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**LiveArea**

# Customer-Centric Manufacturing

In the Age of the Fourth Industrial Revolution

# Contents

03 | Introduction

19 | Why is customer-centricity important?

06 | What is the Fourth Industrial Revolution?

21 | Time for a fresh business architecture

08 | State of the manufacturing industry

22 | The power of data

09 | The challenges for manufacturers today

29 | The importance of agility

12 | A new reality

30 | Extending your business

14 | The pain points that manufacturers face

33 | Investing in talent and a new mindset

15 | What to do next

34 | A new model of servitisation

# Introduction

**The manufacturing industry is going through one of the most profound changes in history.**

The manufacturing industry, across the globe, is going through one of the most profound changes in history. Call it the Fourth Industrial Revolution (4IR) or Industry 4.0, it is the biggest disruption the sector has faced in the last half a century, arguably ever.

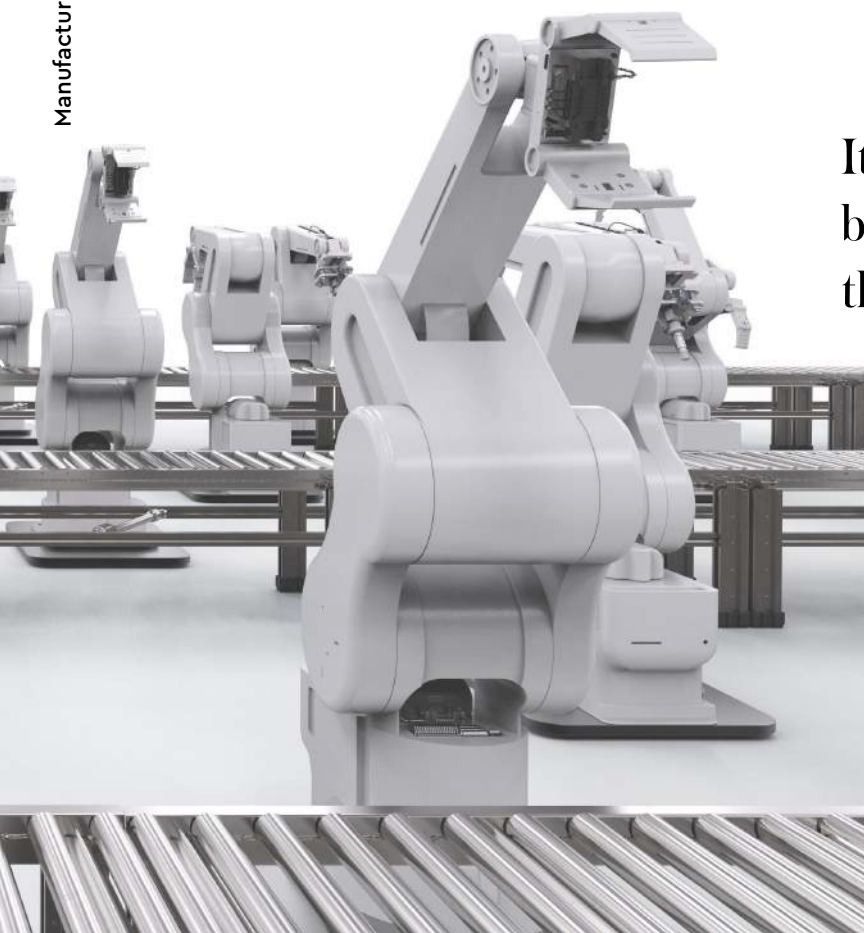
One of the biggest shocks is the sheer speed and pace of change, it is an upheaval that has parallels with the industrial revolutions experienced in the past. Rapid digitalisation, innovative technologies and techniques are changing the way we manufacture products, processes and supply chains.

An industry that was once lagging behind other industries such as retail, banking and telecom is now playing rapid catch-up as expectations in people's consumer and retail lives invade people's commercial and business realities. By 2025, the economic impact of smart factories could reach up

to US\$2.3 trillion per year, according to research by McKinsey.

It has been proven in other sectors that corporations that are slow to embrace this digital revolution have suffered the consequences and been left behind. Yet only 10 percent of industrial equipment manufacturers have a game plan to address the 4IR, according to Dassault Systèmes, a leading computer-aided design software company based in France. At the same time, 80 percent of manufacturers in the UK say the 4IR will be a business reality by 2025.

A lot has been written about how the 4IR is impacting manufacturing processes. Many in industry are investing time, effort and money on the digital transformation of how products are made, with a well-meaning, yet inward-looking, approach to digitising the warehouse floor, production lines and processes.



## It is time for manufacturing businesses to look beyond the factory gate.

It will not be enough to just manufacture and produce a great product in this new digitally driven era. Smart factories and easily configurable production lines will allow many rivals to produce best-in-class goods. You will need to find ways to do it cheaper, faster and with better quality than the competition, which will also be more globalised and fierce. Yes, the answer is better technologies. But they themselves will also become easier to employ, affordable and accessible. There will be a more pressing focal point.



