



Commercial Solutions

TRUST AND THE CUSTOMER EXPERIENCE

How to Win in Manufacturing 4.0

In 4.0, winning starts with a simple goal: to create the most valuable services and experiences for connected customers.

At a Glance

Manufacturing is changing. It's no longer about making the best or most cost-competitive product. Now it is all about what services run through the product. The customer experience—that's the new differentiator.

Winning manufacturers will build an experience based first on trust, which means safety, security, privacy, performance, and a fair price. This is the key to long-term relationships with customers who have more choice and big expectations.

Manufacturing 4.0 demands new solutions:

1. **Ecosystem cyber security to build trust.** Cyber security is no longer just for enterprise IT to worry about—from suppliers to the enterprise and out to connected products in the field, manufacturers need to close vulnerabilities. Customers expect products, processes and services that are secured. Manufacturers that get ecosystem cyber security right will have a leg up on sustaining trusted relationships.
2. **Precision analytics to create new customer experiences.** We get it—big data has arrived. But its promise of solving everything often prevents it from solving anything. The smart firms will look beyond the hype. They'll start small and commit to focused efforts to bring analytics to the right business problems. Failing fast and learning quickly, they'll be best positioned to adopt analytics-at-scale, with a real impact on the bottom line.
3. **A new talent mix to drive value.** The war for talent is real. Technical expertise can be elusive, but the future also calls for creativity, problem-solving, and connecting the dots. Now more than ever, talent at all levels, everywhere in the organization, need enterprise acumen—awareness of the entire business and how each “node” creates value within it.

Winning firms will embrace reinvention. They'll stare down disruption and new competitors. They will form novel partnerships with unexpected allies. Speed, agility, and responsiveness will separate the rest from the best.



4.0's Big Change: From Product to a Trusted Experience

Manufacturing 4.0 isn't about incremental advances. This is transformation, defined by digitization, connectivity, machine learning, and additive manufacturing. Significant by themselves, together these factors are upending industry. The means, methods, and processes for production are changing. Industry lines are blurring. And new competitors are emerging.

Among all this disruption, focus becomes more important than ever. In 4.0, successful manufacturers will pull ahead by embracing a single, critical fact: the product is just a starting point. Today, your brand is defined by delivering services and experiences through the product. From vehicles equipped with proactive safety technology to industrial machinery that signals demand for its own replacement parts, and even refrigerators that write your grocery list, products are now the gateway to the services customers value most.

Keeping customer trust has never been more important. Customers are entrusting you with their safety and private data. They're hungry for a trusted relationship with producers, and they'll demand it—and go somewhere else if they don't receive it. Manufacturers must embrace that trust is a prerequisite to selling services and experiences—and thus a prerequisite for business success.

Building trusted relationships into long-term revenue and profit requires discipline and focus in three critical areas: cyber security, precision analytics, and talent.

Cyber security is the foundation of trust. Your products must be secure and your processes securable. Your brand depends on it. With increasing connectivity, you have to take a much wider view of security and protect your entire ecosystem.

Precision analytics is how you convert customer data into dollars for your business. Customer data tells you what services and experiences to sell next. Turning data into valuable insight is a massive challenge and opportunity. Yet, many companies aren't getting it right.

The right team is how you become an industry leader. Succeeding in 4.0 depends on your organization having a culture of creativity, agility, and experimentation. Without the best mix of talent you'll be stumbling as a follower, not running with confidence.

Dig in. Bear down. Outpace the competition.

