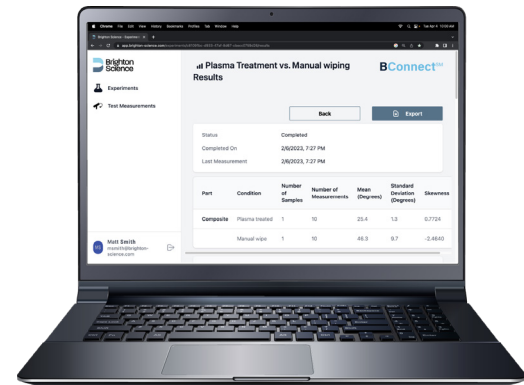
As we began to examine the science of surface analytics in the context of how human beings actually work, we recognized the need to create a "surface intelligence" network. We set out to provide a common language and a consistent system of measurement that would allow our customers to control their surfaces in a variety of ways, from product design through the lifecycle and down the supply chain. (For more details on how this technology can improve product development, check out our article: "[How to Streamline the Product Development Lifecycle](#)".)



This led to the development of BConnect, a technology platform that provides greater visibility into surface readiness by bringing detection capabilities directly to the point of preparation.

Unlike systems that are limited to laboratory environments, BConnect collects and shares data across real-world functions, processes, and companies. This enables the community of designers, scientists, and engineers to accelerate their knowledge of effective surface control and improve their ability to coordinate and cooperate in applying that creativity to bring greater innovation and productivity for the world.

By providing critical information our clients need to make better decisions every day, BConnect unlocks the potential to control surfaces throughout the product lifecycle. In addition to a common language and measurement standards that can be used across departments and divisions, it enables more confidence materials selection, a higher degree of cleanliness control and faster problem resolution. In addition, the insights generated by the network lead to improved quality, lower costs, and faster innovation.



That's our current digital transformation story. Although we still produce instruments and consult with a wide variety of clients, BConnect makes it possible for our customers to create their own surface intelligence networks, gaining new levels of control over a critical variable in the quality of their products and innovation. Whether you're painting, bonding, coating or whatever, you now have unprecedented control over the surface properties that determine whether that bond is successful. That critical data is no longer confined to an instrument or the anecdotal knowledge of an individual technician — it's available in real time to empower the people who make critical decisions every day.

Making it Happen

Digital transformation doesn't always happen overnight. It can be a complex process, but if you want to play in the top league, there's no way around it.

Our mission at Brighton Science is to be an amplifier for industrial success by helping companies grow and compete on a global level. When it comes to digital transformation or any other kind of innovation, the process of change requires a culture that's driven by the values of operational excellence. People at every level of your organization need to be able to accept, support and identify themselves with the goals you set.

The Brighton Science team has the skills and expertise to help make digital transformation an exciting and profitable reality for your business. Let's talk about how we can make it happen together.

About the Authors



Andy Reeher has over 30 years of experience in manufacturing, product management, data application, and entrepreneurship. His work has focused on the power of data to change behavior, improve quality, and achieve breakthrough results. He is Chief Executive Officer at Brighton Science, where he is responsible for customer success and organizational performance. He has a BA in history from Grove City College and an MBA from the University of Chicago.



Yannick Schilly is the President and CEO of ALTIX Consulting. For the past 25 years, he has successfully developed and executed complex global expansion strategies throughout Germany, China and the U.S. for a German-based global Mittelstand company renowned for its advanced manufacturing operations. He possesses a profound and unique knowledge of global and international business, industrial best practices and excellence in advanced manufacturing, industrial engineering, logistics and multi-national supply chain management. In his most recent role as Chief Operating Officer, Yannick established and managed regional production and logistic centers in China and North America for a leading German-based, international industrial technology company.

The Brighton Science Story

More than twenty years ago, Brighton Science began as a development lab for plasma polymerized coatings. Through research and development work led by Chief Scientist and Founder Dr. Giles Dillingham, Brighton Science made great strides in the field of material science and adhesives in manufacturing. It was during this time that Brighton Science developed the Surface Analyst, the first hand-held contact angle measurement device used in the development of adhesive bonding for the F-35 Joint Strike Fighter program.

Since those early days, Brighton Science has helped some of the world's largest companies build better products and develop reliable adhesion processes. Let our experts advise you on specific solutions you can put to work immediately or build into your optimization processes.

Let's talk about what we can do for you. [Contact us.](#)



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