## Customer experience will be the new battleground.

In the post-mass production era we now live in, customers are in the position of power, not goods' manufacturers. Corporations must re-orientate their entire business models. They need to think more about what the customer wants and what will increase value for them. They should now put the customer at the centre of all their planning. The buyer of your product will determine your success in the long-term.

Goods manufacturers are becoming increasingly savvy to the fact that they can now own the whole customer experience and journey. At the same time, a sizeable number of customers are becoming less brand loyal and more obsessed with services. Therefore, many corporations are now re-evaluating how they interact with their customers resulting in better experiences, often with more personalised offerings.

It is also increasingly complicated in the manufacturing space, there isn't just a seller-buyer dynamic but a series of layers to engage with: B2C, B2B, B2B2C and others.

## **"There are numerous touchpoints within the product lifecycle".**

The customer may be your merchants, resellers, and ultimately the end consumer of your product.

This means there are numerous touchpoints within the product lifecycle.

When we talk about the 'customer' it is worth doing so in a much broader context and it is ultimately more complicated for manufacturers attempting to take a more customer-centric approach.

The fact is that digital transformation and the 4IR should not stop when the finished product is on a pallet and leaving your warehouse. Re-engineering your business for the Fourth Industrial Age should start with the customer, whoever that may be. Manufacturers must become a lot more curious about those they sell to and configuring the move to digital and the 4IR with a customer-centric approach.





# What is the Fourth Industrial Revolution?

**The 4IR is driving  
manufacturing into a new era  
that blurs the lines between  
the physical and digital worlds.**

The Fourth Industrial Revolution or the 4IR builds on the Third Industrial Revolution, but goes far beyond it. Machine learning, big data, real-time information processing, cloud computing, artificial intelligence (AI), the Internet of Things (IoT) as well as advanced, intelligent robotics and additive manufacturing are driving the sector into a new era that blurs the lines between the physical and digital worlds.

The 4IR is also evolving at an exponential rather than a linear pace, which can be hard to comprehend. In manufacturing, both the third and the fourth industrial revolutions can be running in parallel.

The latest revolution is expected to generate US\$3.7 trillion in value across all industries globally by 2025, according to the World Economic Forum, with the rise of new products and services. It's a sizeable prize. New technologies will help generate and realise this value.

But the 4IR is not just about improving processes and productivity for

manufacturers, it's about delivering better value to customers, and a better customer experience. Ultimately it is the customer that will drive change in this market, they now have greater autonomy and influence in the B2C and B2B space.

Our consumer lives dictate our business lives, in an era of great expectations, manufacturing companies which have approached their market on their own terms should take note.

Adopting elements of the 4IR will certainly allow you to future proof your business for the decades to come.

**\$ 3.7 trillion**  
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# State of the manufacturing industry

## The market is now split between the old and the new.

Already there is a lot of digitalisation going on around the world in manufacturing. Advanced pockets exist in high-tech economies such as Germany, South Korea, Japan and parts of North America, as well as in some other spots in Europe, while other countries have plans to upgrade their capabilities.

For instance, Made in China 2025 is a blueprint for Beijing's plan to transform the country into a 4IR powerhouse. It is mirrored by Industrie 4.0 in Germany, Factory 2050 in the UK, Japan's Society 5.0 or Smart Nation in Singapore. Expertise and developments exist in digital islands. But the technologies of the 4IR do not recognise national borders and are likely to disrupt manufacturing sectors on a global scale.

At the same time, many small to medium enterprises (SMEs) and certain manufacturing sectors have been slow to change. Yet high-value manufacturing has embraced this move wholeheartedly. For instance, Rolls Royce in the UK is already in the next generation servitisation model of the 4IR with its civilian aircraft engines, while Siemens of Germany is at the forefront of this wholesale industrial change, if not spearheading it. Some manufacturing companies are even starting to transition into technology companies.

This includes the likes of General Electric and GE Digital from the U.S. or Japan's Fujitsu. Technology is changing what manufacturers offer clients.

The market is now split between the old and the new. Those with legacy systems who are trying to make the most of older capital investments, are sometimes competing with agile start-ups and challenger brands who operate with new tech standards, unburdened by prior thinking and systems.

One of the key steps in the transformation process is to take stock of your manufacturing sector and where those beacons of 4IR success are, who are they and what are they doing?

At the global level we are still at the beginning of this transformation journey. No country – even the most advanced, or any particular sector has completely digitised or cracked it. Many companies have yet to even start on their 4IR journey. There is not a one-size-fits-all solution when it comes to the model for digital manufacturing in the 21st Century. If you look at leaders such as Kone, Emerson or Michelin in this sphere all are taking different paths in this journey.

In many ways this presents an unbridled opportunity to make a fresh start and reconfigure your business for the decades ahead. And, it all starts with the customer.



# The challenges for manufacturers today

There are many barriers to change  
such as a reluctance to capitalise  
on technology.