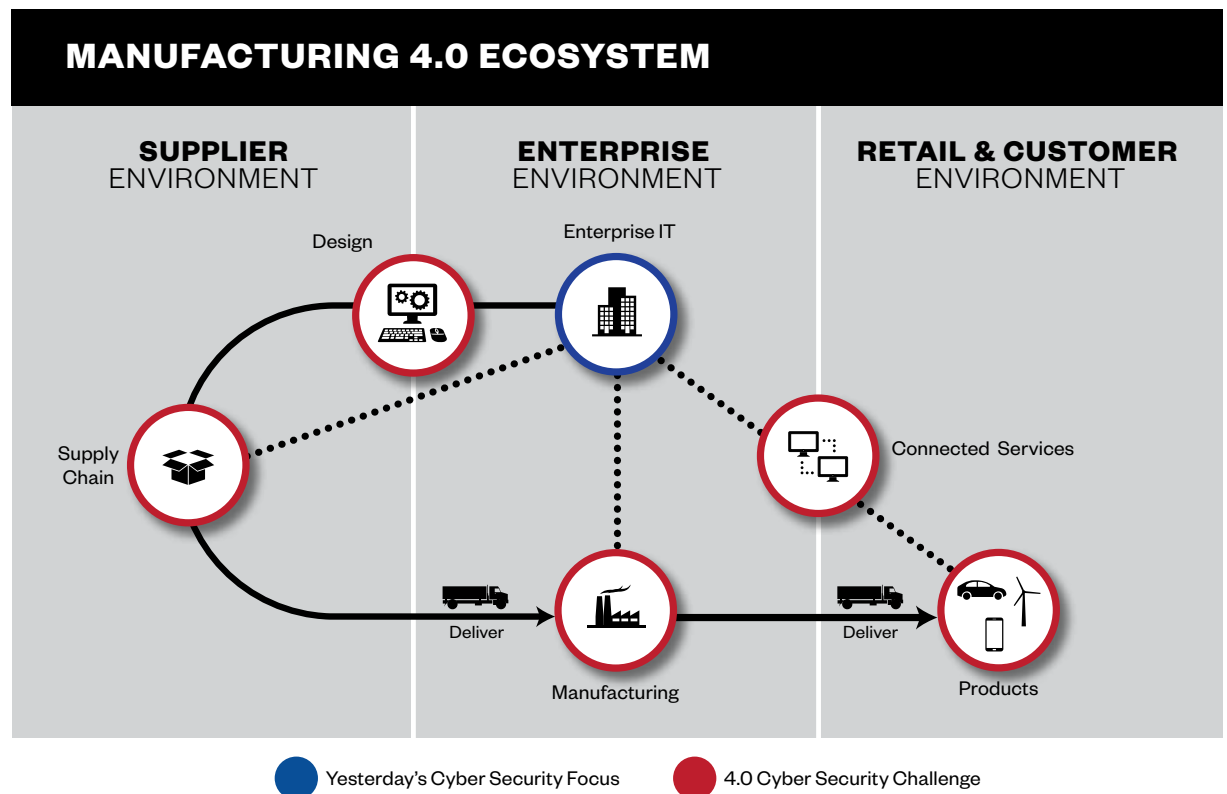
Ecosystem Cyber Security to Build Trust

Trust comes from providing a secure product: one that protects reliability and quality, as well as customer safety, data, and privacy. You earn—and keep—trust by proving that your business—from product design, to the supply chain, to the plant floor, to product servicing—is securable and secured.

4.0 demands a wider outlook on cyber security. It's no longer about just protecting enterprise IT. You're now responsible for security throughout the manufacturing ecosystem. And each part of the 4.0 ecosystem presents specific challenges. Across your supply chain, supplier weaknesses become your vulnerabilities. Just one unsecured supplier can result in the loss of your trade secrets or the compromise of your product. Digital manufacturing is driving the convergence of traditional enterprise IT systems with operational technology (OT). The performance gains can be enormous, but so are the potential security exposures. And after the point of sale, you're on the hook for intrinsically secure products—even as you push enhancements and upgrades to deployed products in real time.

Securing your ecosystem can seem daunting. Here's how to start:

First, getting cyber security right is as much mindset change as technical change. You'll need to raise awareness of the broad cyber challenge and its importance to the customer relationship. You need leaders at all levels of your organization to become true change agents for cyber security—cultivating a new set of behaviors and norms.



