Digital technologies are transforming every stage of the manufacturing lifecycle, from analytics and cloud platforms that enable virtual product design, to intelligent supply chains powered by the internet of things (IoT). Of course, many sectors in manufacturing are also being buffeted by economic volatility, fluctuating consumer demand, sustainability pressures, globalized sourcing and an influx of new competitors. In this climate, digital can seem like one more unwelcome disruption to deal with.

But for those that see change as an opportunity, digital is becoming the heart of their business strategies, supporting new product categories and even entirely new business models. 31% of manufacturing and automotive organizations have already “fully implemented” digital strategies, compared to 25% across all sectors; a further 39% are “currently executing”.1

But there’s plenty of work still to do. Only 4% of manufacturing and automotive organizations say the maturity of their digital strategy is “excellent”, compared to 9% across all sectors; 48% say it’s “fair”, “poor” or “very poor”.1 Furthermore, longstanding divisions between business units mean that developing an orchestrated digital strategy is a tall order. 69% of respondents say that each line of business has a different definition of what “digital” means to them, and 40% say their lines of business are investing in digital initiatives without considering the wider business digital strategy.1

This document sets out to explore how the full range of digital solutions — from analytics and cloud to IoT — fit into the major strategic priorities that manufacturers and automotive companies are focused on. From there we’ll look at why it’s critical for these initiatives to be supported by the right infrastructure, particularly networks, and what steps you can take today to get your business ready for the digital age.

The digital era and the fourth industrial revolution will change the world.2
Reinvent the customer experience

The days of “build it and they will come” are well and truly numbered. Digital is enabling manufacturers in every segment to better understand, serve and engage with their customers.

Take product development. IoT has ushered in the age of connected products, where everything from airplanes to air conditioners is connected to the network, gathering data and transmitting it back to the manufacturer. In-depth insight into how products are being used in the field can be combined with analytics from sales and marketing sources and fed into new product development processes. And, in many cases, by using powerful cloud platforms those products can be developed and tested without a single physical prototype being created.

While automation and analytics play an increasingly critical role, human designers are still vital, bringing the all-important creative spark. Digital technologies like video and mobile devices are helping them collaborate to make better products.

Connected products are also transforming delivery: many manufacturers no longer shift boxes, but rather deliver products “as a service”. Because these manufacturers can track how customers use their products, they can bill them for usage, and bundle in servicing and maintenance for a monthly fee. Consumers benefit from reduced capital expenditure, and manufacturers from ongoing revenue streams and customer lock-in.

Today it’s not just consumer product manufacturers that have a direct relationship with business and consumer buyers. Social, web and multichannel contact centers are disintermediating sales and service channels and enabling manufacturers to engage more intimately with customers.

Why digital matters to your business.

Digital drives the key initiatives across the manufacturing and automotive sector.

45% of manufacturing and automotive leaders say customer experience is a “critical” priority, while 33% say it’s a “critical” priority to gain better customer insight. 

1. Research source.
Optimize operations

Many manufacturers already run a tight ship, with continuous improvement forcing waste out of processes and driving quality up since Kanban and Six Sigma came on the scene. But digital is opening a new frontier for efficiency. We’ve come a long way since SCADA.

Manufacturers are more closely integrating systems across production and supply chains, drawing distributed global value chains into real-time responsive units that shorten lead times. Intelligent automated factories can sense pending equipment failures and reroute production. Analytics tools can predict demand shifts based on leading indicators and ensure the right parts are in the right place at the right time.

However far automated production and distribution have come, people remain important — and their work can be optimized by digital too. Field sales teams can use mobile devices integrated with ERP and CRM systems to log orders in real time. Engineers can use virtual reality to train up on how to maintain complex systems, then use augmented reality out in the field to improve first-fix. Connected products can communicate fault diagnostics, so that engineers arrive with the right part in hand.

Raise quality, manage risk

Few things are more costly to manufacturers than failures and, worst of all, recalls. Digital can help: better simulation during development can reduce design faults; remote monitoring can detect the early signs of failure in the field; and over-the-air updates can in many cases solve or work around problems until a more permanent resolution can be put in place.

It’s not just products that are at risk. Many manufacturers pride themselves on unblemished safety records, but it’s difficult to remove all risk. Employee-worn connected devices can raise the alarm automatically in the event of accidents, whether within a plant or out in the field.

As manufacturers and automotive companies gather more data — about customers, products and operations — and share it more widely with partners, suppliers and dealers, that data is at risk from cyberespionage and disruption. Today’s advanced cloud platforms and networks are equipped with intelligent defenses that can detect intrusions, divert denial of service attacks and block malicious files before they even reach application servers and the sensitive intellectual property they hold.

81% of manufacturing and automotive leaders say they have implemented or plan to implement IoT solutions.

52% of manufacturing and automotive leaders say their primary reason for digital investment is to streamline and improve process operations.

89% of manufacturing and automotive companies say they already use, or plan to use, big data solutions to inform decisions.