There is still a reluctance to capitalise on technology. There is also a long-term lack of structural and capital investment in manufacturing. Some sectors are faced with vast legacy systems, tools and machinery, as well as 20th Century mentalities. These are many barriers to change. A lot of other businesses are keen but confused, if not bewildered.

There is also a strong belief that the 4IR and digital transformation is costly. It doesn't help that some models such as Germany's Industrie 4.0 can involve a wholesale move to a multi-million-pound smart factory. This is very different to a few plug and play, targeted solutions costing a few thousand pounds, dollars or euros.



**"4IR has a lot of potential and has helped businesses in terms of productivity and profitability".**

Since we are only at the start of the 4IR and the digital transformation journey, many companies are saying "I want to be a leader", but what is the ROI or return on investment?

With limited precedence, in terms of cost-benefit analyses on each stage of development it is difficult to provide answers. There are certainly advantages to being a first mover and, as a whole, the 4IR has a lot of potential and has helped businesses in terms of productivity and profitability. Yet there is uncertainty.



At a country level for instance, the UK manufacturing sector stands to benefit from a boost of more than £100 billion per year by 2026 if it invests deep and fast in the 4IR, according to research from Barclays and their Intelligent Manufacturing Report. There are also other issues.

Many companies are still incapable of dealing with the flow of information across their business, as well as the volume of data. Making sense of it is another matter, the so-called analysis paralysis. Yet data, big data and data analytics will be the lifeblood of organisations in the future. It is an invaluable resource, even a currency for many businesses. Collecting the right data, processing it and then acting on it will be the so-called 'secret source' going forwards.

It also doesn't help that there is a limited understanding of the impact that 4IR has already made, and will continue to make, to the progress of manufacturing. It doesn't help that a lot of developments in this field are in so-called 'pilot purgatory', according to the WEF, only 29 percent of industrial companies have started to roll out new technological solutions across their production processes.

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**in 4IR.**

A lack of preparedness can be mired in financial concerns and a lack of funds to invest in the 4IR, with capital spending priorities lying elsewhere. The reliability of the technology should not be overlooked, each sector, product and manufacturing line is unique. Then there's time allocation – the move to digital manufacturing can suck up a lot of man or woman hours to realise solutions.





# A new reality

## **The customer experience is integrated into the manufacturing process at all appropriate points.**

There are many reports that describe the perfect digital manufacturing set-up. The idealised world where the fully-automated, fully digitised smart factory provides designs for products quickly using digital twins, 3D designs, CAD, virtual realisations for parts and finished goods. These digital copies are signed off by the client for approval, they may even be co-created by the customer.

Virtual parts allow digital simulations that test whether the product will work before

anything comes off the production line, saving on any downtime or tooling costs.

Manufacturers in the 4IR era will be smart, connected, responsive and customer-centric all at the same time, with all sectors acting on data in a closed and virtuous loop that reinforces the optimisation of production and services. There is both a seamless front and back-end in the future. The customer experience is integrated into the manufacturing process at all appropriate points.

Personalised products are also the norm and are easily customisable. There will be unprecedented speed-to-market for new designs and products. Manufactured products through the IoT will be able to communicate issues whether they need to be serviced or replaced, giving continuous updates and feedback.

When this idealised manufacturing environment is obtained there is then the ability to offer add-on services, as well as value-added and data-driven services to create more economy, what is being called products as services. This is the ideal world, yet few products globally are produced in this way.

However, there is a new reality for manufacturers that should be considered and these are the reasons why the 4IR is now being acted upon by industry and is so widely talked about:

**"There will be unprecedented speed-to-market for new designs and products".**

- 01 The cost of technology has plummeted
- 02 The cost of data storage and data processing has nose-dived
- 03 Smart sensors and smart machinery have come down in price
- 04 Plug-and-play solutions can be bought off the shelf
- 05 Legacy systems can more easily be integrated with digital ones
- 06 There are now many software solutions making manufacturing processes easier



# The pain points that manufacturers face

**We need to address the real pain points that manufacturers are facing in moving towards a digital and 4IR manufacturing model.**

Firstly, many businesses in this sector are traditional, they were even late to invest in the Third Industrial Revolution. A lot of tools, equipment and solutions that were capital intensive yesterday can easily be out of date today. Legacy systems are rife.

Many manufacturers have also invested in siloes of data that are not joined up across the management of the product lifecycle. Marketing, production, engineering and sales may not be talking to each other through the same systems. Digital islands are a strong pain point.

'Ill prepared' are the words used to describe the state of many manufacturers ability to cope with the next wave of technological developments.

There are now increasing demands from customers or clients whether it be in the B2B or B2C environment with calls for shorter lead times, higher degrees of personalisation in some sectors, and at the same time a growing demand for more complexity, as well as a need for smarter, responsive supply chains. The rise of eCommerce means that manufacturers are having to be a lot more responsive in real-time.

There is a strong mentality of 'make and mend' or 'if it isn't broken, why fix it?' pervading the global manufacturing sector. Many companies are happy to remain with the status quo. Overcoming this culture, then defining and implementing an effective 4IR strategy becomes a real struggle.