Second, think like a business leader, not only a cyber security professional. A common misconception is that a complex proliferation of security controls is the only answer. It doesn't have to be this way. Start by clarifying the business processes that drive key company operations and are critical to your products. Then apply security in a targeted, intentional manner with the underlying goal in mind: a more secure, trusted relationship with customers.

With this foundation in place, you can turn to specific initiatives in each part of the 4.0 ecosystem:

- **Look back to your supplier environment.** Consider how third parties connect with your business applications, because those vulnerabilities are often easily exploited. Recognize that you have dozens or hundreds of suppliers touching your product supply chain. Vulnerabilities there can allow an attacker to manipulate ingredients in a recipe, or change the software configuration of your connected product. Dig into the ways you vet, monitor, and manage your suppliers. Questionnaires and snapshot assessments may not be enough.
- **In your enterprise environment, master the IT-OT convergence.** The dividing lines used to be clear—IT enabled the business, OT controlled the production processes within the four walls of the plant environment. In 4.0, these lines are increasingly blurred, but you can't manage OT security with a traditional IT tactics. The plant floor is not a server room. It's a unique environment that demands special attention. If you don't get production security right, you won't have the critical foundation for providing inherently secure products that win customer trust.
- **Commit resources to ongoing product security in the retail & customer environment.** A compromised product in the hands of a customer can do significant damage to your reputation. Prepare for when things go wrong: good incident response, for example, can be the difference between a catastrophic hit to your bottom line and brand, and a problem that customers feel was well-addressed and boosts trust.

When everything connects, security becomes a more demanding responsibility. Companies that embrace ecosystem cyber security will enjoy a customer relationship built on trust and securable products—which becomes a competitive advantage in the 4.0 era.

Precision Analytics to Create New Customer Experiences

The promise of connected infrastructure and products lies largely in the data they generate—or, more precisely, the potential of that data.

Faith in the power of analytics isn't the same as having a clear strategy. Rather than starting with a business-focused approach, some manufacturers are buying expensive technical solutions and waiting for the magic to happen. That won't work. When it comes to analytics, firms need to slow down on technology investments and take a deliberate, strategic approach. Only after defining a specific need for data analytics should companies invest in particular solutions—technologies, process, people, and organization—that offer a real market advantage.

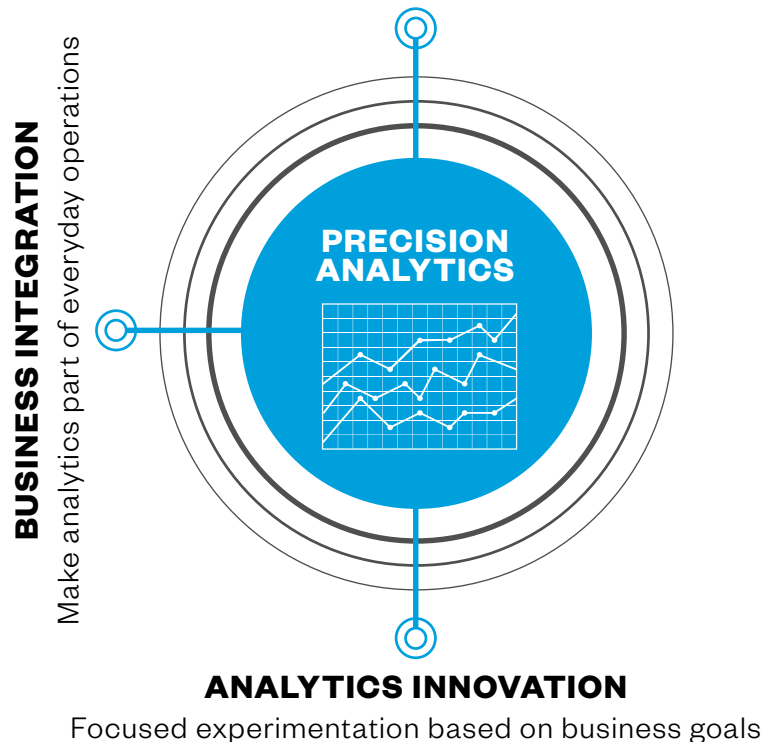
Manufacturing 4.0 is redefining industry boundaries. Amazon, Apple, Google, Uber, and a bunch of hungry startups are going after your customers. They're really good at creating a distinct experience for their customers. Use your experience to fight back. Balance your reputation as a trusted manufacturer with bold new strategies.