85% of manufacturing and automotive leaders say that information security is a “high” or “critical” priority for 2015.
A secure, reliable network is the backbone of every one of your digital initiatives.

The network is the key to digital.

Digital depends on the network

Take IoT applications like connected cars, and other connected products. Without reliable, secure and pervasive connectivity, the user experience would be compromised. Or take the cloud platforms that are hosting ERP systems, rapid prototyping simulations and virtual training environments. Without fast network links between them and your global sites, the business processes you’ve worked so hard to optimize would grind to a halt. In short, today you’re in the business of moving information just as much as physical goods.

Our research shows that manufacturing and automotive leaders recognize the importance of the network in supporting business goals.

38% of leaders in manufacturing and automotive “strongly agree” that the network forms part of their competitive advantage, compared to 28% across all industries.

“Today your business relies on the movement of information just as much as physical goods.”
Cultural change is essential

But it’s just as important to achieve cultural change. When technology is such a central part of operations and the products you manufacture, IT departments themselves must be embedded within the business. Manufacturing and automotive are ahead of the pack here – 43% say that the business and IT are well aligned, compared to 35% across all sectors.

Yet there’s plenty of room for improvement. 53% of leaders we spoke to say the rate of technology change is an obstacle to achieving business goals, compared to 44% in all sectors. 40% cited insufficient budget.

Networks need to change

Most manufacturers recognize that, while networks are critical to digital, their existing infrastructure isn’t up to the challenge. 56% say that their legacy network infrastructure is a bottleneck, and that number is only as low as it is because 65% say they have already expanded their network capacity to support digital.

71% of leaders in manufacturing and automotive say that poor network quality translates into poor user experience.

Manufacturers are facing a digital tsunami. They’re generating huge amounts of data that has to be processed and shared over high-bandwidth networks. But simply adding more bandwidth isn’t enough. In the digital age, networks need to be agile: to support the business into the future, by reconfiguring and scaling as traffic volumes shift to new markets, to support new products, to enable distributed manufacturing through 3D printing, or as “next-shoring” moves production and supplier partners from region to region, month by month.

76% of leaders in manufacturing and automotive say that the network is critical to a big data strategy.

Similarly, networks need to react automatically to threats and failures to maintain service levels and prioritize quality of service for critical applications; to operate themselves intelligently and programmatically to lift the burden of manual reconfiguration from overstretched IT teams.

Sounds like a tall order? There are technologies emerging to deliver these next-generation capabilities, under the banners of software-defined networks (SDN) and network function virtualization (NFV), and manufacturing and automotive organizations are investigating them: 71% say that SDN offers “significant” benefits.

74% of leaders in manufacturing and automotive say that the network is integral to delivery of everything cloud promises.

76% of leaders in manufacturing and automotive say that poor network quality translates into poor user experience.

Organizations know what needs to be done: 92% say that digital projects need clear business-outcome focused metrics, and 56% say they plan to align business and IT agendas. 76% say that CIOs should chair a council on digital innovation, with representatives from IT and the business – and 52% say they plan to form such a digital center of excellence.

74% of leaders in manufacturing and automotive say that the network is integral to delivery of everything cloud promises.
Start your
digital journey.

Make a difference today

Digital transformation is a long-term journey, but the time to start your network preparations is now. Although some of these changes will take time, there are things you can do today that will have an immediate effect. Leading organizations in the sector are already making progress with their digital transformations.

For example, we’ve been working with plant giant Komatsu since 2009, bringing 164 subsidiaries across 15 countries closer together through a next-generation secure wide-area network for voice and data, to help drive productivity and collaboration.

One of the entrants to our Powerful Answers competition, Radiator Labs, has used IoT and cloud technologies to introduce an innovative new connected product that helps cut building heating costs by 30–40%.

In automotive, we’ve been working with the University of Michigan and some of the world’s top automakers and insurance providers to support research into communications between vehicles and urban infrastructure, including autonomous and connected vehicles. We’re also working with Ford and Techstars to support innovative startups in transportation. And in Oregon, we helped bring to life the first pay-by-the-mile road usage program, OReGO, using our Verizon Telematics In-Drive service. Launched in 2011, In-Drive has logged more than three billion miles nationwide.

Joy Global, a provider of asset lifecycle services to the mining industry, worked with us to migrate to a new network and IT infrastructure on a global scale. This was the platform for a new Smart Services offering, which lets Joy Global fit each piece of mining equipment with a connected device to transmit performance data securely, anywhere in the world. Using the data, Joy Global can provide condition-based maintenance, remotely diagnosing and correcting faults to reduce downtime. Supervisors can also analyze shift productivity to streamline workflow management and help mine operators improve output without compromising safety. In some cases, Joy Global has helped its customers increase machine productivity by up to 50%.

References

1 – A commissioned study conducted by Forrester Consulting on behalf of Verizon, February 2015.
2 – European Economic and Social Committee, The fourth industrial revolution: business services at the heart of a new production model, October 2014.