# What to do next

**Practical advice to move to a more digitised model can be crucial.**



The move to a more digital model of manufacturing that encompasses the 4IR is a journey for many corporations. It can involve collecting data from a machine on a production line for the very first time. It could involve the full integration of data across a factory from when parts enter to when finished goods leave. Every business is on that spectrum, beginning, middle or end.

Practical advice and working out what needs to be done in order to move to a more digitised model can be crucial. Mapping out and building a business case for change is also essential.

## Pull focus on the customer

If you are starting off on the journey towards digital manufacturing and the 4IR with little knowledge on where to begin, then it should squarely be on your customer and the consumer of your products.

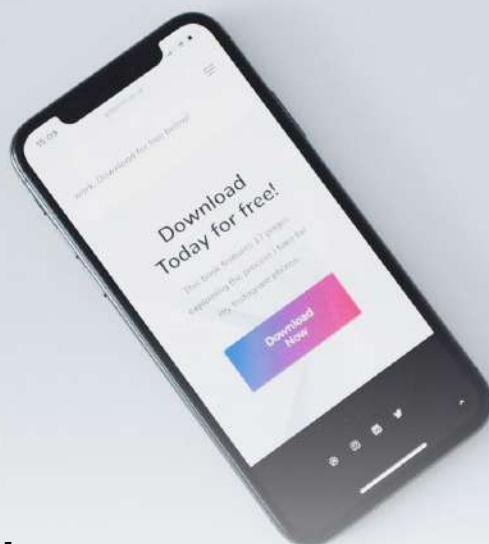
Customer-centricity is key to re-engineering your business. How can new technologies, both software and hardware help you serve the customer better? In an ideal world what would you re-engineer, to provide the best possible service to your customer? Customer expectations are changing; therefore, this should be the first trigger point for change. But it is only the start.

**"Knowing what you have in terms of solutions already is crucial".**

## Take stock of your business

Knowing what you have in terms of solutions already is crucial. What software and hardware you have in place, the digital islands that currently exist and the data solutions. It is good to take stock of what you have that you can build on, which legacy systems need to change. This will provide you with the inventory and business case for change.





## **"Customer-centricity is key to re-engineering your business".**

### **The need for change and transformation**

Tangible objectives and business outcomes are crucial from the very start. No one can transform their business overnight: So, what do you want to ultimately achieve in your manufacturing business over time? How can you articulate that change? What small steps do you need to achieve it?

These are crucial questions, in many cases it needs to be a step-by-step approach, in other cases it is about improving and marrying up siloed data systems, departments and getting divisions to communicate with one another. Above all you should have a pragmatic view on what can be achieved.

Certainly, the C-suite and business leaders need to embrace change, any technological leap needs buy in from the CEO down, with endorsement from seasoned middle management, who are known to be the least likely to embrace change.

You also need to address the issues that legacy systems bring, this is especially true in the manufacturing sector. What are the easy gains and entry points into this brave new world?

### **BARRIERS TO CHANGE**

- » Costs
- » Mindset
- » Training
- » Effort
- » Involves integration
- » Increased transparency

### **ADVANTAGES OF 4IR**

- » Speed to market
- » Customer-focused
- » Efficient production
- » Uniform quality
- » Mass customisation
- » Increased transparency



## Think outside the box

The new era in digital manufacturing and the 4IR is creating new business models, new ways of operating, new products and services. This is also the age of disruption. Seasoned incumbents once viewed start-ups as primary threats, now they are collaborating and co-creating with them along the supply chain and in different sectors. There are many new possibilities in the coming decade. The standard and normal manufacturing model is evolving, for some products and services it could become outdated.

## Again, re-orientate towards the customer

Those manufacturers who fail to adapt their business processes to satisfy increasingly demanding customers could easily be overtaken by the competition. At present, industry is focused clearly on making the

4IR and digital processors work internally, perfecting the nuts and bolts of production. Instead the primary focus should be on the customer.

Industry 4.0 should be a catalyst for driving a better customer experience, where manufacturing businesses are able to delight clients with more innovative, customised, personalised and adaptive products.

The process is then not just about manufacturing your product in the best way you can and employing technology for PLM – product lifecycle management. But a lot more. If you put the customer at the centre, you start thinking about how your business ecosystems can collaborate and serve the client in new and interesting ways. For instance, the aerospace industry in the UK has seen a 69 percent increase in customer satisfaction with the personalisation of manufactured products, according to the British Government's Made Smarter report.



# Why is customer-centricity important?

**In this new digitally driven age manufacturers need to apply customer-centricity throughout their organisation.**

A lot of the industrial digitalisation technologies being employed are disruptive in themselves. They are forcing manufacturers to move towards a more customer-centric business model. Why? Because they allow more personalised products, mass customisation, faster design, production and delivery cycles, as well as enhanced services and the ability to plug-in seamlessly to sales, marketing and eCommerce solutions.