Analytics is at its best when accurately predicts where your customers will be. That's why leading manufacturers are thinking about precision analytics: the harnessing of big data and application of tailored analytics to very specific business challenges and opportunities. Precision analytics has three components:

- **An “Analytics 360” strategy.** This is about scanning the entire business landscape for data-driven opportunities— and identifying investment-worthy ones. Start with the most basic question: “Where do we need to improve our business?” Maybe the answer is leaner manufacturing operations, smarter cyber risk management, or better customer intelligence. Firms need to figure out their key business challenges and opportunities, consider how analytics might help, and then take action to bring specific analytics approaches and solutions to bear. Lead with the need, not the technology.
- **A culture of innovation around analytics, particularly at the grassroots.** You need curious data scientists positioned to find opportunities where analytics can truly help: at the ground level. Here, you need to prototype and experiment. Fail fast. Empower your teams to test what is possible with analytics in low-risk environments.

“ANALYTICS 360” STRATEGY

Align analytics with business goals



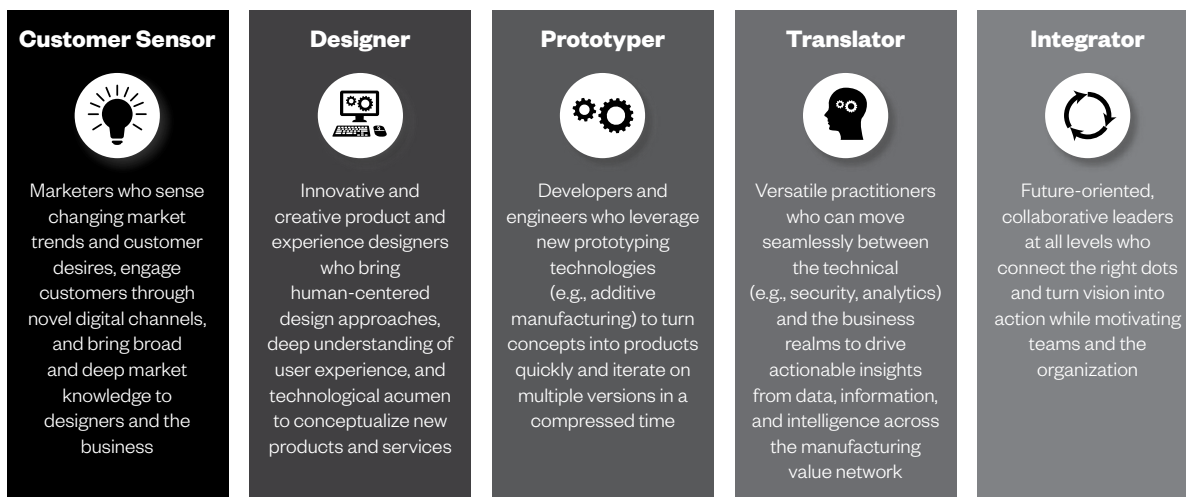
• **A focus on business integration, operationalizing analytics across your business.**

Think of this as making analytics business as usual. The enterprise has embraced it and it's almost unnoticeable. It's just happening. You'll need to tackle culture, mindsets, and organizational structure to make this real. Focus on where the data analytics team lives and how it works. Clarify who owns development, who maintains and updates datasets, and the process for injecting analysis into strategy and enterprise decision-making. Having a team of bright data scientists isn't enough; this team needs to be able to engage seamlessly across IT, business units, and corporate services without being encumbered by any one part of the enterprise.