Therefore, thinking about the customer in this digitalisation journey is crucial. Inward looking measures focused on manufacturing performance will need to be replaced with customer-centric analytics. These will be fuelled by more efficient means of capturing quantifiable insights. In this new digitally-driven age manufacturers need to apply customer-centricity throughout their

organisation, whether it relates to product design, re-orientating production, higher service levels in the supply chain or customer service directly.

## It's not just manufacturing that's evolving

There are many other digital offerings coming to the fore that are being employed by businesses, these include chatbots or robo-advisers, advanced algorithms, IoT, real-time payments, smart contracts and other software solutions all built on data. These are all enhancing the customer experience and, increasingly, will be connected directly to the manufacture and production of goods.



## Customer demand reaches new heights

A lot more ordering and customer requirements are already moving online; more knowledge is therefore in the cloud. Digitised knowledge platforms with quicker access to information will be crucial, as will KYC – know-your-customer – platforms. Clients don't want to have to key in their orders every time. Customer service is about the right delivery of information at the right time.

Changing customer demand now requires manufacturers to be flexible enough to produce at both high and low volumes whilst at the same time keeping costs low, as well as customise where necessary. Digital technologies allow manufacturers to reconfigure production processes, optimise machinery management and provide end-to-end, supply chain efficiency.





# Time for a fresh business architecture

**The goal involves boosting customer retention and customer experiences.**

Over time manufacturers should look to redesign the structure of their business through the lens of the customer. This is part referred to as Marketing and Sales 4.0 by business consultants McKinsey, it goes hand in hand with Industry 4.0.

This is where manufacturing capabilities are re-orientated to serve the customer directly, whereby digital machinery is connected in such a way that it achieves marketing and sales goals. The strength of

many manufacturers is with its technical engineers and product specialists and less with its marketers and customer service managers. Now this is changing.

A customer pain-point analysis will help you achieve this. Realising all of the possible changes that should be achieved along the customer journey. The goal involves boosting customer retention and customer experiences. You want lower churn and higher conversion rates in the process.

# The power of data

How can I connect the devices that I own and  
get data from them?

When it comes to data, manufacturers aren't novices. Many companies are excellent at measuring things, collecting data and doing analyses. Data of some description is essential for the manufacture of all products. But it's what you do with it that counts. In this new digital and 4IR era all the latest technologies drive value from data.

The integration of data across the product lifecycle and integrated with customer information can be extremely powerful. This cannot be under-estimated. We should ask: how can I connect the devices that I own

and get data from them? How can I utilise the data to best service my customers?

The issue is that every company is dealing with a deluge of data. IDC predicts a mind-boggling fifty-fold growth in digital content from 2010 to 2020. There is now a greater realisation of the complexity involved in achieving digital and 4IR manufacturing at scale.

The integration of production, finance, market, direct sales, eCommerce, operations, warehouse, marketing, sales and more is a task that takes a lot of time, effort and money.

## Data integration is key

The digital manufacturer has a slew of new sources of product information that must be managed, updated, analysed and combined with other sources produced from within. Manufacturing machines are producing more data. Smart, connected products are also sending customer experience data back to product managers to help them anticipate demand and design better products. If the right data is captured, shared across the whole organisation and exploited, it can empower whole organisations.

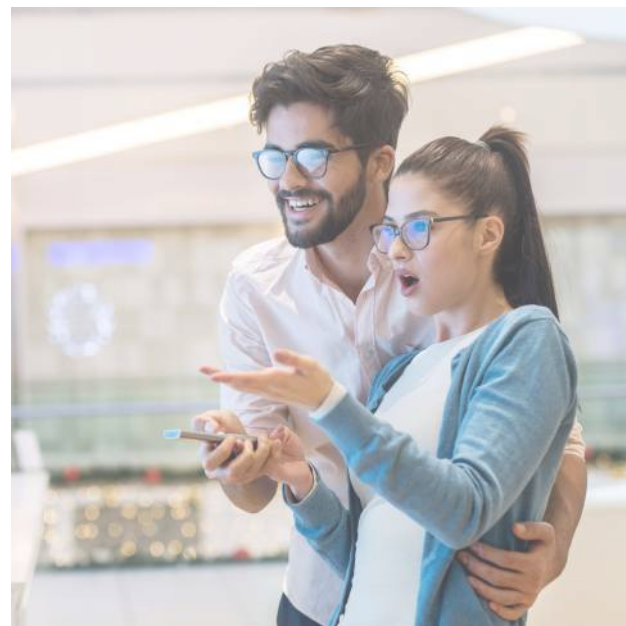
There's also an ecosystem of apps that help manufacturers increase efficiency, stay competitive, and improve the customer experience including Enterprise Resource Planning (ERP), Product Lifecycle Management (PLM), Configure Price Quote (CPQ), and Finance apps.





Manufacturers who are shifting into the digital age are also moving crucial content to the cloud, storing content both on-premises and on remote servers, with seamless syncing between the two. This means that workers can be anywhere and access crucial company data. It can also be shared by many more companies and teams in the value chain. It is also now much cheaper to process huge volumes of data. These can be churned through to extract insightful information, which can be used in product innovation as well as deliver better customer experiences.

If you are facing so-called 'paralysis by analysis' when it comes to prioritising your move in this field. It is worth prioritising technologies and digital solutions that directly improve the connection with the customer. Done properly, data analytics can bring the voice of the customer into every aspect of your manufacturing business. Bosch, BMW, General Electric have all prioritised this along with 4IR technologies to build customer experiences.



**"It is worth prioritising technologies and digital solutions that directly improve the connection with the customer".**

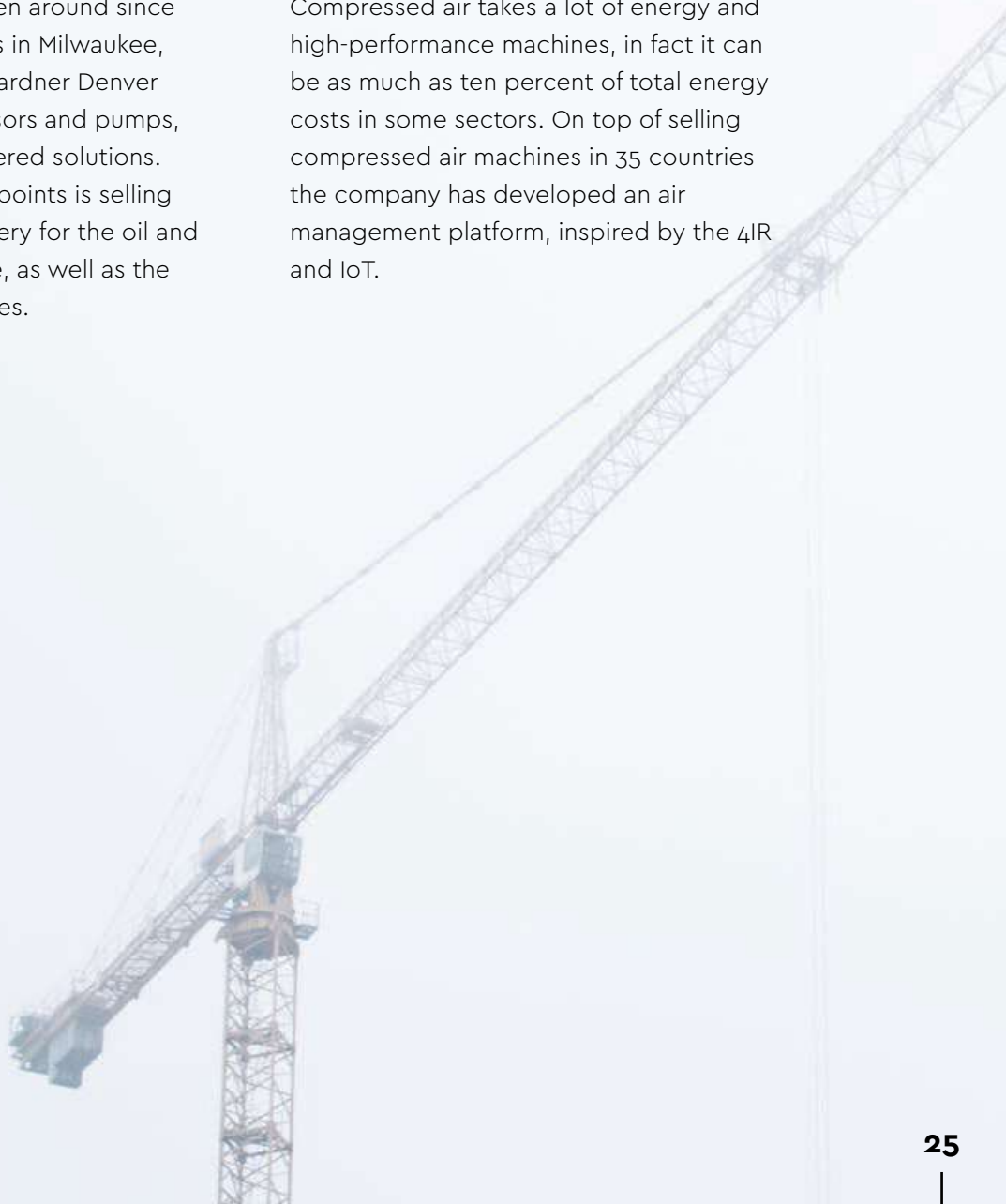


# 01

## Case Study

Gardner Denver has been around since 1859, with headquarters in Milwaukee, Wisconsin in the U.S. Gardner Denver manufactures compressors and pumps, as well as other engineered solutions. One of their main focal points is selling compressed air machinery for the oil and gas, food and beverage, as well as the pharmaceutical industries.