The best manufacturers are relentlessly focused on capturing data, turning it into knowledge, and leveraging it to make decisions on new products and product-based services. Analytics can be a decisive factor for providing a differentiated experience.

A New Talent Mix to Win

You need a different talent profile to match your new enterprise profile. Tech-, data-, and cyber-savvy talent is a must. Because everything connects, your workforce must be collaborative, creative, and agile. You need people able to work across—and bring together—old silos of excellence. You need versatile practitioners who bring technical expertise and a broad understanding of the entire manufacturing value network. You need entrepreneurs who can create, and are creative. Most of all, you need people who can lead across teams, connect the dots, and convert innovative ideas into action.



While every firm will have distinct talent needs, there are five archetypical roles that modern manufacturers should emphasize as they rethink their talent profiles:

1. **Customer Sensors** are “tip of the spear” marketers and customer engagement experts. They sense changing market trends, interpret customer desires, and shape customer demands. They engage customers in your business through novel digital channels, your brand, and your products. They talk to customers about the quality of the services and experiences they receive through your products. They sense what’s next in the market.
2. **Designers** are innovative, creative types who bring human-centered approaches, deep understanding of user experience, and technical acumen to conceptualize and create new products and services. The modern designer understands the business, and forms strong relationships with your customer sensors to accelerate design cycles.

3. **Prototypers** are developers and engineers who leverage new prototyping technologies (such as additive manufacturing, and development sandboxes) to turn concepts into iterative products, quickly. They're working alongside designers—not siloed from them—to speed up the design-test-refine-test cycles.
4. **Translators** exist everywhere in the business. They have mastery over their functional domain, but maintain awareness of other parts of the value network. They apply their expertise in a broader business context, and are always looking for new ways to add value across the enterprise. They're adept at creative problem solving and bottom-up innovation.
5. **Integrators** are motivational and inspirational leaders who grasp the new realities of Manufacturing 4.0 and rally the organization around them. Importantly, integrators aren't just executives, but formal and informal leaders at every level who embody the values and strategic direction of your company. They're visionary and future-oriented. But they're also practical and pragmatic. They get things done.

Recruiting, retaining, and developing people is only getting harder. You're competing with software companies and startups. You're fighting manufacturing's legacy image to inspire younger generations. But no company can build and sustain long-term competitive advantage without the right people. And in manufacturing today, it's a race to refill your talent pool before the competition does.

Embracing the New Competitive Landscape

Manufacturing is undergoing tectonic change—from building standalone products to creating gateways for services and experiences. In the past, manufacturers competed with other producers in distinct market verticals. Now, the distinctions between manufacturers, technology companies, retailers, telecoms, and even logistics firms are blurred. Everyone's competing to deliver services and experiences to the connected customer—who has more choice than ever before.

Winning manufacturers will embrace, not resist, this new competitive landscape. They'll proactively reimagine themselves as a transformed company. They'll be willing to form partnerships with other business that might first look like competitors. And they'll look to complement others while staying true to a set of core capabilities that directly align to the connected customer's demands for product-based services and experiences.

Manufacturers must understand that speed, not size, is the more valuable attribute in Manufacturing 4.0. The connected customer expects on-demand services, and it won't stop there. As you master on-demand, you'll need to adapt to pre-demand, where you deliver a new service or experience before the customer asks for it. Maintaining customer loyalty means responding to—and predicting—their ever-changing wants and needs faster than the competition, without compromising on security or privacy. Agility and flexibility are keys to survival.

We're in a period of industry upheaval, driven by ubiquitous technology, connectivity, and digitization. This change is transforming how manufacturers work. It is radically altering what customers expect from the products they buy. To succeed, reinvent your business. Incremental change is not enough.

Think big. Move fast. Get ahead.

To learn how Booz Allen Hamilton can help your business thrive, contact:

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