Compressed air takes a lot of energy and high-performance machines, in fact it can be as much as ten percent of total energy costs in some sectors. On top of selling compressed air machines in 35 countries the company has developed an air management platform, inspired by the 4IR and IoT.



Called iConn, their cloud-based system delivers advanced analytics, enabling operators to stay in control of their compressed air machines. The system provides historic, real-time, predictive and cognitive analytics, allowing users to address potential issues before they happen.

Data is accessed via open APIs allowing increased uptime. There's also a maintenance-scheduling tool that notifies the customer of any anticipated machine faults and enables services to be scheduled. iConn is now available as standard on all new CompAir machines and can be retrofitted to existing compressor installations.

What this shows is that manufacturers are developing smart machines and also services using 4IR technology. This not only provides a better customer experience but also value-add. Smart sensors and data is being leveraged here to provide 'products as a service.' This makes the manufactured product more valuable but also answers pressing and costly issues for the customer – downtime and maintenance. It's a win-win for both producer and consumer.



**"Manufacturers are developing smart machines and also services using 4IR technology".**

## Incorporating machine learning

In many cases, manufacturers have been slow to incorporate machine learning into their businesses. However, in this new era, particularly in after-sales and customer care, machine learning could positively impact manufacturers' bottom line and the overall customer experience.

When it comes to new product releases machine learning can also use algorithms and data analytics to track and determine a launch's success. By bringing together sales data, social media feeds, web traffic and other data sources a more accurate picture can be compiled.

If manufacturers know when, where and what products need to be ordered, manufactured and stocked, then excess inventories and overhead costs can be cut. When products are stocked more accurately, customers are guaranteed they will get what they want when they order it.

## A new era of great expectations

Those companies that have digitised and have fully embraced 4IR have high response rates, 24 hours becomes instant quotes in a bid to retain customers, even on complicated orders. It's all about giving the customer real-time and accurate quotes. Customers can now take the initiative through self-service journeys where they configure a product and request a proposal using the right software. This allows the manufacturer to customise the product with additional value-adds to give the customer an even better experience, mixing and matching both human and machine engagement.



Efficient demand forecasting using complex data analyses is also allowing digitised manufacturers to predict future demand for products. This is based on trends, fluctuations in sales and past events. Data-rich, smart forecasting will be a key component to success in customer service and after-sales going forwards.

Certainly, it is worth measuring the gap between customers' expectations and their real-life experiences. These gaps are then articulated across the entire company and how technology can assist in closing those gaps.

Many manufacturers still rely on simple pricing practices, many derived from Excel spreadsheets with little optimisation of price points. Customer expectations have changed, they want more dynamism. They get this in their retail and eCommerce lives, why not in their B2B ones? There are missed profit opportunities for manufacturers and potential to upsell with after-sales services that many companies are missing.

Stocking rates and warehouse figures, as well as data from production lines, are often poorly integrated into the customer-facing platform. This leads to a lack of visibility of supply or demand. This also leads to forecast accuracy issues and problems maintaining a balanced inventory. This can have an impact on costs. In many cases manual processes, as well as outdated technologies and business practices pervade in the sales and after-sales side of manufacturing companies. There is a missed opportunity here.

In the 4IR era you can base product development specifically on customer specifications. These are the key words in this agile era: Frictionless, personalised, dynamic, real-time, omnichannel, transparency, algorithmic.

**"Customer expectations have changed, they want more dynamism. They get this in their retail and eCommerce lives, why not in their B2B ones?"**



# The importance of agility

## **Agility is key along with the ability to look at real problems to solve with technology.**

Let's face it, 4IR and digital transformation projects sometimes take way too long to deliver. Many manufacturers have too many legacy systems that can't be replaced by a high-spec digital factory overnight. The key thing is to get started and demonstrate the benefits quickly.

That's why agility is key along with the ability to look at real problems to solve with technology. Manufacturers will have to be more agile in their approach to this new era ahead, especially in terms of what they implement and where. Many businesses want tangible results when it comes to digitalisation. Certainly, investing

in customer-centric, tech-driven solutions can provide some early wins. These don't interfere with some of the legacy issues and machinery that already exists on the shop floor. Software and human-focused solutions can also offer easier wins than investing in new hardware.

Further down the line achieving mass customisation and personalisation of product lines and marrying that up with customer care requires tremendous agility within the entire supply chain, not just within a manufacturing plant itself. An agile approach is crucial from the start, it will assure future success.



# Extending your business

## **There are many people and companies out there offering services that will help you in your 4IR journey.**

In this digitalised era there is increasing value in the extended enterprise. This involves extending your value chain beyond your usual ecosystem of suppliers and designers, engineers and customers. Companies are now teaming up with external collaborators for everything from product specifications and development, to marketing, sales, and services. You don't need to reinvent the wheel from within. There are many people and companies out there offering services that will help you in your 4IR journey. These days it is a lot more about co-creation and new ideas. Customers themselves are also becoming collaborators in creating excellent experiences and in turn offering suggestions for new products.

In the aerospace industry Northrup Grumman, Airbus, Bombardier and Boeing all rely on the 4IR to provide a framework for the customers' voice. This can then be embedded in their product design and processes, especially with customer expectations becoming more complex.

There are now many off-the-shelf solutions that can help you in your move to a more digitised and 4IR tech-driven existence, many plug and play options are available.

Configure, Price, Quote CPQ software and solutions for instance can assist greatly in this space. CPQ helps businesses configure and quote the right product, at the right price, to the right customer. You can now harness a company's data including product catalogues, transaction history, customer information and price lists. Data can also be sourced from disconnected systems across the company. CPQ software makes it actionable across all engagement points, including eCommerce and partner channels. Customers can now interact with this data through partner portals. It is all about reducing the time from initial enquiry to final delivery.

# 02

## Case Study

Buying furniture can be quite traditional right? How furniture is made, bought and supplied has been unchanged in half a century. Until now. Meet Tylko. Meaning "only" in Polish the company's app turns the process, and expectations of creating a personalised table, bookshelf or shelving unit on its head.



Customers tap on an easy-to-use augmented reality app. Point it at the corner of your bedroom, your new furniture is then displayed in-situ on your smartphone. Anyone can co-design a unique piece of furniture according to Mikołaj Molenda, co-founder at Tylko. You get instant quotes across Europe and they've teamed up with a Swiss designer so you can personalise his furniture, although Tylko has made sure algorithms are in place that respect the visual harmony of his pieces.

The technology offers a level of personalisation and customer engagement that haven't been possible before. This challenges the existing retail business model for furniture manufacturing allowing brands to move away from brick and mortar to more dynamic models, online. You can also create a video with the app. The stars are the furniture you've created shot in various rooms in the home, so you can see what you've produced before ordering. Tylko's business model is based on fully automated production, no-middlemen and delivery of the furniture direct. Tylko has paid special attention to simplifying the customisation process. What this shows is that start-ups can enter traditional manufacturing sectors such as furniture-making. Tylko has a clear focus on the end-customer in the purchase of a finished product. They've then engineered production in the factory from the output of their app. This is a classic case of digital manufacturing and the 4IR using data and customer experience to disrupt traditional manufacturing.



**"Start-ups can enter traditional manufacturing sectors such as furniture-making".**



# Investing in talent and a new mindset

It will be people that drive digital manufacturing and the 4IR in the future not just machines. Investing in the next generation will be crucial. Also investing in people who can bring this new era to life. It is all about the mindset shift. The 4IR era also involves a mind meld between the Chief Information Officer, the Chief Digital Officer, Marketing and Sales departments as well as production engineers working with data and products on the shop floor.

# A new model of servitisation

## **There is a fundamental shift from offering products to offering a service or an outcome.**

More industrial equipment manufacturers that would have in the past just sold products are now selling services in an attempt to future-proof themselves from commoditisation in some sectors.

There is a fundamental shift from offering products to offering a service or an outcome, because ultimately that's what the customer values and measures. Philips now sells lumens instead of lightbulbs at Amsterdam's Schiphol Airport. Goodyear instead of selling tyres, is selling predictive analytics to help fleet managers handle their vehicles. In these cases, a capability or service is delivered rather than an actual product. Rolls Royce is selling total care of its civil aerospace engines over their lifespan rather than just a one-off sale of goods.

Ultimate customer service is about servitisation. It provides value-add to manufacturers, because what they start selling is their expertise in sectors where products are becoming commoditised,

determined by low-prices and fierce competition. No one wants to be reduced to this.

Adopting new technologies such as sensors, IoT and machine learning is one way to attain this new servitisation model. One fundamental lesson that businesses can take as some companies move from a manufactured product model to an outcome based one, is that you shift the relationship from that of a supplier to your customer, to that of a trusted partner. In many ways you become an intrinsic part of the business, orientated to the end customer. This is a fundamental shift in the value that you as a supplier drive for the customer.

Certainly, having a customer-centric mindset will eventually allow you to shift your production model and offer greater servitisation, but also add value. This is the ultimate goal. It cannot be achieved from just being a great manufacturer of good products.

## Looking to the future

Look at the Chinese, they are taking the long view with their Made in China 2025 plan. With 4IR you need a strategic plan that extends way into the future. Disruption is coming to a manufacturing sector near you, it's not a matter of if, but when. When it comes it will either be one of quiet incremental change or ultimate displacement.

You cannot future-proof your business, the market is evolving too quickly to do so. What you can do though is take steps to adapt now, take on the right habits, mentality and ways of thinking, as well as

reinvent your company culture. The aim is to remain or be as agile as possible, so you can stay ahead of the competition, change if need be, and beat any disruption that besets the market.

Manufacturers will need to innovate and co-create at the speed of thought.

The customer will decide the fate of your business if you don't. Their expectations are changing rapidly. Retail and consumer lives are driving expectations in business and commercial environments. This will only accelerate in the future.



**"Manufacturers will  
need to innovate  
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speed of thought".**

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ABOUT

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